



Support to the Preparation of a National Strategy for Sustainable Development in  
The Republic of Macedonia

Draft Final National Strategy for Sustainable Development February 2008

Part II: Strategic background and analysis

**Support to the Preparation of a  
National Strategy for Sustainable Development  
In the Republic of Macedonia**

A Sida-funded project in cooperation with the  
Ministry of Environment and Physical Planning,  
The Republic of Macedonia

**Draft Final  
National Strategy for Sustainable Development for  
the Republic of Macedonia  
Part II: Strategic background and analysis  
February 2008**

***A Better Future through Change  
- balanced use of our rich social, cultural and  
natural heritage***

**Sida Reg. No. 2005-001592**

This report has been prepared by the NSSD Project Team  
(Comprising National Specialists, Local Staff, Project Management and International Specialists)



## Project Cover Sheet

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## List of Abbreviations

A21	Agenda 21
AAR	Analysis and Assessment Report
ADSL	Asymmetric Digital Subscriber Line
BAHA	Balkan Alliance of Hospitality Accountants
BERCEN	Balkan Environmental Regulatory Compliance and Enforcement Network
CAP	Common Agricultural Policy
CCI	Cross-Cutting Issues
CCSU	Cross-Cutting Support Unit
CDM	Clean Development Mechanism
CEFTA	Central European Free Trade Agreement
CEO	Chief Executive Officer
COC	Consolidated Conclusions
COF	Consolidated Findings
COR	Consolidated Recommendations
CPI	Consumer Price Index
DPRS	Diagnostic-Prognostic-Reporting-Service
EAR	European Agency for Reconstruction
EBRD	European Bank for Reconstruction and Development
EC	European Commission
EE	Energy Efficiency
EEA	European Environmental Agency
EIA	Environmental Investigation Agency
EIB	European Investment Bank
EMS	Environmental management system
ERC	Energy Regulatory Commission
ESCO	Energy Service Company
ESM	Electrostopanstvo na Macedonia
EU	European Union
EU EPA	Environment Protection Agency
EUREPGAP	Good Agricultural Practices
EURES	European Employment Services
EXS	Executive Summary
FDI	Foreign direct investment
GAP	Good Agricultural Practice
GCI	Global Competitiveness Index
GDP	Gross domestic product
GEF	Global Environment Facility
GEF	Global Environment Fund
GHG	Greenhouse Gas
GIS	Geographic Information System
GPRS	General Packet Radio Service



GTZ	Deutsche Gesellschaft fuer Technische Zusammenarbeit
HASSP	Health Approved Safety Standards Protection
HRM	Human resource management
IA	Impact Assessment
IFIs	International financing institutions
IPA	Instrument for Pre-Accession Assistance
ITC	Information and Communication Technologies
KfW	Kreditanstalt fuer Wiederaufbau
LFA	Logical Framework Approach
LIFE	EU's financial instrument supporting environmental and nature conservation projects throughout the EU, as well as in some candidate, acceding and neighbouring countries
MAASP	Macedonian Agricultural Advisory Support Programme
MAFWE	Ministry of Agriculture, Forestry and Water Economy
MC	Management Commentary
MCs	Management Commentaries
MEAs	Multilateral environmental agreements
MEPSO	Macedonian Transmission system operator
MES	Manufacturing execution system
MIS	Market Information System
MoEPP	Ministry of Environment and Physical Planning
NASD	National Agency for Sustainable Development
NATO	North Atlantic Treaty Organization
NCSD	National Council for Sustainable Development
NDP	National Development Plan
NEA	National Extension Agency
NEAP	National Environmental Action Plan
NES	National Employment Strategy 2010
NGO	Non Government Organization
NPAA	National Programme for Approximation of the Acquis
NSDIB	The National Sustainable Development Investment Bank
NSSD	National Strategy for Sustainable Development
NUTS	Nomenclature of Territorial Units for Statistics
OSCE	Organization for Security and Cooperation in Europe
PCM	Project Cycle Management
PD	Project Director
PINCR	Project Inception Report
PINTR	Project Interim Report
PIO	Project Implementation Office
PIP	Project Implementation Plan
PM	Project Management (Team Leader and Deputy Team Leader)
PPP	Public-Private-Partnership
PSC	Project Steering Committee
PT	Project Team
REReP	Regional Environmental Reconstruction Programme for South East



	Europe
RES	Renewable energy sources
RM	Republic of Macedonia
ROACH	Results-Oriented Approach for Capacity Change
RSDI	Regional Sustainable Development Indicators
SAA	Stabilisation and Association Agreement
SD	Sustainable Development
SDCU	Sustainable Development Campus University
SDF	Sustainable Development Framework
SDFR	SD Framework Report
SDI	Sustainable Development Indicators
SD-KPI	Sustainable Development Key Performance Indicator
SDS	Sustainable Development Strategy
SEA	Secretariat for European Affairs
Sida	Swedish International Development Cooperation Agency
SMEs	Small and Medium Size Enterprises
SMiLEs	Small, medium and large enterprise
SWG	Sector Working Group
SWOT	<u>Strengths-Weaknesses-Opportunities-Threats</u> (Analysis)
TAIEX	Technical Assistance and Information Exchange Instrument
TIRZ	Tax Increment Reinvestment Zones
TL	Team Leader
TOC	Table of Contents
ToR	Terms of Reference
TTC	Technology Transfer Centres
UN	United Nations
UNCED	United Nations Conference on Environment and Development
UNDP	United Nations Development Programme
UN-ECE	United Nations Economic Commission for Europe
UNEP	United Nations Environmental Programme
UNIDO	United Nations Industrial Development Programme
USAID	US Agency for International Development
VET	Vocational education and training system
WG	Working Group
WHO	World Health Organization
WSSD	World Summit for Sustainable Development
WTO	World Tourism Organisation
WWTP	Waste water treatment plant
ZELS	Association of the Units of the Local Self-Government of the Republic of Macedonia



## Executive Summary

The National Strategy for Sustainable Development (NSSD) **Part II: Strategic background and analysis** comprehensively describes the **country's vision for the next 22 years until 2030**. By joining the global movement of sustainable development, the NSSD will provide a clear direction and roadmap of the country's future development.

The vision of a balanced and accountable development in the economic, social and environmental fields is the heart of sustainable development.

The concept of sustainable development is one of the main goals of European integration and it is the core of the European model society<sup>1</sup>. Therefore the NSSD for the Republic of Macedonia has a **EU integration dimension**. In December 2005, the Republic of Macedonia was awarded candidate status for EU membership and the country is thus obligated to prepare a National Strategy for Sustainable Development (NSSD)<sup>2</sup>.

The National Strategy for Sustainable Development in the Republic of Macedonia is prepared with financial support from the Government of the Kingdom of Sweden, facilitated through the Swedish International Development Cooperation Agency (Sida) and co-ordinated by the Ministry of Environment and Physical Planning (MoEPP).

Together with the Spatial Planning Strategy from 2004 the NSSD provides the first **integrative planning approach in the Republic of Macedonia**. These two strategies offer the overall umbrella for all other strategies and policies in various fields<sup>3</sup>.

The strategic objective of the NSSD is to encompass the economic, social and environmental dimensions **by 2030**. The project objective was to lead a participatory process of developing a National Strategy for Sustainable Development, meeting the requirements of EU-accession for the Republic of Macedonia. Usually solely international specialists have prepared strategies. In this case, national ownership of the strategy and a completely new way of thinking and working was demonstrated throughout the process.

The *driving engine* of the NSSD project were the national specialists with their 7 Sector Working Groups (SWGs) and 4 Cross-cutting Support Units (CCSUs) in which participated more than 200 experts from administration, academia, NGOs and other key stakeholders. The International Specialists for Research & Survey, Organisation/Economics (Business), Foreign Direct Investment, and Sustainable Development supported and facilitated all the eleven working groups on demand during the entire period of preparation of the NSSD.

Due to this approach, awareness of sustainable development increased not only among the natural stakeholders of the project but also among the people of Macedonia. The national specialists and their working group members have established strong networks.

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<sup>1</sup> Romano Prodi, President of the European Commission European Parliament, (Strasbourg, May 2001).

<sup>2</sup> ANALYTICAL REPORT for the Opinion on the application from the Republic of Macedonia for EU membership, {COM (2005) 562 final}, Brussels, 9 November 2005, page 121.

<sup>3</sup> Republic of Macedonia: National Development Plan 2007 – 2009, unedited draft, Skopje, February 2007, page 3-4.



The ultimate tangible outcome of the NSSD Project is the National Strategy for Sustainable Development (NSSD) Part I: The overall strategic framework and Part II: **Strategic background and analysis** presented here. Developing the NSSD in the Republic of Macedonia was a stepwise process depending on the degree of commitment of everyone involved.

**In terms of reporting** the NSSD Project Team prepared 4 major deliverables, which form a pyramid style structure. The basic foundation for the whole strategy development process are the **11 Assessment and Analysis Reports (AARs)** as of December 31<sup>st</sup> 2006. They were prepared by the National Specialists. **The Sustainable Development Framework Report (SDFR)** as of the end of July 2007 marked a milestone before drafting the National Strategy for Sustainable Development. The Government of the Republic of Macedonia submitted the SDFR as part of its pre-accession Economic Programme to the European Commission in Brussels and received a positive response.

Based on the discussions among and between the NSSD Project WGs, a **Strategic [SWOT] Analysis of Macedonian Development (Chapter 2)** was created to provide an overall analytical and decision making framework.

A cross-cutting and a comprehensive description of **the sustainable development potentials** of the Republic of Macedonia derived from the aggregated strengths identified in the individual SWOT analysis presented in **Chapter 3**:

- Unique Beautiful Natural Environment and Rich Geo-/Biodiversity.
- Potential for renewable energy sources.
- Huge Variety of Traditionally High Quality Agriculture and Forest Products and Potential for Tourist Products.
- Rich cultural heritage, traditional architecture and craftsmanship products.
- Intellectual Energy and Human Resources Base Potential.
- Regional SD Potential facilitated by Pan-European Corridors X and VIII and their Sub-Corridors.
- Stable Macro-Economic Environment, Favourable Investment Conditions and SME-based Economy.
- Process of Harmonization of Legislation in Compliance with EU Regulations.

**Macedonian commitment to the Policy Guiding Principles** as outlined in the RENEWED EU SUSTAINABLE DEVELOPMENT STRATEGY June 9, 2006 – 10117/06 is presented in **Chapter 4**. It is related to 10 policy-guiding principles and four priorities and objectives. The hierarchy is as follows: economic prosperity, social equity and cohesion, environmental protection and meeting international responsibilities.

**Macedonian Sustainable Development Vision and State Mission: Key Challenges and Key Objectives** are highlighted in **Chapter 5** and described in full detail in **Chapter 6**. After being awarded the candidate status for EU membership in December 2005, the National Strategy for Sustainable Development in the Republic of Macedonia is firmly anchored at the EU level, but at the same time the strategy emphasizes the countries' specific key challenges and key objectives.

The key challenges and key objectives are defined as follows:

RM 1: Good Governance and Better Policy-Making

RM 2: Diversification of Income in Rural Regions and Sustainable Development Challenges



RM 3: Economic Prosperity and Job Creation  
RM 4: Sustainable Human Settlements  
RM 5: Cross-Cutting Policies contributing to a Knowledge Society  
EU 1: Climate Change and Clean Energy  
EU 2: Sustainable Transport  
EU 3: Sustainable Consumption and Production  
EU 4: Conservation and Management of Natural Resources  
EU 5: Public Health  
EU 6: Social Inclusion, Demography and Migration

*The SD Synergies* as stipulated in Chapter 5, help to identify **three Strategic Trust Building Blocks of Sustainable Development in Macedonia** that contribute to all SD Key challenges and their corresponding key objectives as outlined above. These Strategic Trust Building Blocks are:

- Small and Medium Enterprises, which today make up 99.7% of all enterprises in the country, and in the future some of these might develop in Large Enterprises;
- Policy and Legal Issues;
- Education, understood as a life-long learning process, which uses modern day Information and Communication Technologies.

There is no doubt that the implementation of the NSSD in the Republic of Macedonia is a major **process of change for the entire country** and the implementation highly depends on the **Enabling Environment and the Implementation Capacity**, which directly lead to the importance of the political awareness and capacity. **Chapter 7** discusses the Enabling Environment and the Implementation Capacity in their various aspects.

The State is responsible for providing the necessary institutional capacity and set-up (**Chapter 8**) in order to ensure professional implementation of the NSSD and to safeguard the movement from sectorised towards integrated planning with social, economic and environmental objectives being complementary and interdependent throughout the development process.

A system of indicators is proposed (**Chapter 8**) to monitor the progress in achieving the objectives of the strategy and to accommodate a process of learning and improvement. Major investments are needed to redirect the society towards sustainable development.

The NSSD should generate a positive climate for investors, both international and national. To this end, the NSSD project has identified possibilities for investment and has drafted pilot projects.





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- Annex No. 2: Sustainable Development Objective Trees
- Annex No. 3: The Commitment of the Republic of Macedonia to Sustainable Development as of February 2008
- Annex No. 4: Role and mandate of the NCSD
- Annex No. 5: Proposal for Institutional Set-up to Support the Implementation of Sustainable Development in the Republic of Macedonia, July 2007; NSSD Position Document I
- Annex No. 6: Sustainable Development Pilot Projects Catalogue as of February 2008
- Annex No. 7: Sustainable Development Indicators
- Annex No. 8: Examples of Sustainable Development Project Design
- Annex No. 9: List of Reviewed Documents
- Annex No. 10: List of NSSD Workshop Participants



**Supplements:**

NSSD Position Document I: Proposal for Institutional Set-up to Support the Implementation of Sustainable Development in the Republic of Macedonia, July 2007.

NSSD Position Document II: Air quality in the Regions of Macedonia as Foundation for Agriculture and Rural Development based on SD Principles, October 2007.

NSSD Position Document III: Population Change and Demographic Situation in the Republic of Macedonia, October 2007.

NSSD Position Document IV: Agriculture, Climate Change, Soil Protection, Pesticides, Nitrates and Water in the Republic of Macedonia, January 2008.

NSSD Position Document V: Environmental integration into the future CAP, Cross compliance, Agro-environmental Measures and Agro-environmental indicators in the Republic of Macedonia, January 2008.

NSSD Position Document VI: Agriculture and biodiversity Plant Genetic Resources in the Republic of Macedonia, January 2008.

NSSD Position Document VII: Agriculture and biodiversity Animal Genetic Resources in the Republic of Macedonia, January 2008.

NSSD Position Document VIII: Agriculture and Genetically Modified Organisms in the Republic of Macedonia, January 2008.

NSSD Position Document IX: Plants Biomass Production and Bio Fuels in the Republic of Macedonia, January 2008.

NSSD Position Document X: Proposition of Performance Indicators for Road and Railway Transport to establish more efficient, less polluted and safer Transport System in the Republic of Macedonia, January 2008.

NSSD Position Document XI: Water Infrastructure in the Republic of Macedonia, January 2008.

NSSD Position Document XII: Regional Opportunities for Sustainable Development of Tourism in the Republic Macedonia, January 2008.



## 1. National Strategy for Sustainable Development in the Republic of Macedonia – Background and Introduction

The **National Strategy for Sustainable Development (NSSD)** of the Republic of Macedonia sets a vision, mission and objectives for economically, socially and environmentally balanced development. By joining the global movement for sustainable development, the Republic of Macedonia needs to provide its citizens with a clear direction and road map of the country's development, as well as motivate their hope and trust in the future. The NSSD focuses on the time frame 2008-2030, projecting Sustainable Development Macedonia by 2030.

The belief that social, economic and environmental goals should be complementary and interdependent throughout the development process is the heart of the concept of Sustainable Development. All Macedonian citizens should understand the SD philosophy, as they have crucial role to build a sustainable society. In the situation of unfavourable demographic trends in the country represented through rapid aging of the population and intense emigration abroad, the SD concept is extremely important for achieving sustainability of the human capital in the Republic of Macedonia.

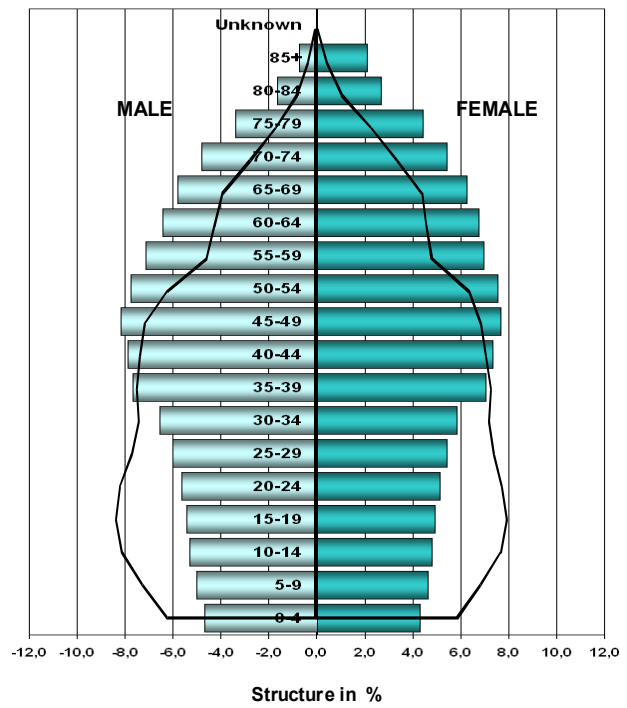


Chart no.1 Demographic trends in RM  
2030 (shaded bar) 2002 (line)



This National Strategy for Sustainable Development of the Republic of Macedonia provides an **integral planning approach**, which offers the overall umbrella for all other policies and strategies in various fields.<sup>4</sup> The NSSD respects already set strategic directions in

<sup>4</sup> Republic of Macedonia: National Development Plan 2007 – 2009, unedited draft, Skopje, February 2007, page 3-4.



different sectors, but also provides strong cross cutting links essential for sustainable development.

Figure no.1 Diagram of SD

The NSSD in the Republic of Macedonia also has an eminent international political dimension in terms of **EU integration**. Since Sustainable Development is the fundamental goal of the European Union, the Republic of Macedonia after being awarded the candidate status for EU membership in December 2005 is obliged to prepare a National Strategy for Sustainable Development<sup>5</sup>. The concept of Sustainable Development is one of the main goals of European integration and it is the core of the European model of society<sup>6</sup>.

## 1.1 Understanding the Project

Scanagri Sweden AB, in consortium with NIRAS A/S and Euro consultants S.A., has been awarded the contract to implement the project “Support to the Preparation of a National Strategy for Sustainable Development” in the Republic of Macedonia. The project contract was signed on the 15 February 2006, which is considered as the official starting date of this two-year project. The project was financed by the Swedish International Development Cooperation Agency (Sida) and the Macedonian coordinating partner was the Ministry of Environment and Physical Planning of the Republic of Macedonia (MoEPP).

The aim of the project was to assist the Republic of Macedonia in preparing a national strategy for economically, socially and environmentally sustainable development that takes full advantage of past planning efforts in the country before and after the World Summit for Sustainable Development (WSSD) in Johannesburg 2002. The strategy should fulfil the obligations made by the Republic of Macedonia internationally and to the EU, but its primary purpose was to provide an effective framework for sustainable development that, via reviews of existing policies and sector strategies, offers practical guidelines for the public and private sectors and serves to encourage incremental domestic and foreign investments.

The understanding of the project as presented in the Technical Proposal prepared by the Consultant’s Consortium (Scanagri, Niras, Euroconsultants) has in most respects been reaffirmed during the Inception Phase until 15 May 2006. The integration of the three pillars of sustainable development – economy, social issues and environment – guided the work during all project phases. The NSSD project team at any time was committed to an open, democratic and output oriented process. Based on experiences and knowledge

<sup>5</sup> ANALYTICAL REPORT for the Opinion on the application from the Republic of Macedonia for EU membership, {COM (2005) 562 final}, Brussels, 9 November 2005, page 121.

<sup>6</sup> Romano Prodi, President of the European Commission European Parliament, (Strasbourg, May 2001).



gained during the Inception Phase it is to underline and complement our understanding of the project with the following points:

### 1.1.1 Supporting Approach

As early as during the Inception Phase, in the revision of the LFA matrix the project team has gradually moved from a discussion of the very abstract level of the project concerning the future and identity of Macedonia towards a more down-to-earth level planning the practical activities and tasks in the project. In this process the members of the project team identified their respective roles in the project set-up.

The project team has resolved that the best way to organise the project and to promote national ownership to the strategy is by highlighting the 'driving engine' role of the working groups, both SWGs and CCSUs, facilitated by the National Specialists. Based on a cascading approach the Working Groups invited gradually more segments of the population into their discussions.

The Foreign Specialists and Project Management supported the National Specialists and ensured respect to the EU documents and standards into the NSSD, as well as participation of relevant Macedonian stakeholders (from the ministries, municipalities, NGOs, business associations, consumer's association, donors etc.)

Such organisation and mode of operation of the project reflected the fact that the project deals with important issues concerning national identity and national ambitions, which are increasingly shaped in an international environment.

### 1.1.2 Sustainable Development – A new way of thinking and working

"Being strategic implies setting goals and identifying means of achieving them. This implies adopting an approach, which has an underlying vision, is based on solid evidence, sets priorities, goals and direction and sets out the main tactics for achieving them. In relation to sustainable development, being strategic requires a comprehensive understanding of the concept and its implications."<sup>7</sup>

**A strategic approach to sustainable development** implies new ways of thinking and working so as to:<sup>8</sup>

- Move from developing and implementing fixed plans, ideas and solutions towards operating an adaptive system that can continuously improve governance to promote coherence between responses to different challenges.

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<sup>7</sup> The DAC Guidelines Strategies for Sustainable Development. OECD, 2001, page 24.

<sup>8</sup> The DAC Guidelines Strategies for Sustainable Development. OECD, 2001, page 24.



- Move from a view that the state alone is responsible for development towards one that sees responsibility with society as a whole.
- Move from centralised and controlled decision-making towards sharing results and opportunities, transparent negotiation, co-operation and concerted action.
- Move from a focus on outputs (e.g. projects and laws) towards a focus on outcomes (e.g. impacts of projects and legal changes).
- Move from sectoral towards integrated planning.
- Move from a dependence on external assistance towards domestically driven and financed development.
- Move towards a process that can accommodate monitoring, learning and improvement.

### **1.1.3 Awareness Raising Beyond Project Period**

Having in mind the above and in relation to creating awareness of sustainable development among the general public in the Republic of Macedonia, this will not be achieved only through this project's funding and during the project period, but will have to be continued after the end of the project to reach all citizens in the Republic of Macedonia.

### **1.1.4 Creating a Positive Ground for Investments**

The team's project understanding based on the ToR was process-oriented to preparation of the document "National Strategy for Sustainable Development". According to the ToR, the project has neither the financial, nor the administrative and human resources to be an 'Implementation Project' at the same time. Therefore, the project objective of 'increasing foreign direct investment' in the ToR was clarified and implicitly, monitoring indicators were defined in our revised Logical Framework Matrix<sup>9</sup>, as it will be very difficult to measure any specific development at the time when the project ends. The development of a National Strategy for Sustainable Development is rather supposed to generate a positive climate for investors, both foreign and domestic. At the end of the two years project cycle (mid-February 2006-2008), the NSSD Project can realistically identify possibilities for investment and draft pilot projects. More specific development in form of financial investments will most likely be generated after the end of the project.

## **1.2 Why do we need a National Strategy for Sustainable Development? – The Need for Hope and Trust in the Future**

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<sup>9</sup> See Inception Report Annex 12: Revised Project's Logical Framework Matrix.



The current situation with respect to the economic prosperity, social cohesion and environmental protection in the Republic of Macedonia does not provide Macedonian citizens with a good quality of life. In addition, there is no substantial link among those three pillars, most often translating into isolated sector's policies and actions with short-term results. The need for NSSD derives mostly from these problems, along with the challenges imposed by the changing international environment. The internal and external pressures to the state to ensure a better quality of life set a necessity for introduction of the systematic and sustainable approach towards development.

**The basic enabling factor** in connection with any strategic context entailing major change is “*trust*”. The most dangerous thing to do, and the most difficult thing to implement, is to motivate changes. Consequently if you have to drastically change the direction of the development of a society, and the daily lifestyle of people, which sustainable development certainly will entail, we have to convince people that change is a positive thing and not a negative thing. It is hard work building up trust in change and the people responsible for the direction of the change.

The above goes for all countries and all societies around the world, as well as for organisations and institutions, where you would like to change how things are done. This challenge is comprehensive, complex and stratified at different levels. Available resources and capacities are limited, and yet overwhelming prosperity is expected to be achieved. It is clear from the 11 AARs, and it has been discussed several times in sessions and at workshops within and between stakeholders, National and Foreign Specialists and Project Management. A very tangible manifestation of this is the identified severe “brain drain” in a number of the sector SWOT Analysis conducted as part of the Project Implementation Phase II, the Analysis and Assessment Phase, and reported in the AARs.

This national overburden with underdevelopment issues is accompanied with scepticism from the international society concerning the development potentials of the Republic of Macedonia in relation to the question about short as well as long-term political stability<sup>10</sup>. If the above two issues, the National overburden and the International scepticism, toward Macedonia, are not addressed properly, the appropriate Sustainable Development Strategy (SDS) developed within the Sustainable Development Framework (SDF) will only be of academic interest, as the external as well as internal implementation background will be infertile.

*Consequently the change of attitude towards the future* of the people at large in the Republic of Macedonia, and the International society towards the Republic of Macedonia, has to be addressed and resolved as an inherent and integral part of the formulation of the SDF and the development of the SDS. This is certainly a task outside

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<sup>10</sup> This was very vividly expressed at the Invest in Macedonia Conference that the Project Director Annika Sandell attended in Stockholm in April 2007.





the Project not only due to limited resources within the project but also due to the limited legitimacy of the Project in this context. However, the Project first of all shoulders the responsibility to explain the above to the right persons in the right places. Secondly the Project supports this process of increasing the “trust in the future” as an integral part of the public awareness and public participation activities.

### **On which ethical principles of change is Sustainable Development based upon?**

The Report of the World Commission on Environment and Development (better known as the Brundtland Commission) *Our Common Future* in 1987 defined sustainable development as: *“Development that meets the needs of the present without compromising the ability of future generations to meet their own needs.”* It further reads: *“In essence, sustainable development is a process of change in which the exploitation of resources, the direction of investments, the orientation of technological development and institutional change are all in harmony and enhance both current and future potential to meet human needs and aspirations.”*

Although the later definition might not be as well known as the first one, it gives more practical guidelines for what we understand as *behavioural changes*. Thus, the National Strategy for Sustainable Development in the Republic of Macedonia motivated behavioural changes of each and every citizens, e.g. on how to treat solid waste, to think about utilization of renewable energies and to motivate investments in this direction as well as to motivate institutions to define themselves as positive thinking civil servants for the benefit of the entire society. All this gives the complete mosaic picture of how we want to behave today for the benefit of future generations to come.

### **1.3 Our Commitment to the overarching EU policy**

After a 16 year-transitional phase of the Republic of Macedonia, building a comprehensive approach toward sustainable development is a difficult and long-lasting process. Nevertheless, every journey starts with the first step, and to facilitate an **Enabling Environment first of all means to strongly commit the Republic of Macedonia to Sustainable Development, which is the fundamental goal of the European Union and the main goal of European integration.**

1. Generally the following sets out a coherent framework on how the Republic of Macedonia should more effectively live up to its long-standing commitment to meet the challenges of sustainable development. It reaffirms the need for and benefits of global solidarity and recognises the importance of strengthening the work with partners within and outside the EU.
2. Following the UN Conference on Environment and Development (Rio de Janeiro, 1992) countries were encouraged to elaborate a national strategy on sustainable



development, in order to bring Agenda 21 into action. The commitment to the principles of sustainable development and preparing a NSSD was reconfirmed by nations, including the Republic of Macedonia, participating in the Johannesburg 2002 World Summit on Sustainable Development.

3. The preparation of a National Strategy for economically, socially and environmentally Sustainable Development in the Republic of Macedonia takes full advantage of past planning efforts in the country before and after the World Summit for Sustainable Development (WSSD) in Johannesburg 2002. The strategy shall fulfil the obligations made by the Republic of Macedonia internationally and to the EU. However, its primary purpose is to provide an effective framework for sustainable development that, via reviews of existing policies and sector strategies, offers practical guidelines for the public and private sectors and serves to encourage incremental domestic and foreign investments.

4. The Constitution of the Republic of Macedonia contains articles referring to fundamental principles upon which sustainable development is founded. The Law on Environment contains, among other principles, the Principle of Sustainable Development. This poses the obligation that, in undertaking or performing any activity, care should be taken to safeguard rational and sustainable use of natural resources for the purpose of satisfying the needs for a healthy environment, as well as social and economic needs of present generations, without jeopardizing the rights of future generations to satisfy their own needs.

5. Sustainable development is the overarching objective of the European Union set out in the Treaty, governing all the Union's policies and activities. It is about safeguarding the earth's capacity to support life in all its diversity and is based on the principles of democracy, gender equality, solidarity, the rule of law and respect for fundamental rights, including freedom and equal opportunities for all. It aims at the continuous improvement of the quality of life and well being on Earth for present and future generations. To that end it promotes a dynamic economy with full employment and a high level of education, health protection, social and territorial cohesion and environmental protection in a peaceful and secure world, respecting cultural diversity.

6. The participatory process of developing a National Strategy for Sustainable Development, meeting the requirements of EU-accession is a major milestone for the Republic of Macedonia to join the family of EU countries. Within the framework of the renewed EU SDS (June 9, 2006) there is provision made for the Republic of Macedonia to identify and develop objectives and actions to enable achieving continuous improvement of the quality of life both for current and for future generations, through the creation of sustainable communities able to manage and use resources efficiently and to tap the ecological and social innovation potential of the economy, ensuring prosperity, environmental protection and social cohesion.



7. The strategic objective of Sustainable Development in the Republic of Macedonia, encompassing the economic, social and environmental dimensions shall be reached in 22 years **by 2030**. In the below Chart *three major time horizons* are given for a comprehensive strategic framework.

#### 1.4 How was the strategy developed?

Sustainable Development is strongly related with citizens' participation in the process of decision-making. In particular, this refers to the preparation of a National Strategy for Sustainable Development, which should drastically change the direction of the development of a society. As point of departure, during the 3 ½ months Interim Phase, 15 May-31 August 2006, the *Train-the-Trainer* Programme peaking in July 2006 paid special attention to the multiplier function of the Domestic Specialists leading their working groups by conducting internal workshops which insured an international standard in organizing and programming the participatory work as well as the analytical and assessment framework of the *driving engine* (Chapter 1.4.1).

The NSSD project is building upon prior experiences and fulfilling obligations made by the Republic of Macedonia internationally – especially with regard to accession to the EU. The aim is to provide an effective framework through the NSSD, offering practical guidelines for the public and private sectors in how to plan and implement sustainable development and encourage an increase in domestic and foreign investments (Chapter 1.4.2 and 1.4.3).

##### 1.4.1 Project's 'Driving Engine' Concept

With the financial support from the Government of the Kingdom of Sweden, facilitated through the Swedish International Development Cooperation Agency (Sida) and co-ordinated by the Ministry of Environment and Physical Planning (MoEPP), it was the **project objective:**

**To lead a participatory process of developing a National Strategy for Sustainable Development, meeting the requirements of EU-accession for the Republic of Macedonia.**

This approach, which is very much different compared to other strategic documents prepared solely or mostly by foreign consultants, ensures national ownership of the strategy and the integrality of thinking and working was demonstrated on the spot.

The Domestic Specialists with their 7 Sector Working Groups (SWGs) or 4 Cross-cutting Units (CCSUs) were the *driving engine of the NSSD project*. The Domestic Specialists were occasionally supported by the International Specialists for Research & Survey,



Organisation/Economics (Business), Foreign Direct Investment, Sustainable Development, and during a later project phase the Information and Communication Specialist (Chart No. 2).

Group dynamics within the WGs during the Project Implementation Phase II (Strategy Planning, 1 January – 30 November 2007) led to increased interactions among the SWGs and CCSUs. This included merging of pre-defined SWGs, such as SMEs and Industry to become SMiLEs. In return, these intensified interactions increased the awareness for the concept of sustainable development, attracted the stakeholders and stimulated their more active participation in the elaboration of the National Strategy for Sustainable Development in the Republic of Macedonia.

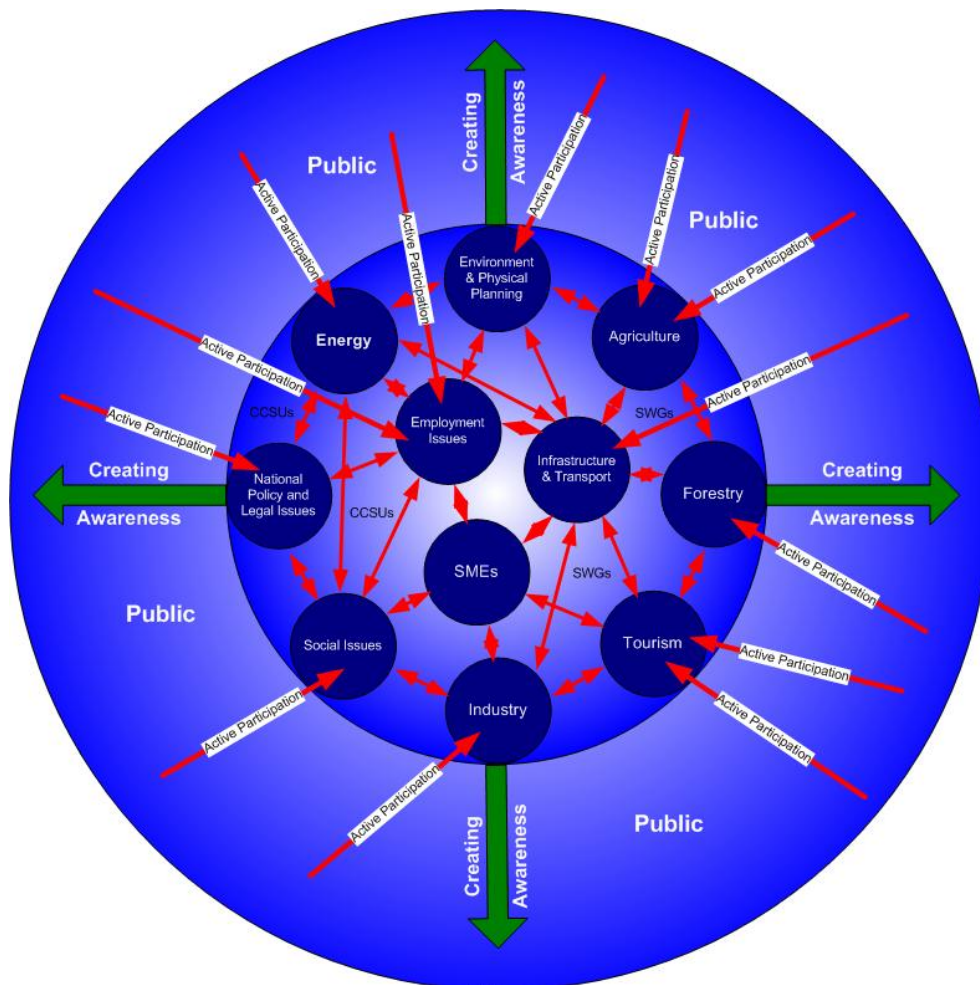


Chart No. 2: The NSSD Project Driving Engine Concept



Until the end of the NSSD project, 69 Workshops were held, out of which 54 were Working Group sessions with a total number of 209 participants for the 11 Working Groups. Also, numerous additional meetings were hosted at seminar premises within the project office in Skopje. In order to facilitate group dynamics, strengthen the group spirit and ensure high efficiency, by working on Problem Trees according to the EC Project Cycle Management<sup>11</sup>, additional 7 three-day Workshops with a total number of 174 sector participants were held in Gevgelija, Dojran and Ohrid.

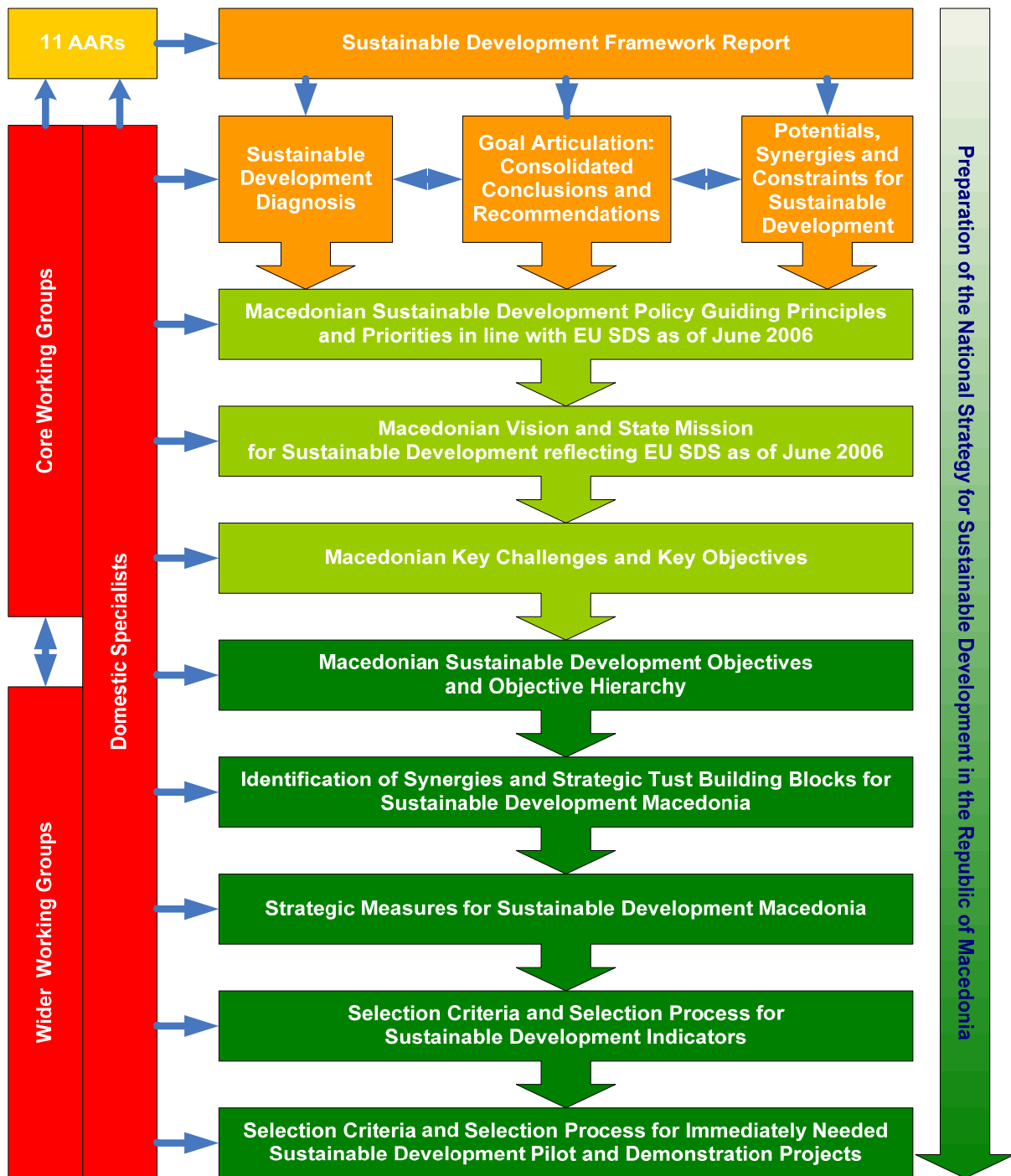
Being the foundation stone of the NSSD project, the WGs were at the centre of the changes achieved throughout the project. The changes will hopefully encourage more citizens to think and contribute to build Sustainable Development Macedonia. The society should be seen as a responsible entity for development and this necessitates a transparent decision making process that focuses on the quality of the processes for both management and participants.

To achieve all this, increased awareness of sustainable development is a must not just among the natural stakeholders of the project, but also among the people of Macedonia. The National Specialists and their working group members have strong networks and have taken on the role of ambassadors creating awareness alongside their other activities. They not only work in core working groups, but also with wider working groups covering many stakeholders in the Republic of Macedonia.

The ultimate tangible outcome of the NSSD Project is the National Strategy for Sustainable Development (NSSD) presented here to the public in large. To develop the NSSD in the Republic of Macedonia was a stepwise process where all steps depended on each other. The process is visualized in Chart No. 3

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<sup>11</sup> European Commission: Aid Delivery Methods, Volume 1: Project Cycle Management Guidelines. Brussels 2004.



\* AARs: Assessment and Analysis Reports

Chart No.3: Structured Strategic Process for providing a viable NSSD



In terms of reporting the NSSD Project Team prepared 4 major deliverables, which form a pyramid style structure (Chart No.4). The basic fundament for the whole of the strategy development process is **11 Assessment and Analysis Reports (AARs)** as of 31<sup>st</sup> December 2006. They have been prepared by the National Specialists. **The Sustainable Development Framework Report (SDFR)** as of the end of July 2007 marked a milestone before drafting the National Strategy for Sustainable Development. The Government of the Republic of Macedonia submitted the SDFR as part of its pre-accession Economic Programme to the European Commission in Brussels and received a positive response.

The National Strategy is finally presented in two documents:

- ✓ **This Strategic Background and Analysis of the National Strategy for Sustainable Development**, mainly relevant for the public administration and consultants that will implement the strategy and will design projects, and
- ✓ **The National Strategy for Sustainable Development, Public Version**, meant for those who want to be inspired by the Sustainable Development Vision of the country, develop their innovative business and invest in Sustainable Development Macedonia.

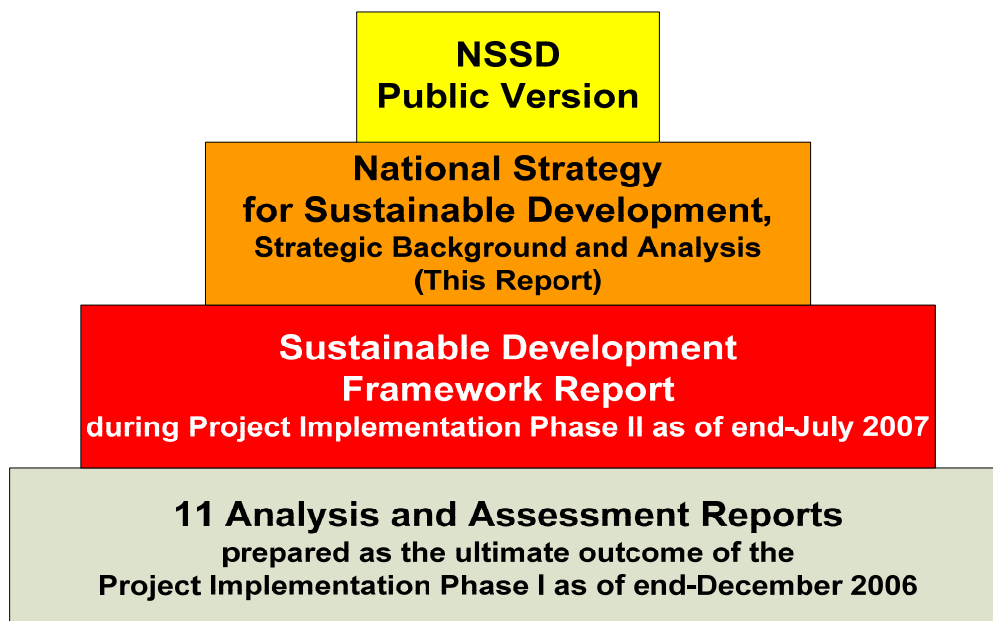


Chart No. 4: Pyramid style structure of reporting in the NSSD Project.



Although we understand the scepticism from the international society concerning the development potential in the Republic of Macedonia in relation to the question about short as well as long term political stability as addressed in Chapter 1.2, the way this NSSD was prepared in itself gives hope and trust in the future, and in fact provides striking evidence what committed citizens of this country are able to do if they join forces for the benefit of all.

#### **1.4.2 The Republic of Macedonia on its way towards EU and Sustainable Development**

At Lisbon 2000, the European Council set a new strategic goal for the Union “to become the most competitive and dynamic knowledge-based economy in the world capable of sustainable economic growth with more and better jobs and greater social cohesion”. The Stockholm European Council then decided that the EU sustainable development strategy should complete and build on this political commitment by including an environmental dimension. This recognises that in the long term, economic growth, social cohesion and environmental protection must go hand in hand. Sustainable development offers the European Union a positive long-term vision of a society that is more prosperous and more just, and which promises a cleaner, safer, and healthier environment, a society which delivers a better quality of life for us, for our children, and for our grandchildren. Achieving this in practice requires that economic growth supports social progress and respects the environment, that social policy underpins economic performance, and that environmental policy is cost-effective.

The Republic of Macedonia has identified several key priorities for its future development, where achieving EU membership can be considered as the overriding strategic policy objective. The Republic of Macedonia was granted applicant status in May 2004 and candidate status in December 2005. The European Partnership concluded in June 2004 provides main priority areas for further integration into the European Union and the development of a National Strategy for Sustainable Development (NSSD) has been identified as a short-term priority. The NSSD should be in line with the *acquis* and a plan for the implementation of the recommendations set out in the conclusions of the UN World Summit on Sustainable Development in Johannesburg 2002.

The ANALYTICAL REPORT for the Opinion on the application from the Republic of Macedonia for EU membership (COM 2005)<sup>12</sup> again highlighted the need of a National Strategy for Sustainable Development.

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<sup>12</sup> ANALYTICAL REPORT for the Opinion on the application from the Republic of Macedonia for EU membership (COM 2005), p. 121.





The Ministry of Environment and Physical Planning has undertaken many activities for promoting sustainable development in general and for the furthering the National Strategy for Sustainable Development. MoEPP has:

- (a) Organised workshops for governmental, municipal, academic and NGO representatives;
- (b) Financed the development of the "Conceptual Approach towards Creation and Implementation of the National Strategy for Sustainable Development of RM" (2000);
- (c) Co-ordinated the preparation of the "National Assessment Report for Sustainable Development" (2001-2002), which was adopted by Government in July 2002 (with this document, the Republic of Macedonia participated in the World Summit on Sustainable Development in Johannesburg in 2002);
- (d) Commenced the implementation of the activities aimed at developing the "Research Concept supportive to the creation and implementation of the NATIONAL STRATEGY FOR SUSTAINABLE DEVELOPMENT OF THE REPUBLIC OF MACEDONIA", 2003;
- (e) Co-ordinated the national reports to the NCSD sessions;
- (f) Translated and published relevant international documents on sustainable development; and
- (g) Financed the development of the "Guide towards Local Agenda 21" (a guide towards the development of strategies and action plans for sustainable development at local level).

For undertaking these activities, MoEPP was given a mandate from Government in the form of governmental conclusions and decisions of which the following are particularly relevant:

1. The Ministry of Environment and Physical Planning, as the national focal point, shall proceed with co-ordination of the activities related to the implementation of the goals and recommendations of Agenda 21 and development of "National Assessment Report of Sustainable Development" (2001);
2. The Government has obliged the Ministry of Environment and Physical Planning to initiate, after the completion of the "Research Concept for Provision of Analytical and Prognostic Substance to Serve the Purposes of the Development of the National Strategy for Sustainable Development of the Republic of Macedonia", preparatory activities for development of the "National Strategy for Sustainable Development of the Republic of Macedonia" (2002); and
3. The Government has appointed the Ministry of Environment and Physical Planning to be co-ordinator of activities for development of the "National Strategy for Sustainable Development of the Republic of Macedonia" (2004).

All this demonstrates that the present NSSD project was well founded and the Republic of Macedonia was soundly prepared to start a participatory process of elaborating such an important document, which will have major impacts on the future developments of the country and its full integration in the EU. The Project Team appreciated all the efforts in



the past and incorporated the relevant documents for the benefit of a National Strategy for Sustainable Development.

The preparation of a NSSD was still a challenging and time-consuming process, which by necessity included many sectors, many stakeholders, and a great variety of other donors' projects. The process as such as well as the institutional framework to be developed was complex with conflict potentials among stakeholders, between public and private interests, within sectors, and between sectors and crosscutting issues. Finally and based on the spatial approach of the Agenda 21 (A21), the NSSD needs to be implemented 'on the ground', on a Municipality level or regional/cross-border co-operation level. Therefore, we very much appreciate MoEPP's "Guide towards Local Agenda 21".

Municipalities are members of the Association of Local Self-Governments (ZELS). As early as of 7 March 2006, the President of the Association of Local Self-Government of the Republic of Macedonia was invited to participate at the 1<sup>st</sup> NSSD Stakeholder Workshop. On 28 March 2007 a Memorandum of Understanding and Cooperation was signed with ZELS.

The NSSD Project encourages Local Agenda 21 activities and invites Municipalities to actively participate in the Local Agenda 21 process. Thus, we facilitate a programme for implementation of the decentralisation process in the Republic of Macedonia as adopted in February 2003.

### 1.4.3 Project Phases, Objectives and Milestones

During its two years duration (15 February 2006-14 February 2008), the project was developed in five phases (see Chart No. 2):

- **Inception Phase** (3 months, 15 February-14 May 2006),
- **Interim Phase** (3 ½ months, 15 May-31 August 2006),
- **Project Implementation Phase I: Assessment and Analysis** (4 months, 1 September-31 December 2006),
- **Project Implementation Phase II: Strategy Planning** (11 months, 1 January-30 November 2007),
- **Project Implementation Phase III: National Consolidation** (2 ½ months, 1 December 2007-14 February 2008).



Chart No. 5: Original (above) and Revised (below) Time Line of the NSSD Project

As a result of the logical framework process during the initial 3 months Project Inception Phase the following project objective structure was agreed among the team of domestic and foreign specialists and the beneficiary:

### Strategic Objective

Sustainable development in the Republic of Macedonia, encompassing the economic, social and environmental dimensions.

### Project Objective

To lead a participatory process of developing a National Strategy for Sustainable Development, meeting the requirements of EU-accession for the Republic of Macedonia.

### Outputs

#### Specific Project Objective Area 1 - Awareness Increased

Output 1: Awareness of sustainable development among the stakeholders and the people of the Republic of Macedonia increased.

#### Specific Project Objective Area 2 – NSSD Prepared

Output 2: Framework for sustainable development in the Republic of Macedonia as ground for acceleration of domestic and foreign investments defined.



- Output 3: Strengths of the Republic of Macedonia to fully participate in the process of globalisation identified.
- Output 4: National Strategy for Sustainable Development in compliance with EU-requirements elaborated.

### **Specific Project Objective Area 3 - Capacity Increased**

- Output 5: Capacity for planning and management of sustainable development among key stakeholders strengthened.
- Output 6: Institutional setup and coordinating mechanisms for implementation and maintenance of the process of sustainable development established.

Targeting the outputs as described above and performing the corresponding activities and tasks, the NSSD project reached various **milestones of overall project implementation** as follows:

- ✓ Inception Report on 5<sup>th</sup> May/June 2006;
- ✓ Interim Report on 9<sup>th</sup> November 2006;
- ✓ Assessment and Analysis Report (Project Phase I; Technical Background Report I) on 31<sup>st</sup> December 2006;
- ✓ 1<sup>st</sup> Progress Report on 29<sup>th</sup> January 2007;
- ✓ Sustainable Development Framework Report on 31<sup>st</sup> July 2007;
- ✓ NSSD Position Document I, Proposal for Institutional Set-up to Support the Implementation of Sustainable Development in the Republic of Macedonia on 31<sup>st</sup> July 2007;
- ✓ 2<sup>nd</sup> Progress Report on 31<sup>st</sup> July 2007;
- ✓ Final Draft National Strategy for Sustainable Development (Project Phase II; Technical Background Report II) on 30<sup>th</sup> November 2007;
- ✓ 3<sup>rd</sup> Progress Report on 31<sup>st</sup> December 2007;
- ✓ Final Draft National Strategy for Sustainable Development for the Public on 31<sup>st</sup> January 2007;
- ✓ Final Draft Capacity Building Report on 30<sup>th</sup> April 2008;
- ✓ 4<sup>th</sup> and Final Progress Report on 14<sup>th</sup> May 2008.

## **1.5 What does the strategy contain?**

The 1992 United Nations Conference on Environment and Development (UNCED) declared in its document Agenda 21 (Chapter 8, paragraph 8.7) that Governments should prepare and adopt a national strategy for sustainable development. However, a "blueprint" approach for national sustainable development strategies is neither possible nor desirable. Every country needs to determine, for itself, how best to approach the



preparation and implementation of its national sustainable development strategy depending upon the prevailing political, historical, cultural, economic, and environmental circumstances.

Until recently, authors of strategies have enjoyed this freedom, enabling them to develop a strategy that is adjusted to requirements, the development and the actual circumstances of the country. However, the situation at least in the European context changed in a way when after intensive public consultations the **Renewed EU SDS** was presented in June 2006. This renewed EU SDS demonstrates that Europe is putting its own house in order and thus providing international leadership.

By acknowledging the consolidation process in an EU context, and after the Republic of Macedonia was awarded the candidate status for EU membership in December 2005, the NSSD Project Team decided to firmly anchor its strategy at the EU level, but at the same time to emphasize the countries' specific key challenges and key objectives. Therefore, both types of key challenges and key objectives described in Chapter 5 (see below) are regarded as two sides of the same medal, which forms the heart of the vision for Macedonia's future.

Given above the Background and Introduction for the National Strategy for Sustainable Development in the Republic of Macedonia, the National Strategy outlines in detail the following:

- The **Strategic (SWOT) Analysis of Macedonian Development** (Chapter 2),
- **Macedonia's Sustainable Development Potentials** (Chapter 3),
- **Macedonian Sustainable Development Principles, Priorities and Objectives Hierarchy** (Chapter 4),
- **Macedonian Sustainable Development Vision and State Mission: Key Challenges and Key Objectives** (Chapter 5),
- **Macedonian Sustainable Development Objectives and Measures for their Implementation** (Chapter 6),
- **Concluding Provisions** (Chapter 7), and
- **Strategy Implementation, Monitoring of Progress and Incremental Costs** (Chapter 8 including Annex No. 7: Sustainable Development Indicators and Annex No. 8 Examples of Sustainable Development Project Design).



## 2. Strategic (SWOT) Analysis of Macedonian Sustainable Development

**EU Project Cycle Management (PCM)**<sup>13</sup> provides the overall analytical and decision-making framework in which this National Strategy for Sustainable Development in the Republic of Macedonia was prepared. By using moderation techniques throughout the various stages, PM facilitated the participatory process, thus securing the ownership of the development processes by the 11 Working Groups and strengthening the institutional and administrative capacity to effectively manage change. It is worth to highlight that the following Strategic (**S**trengths-**W**eaknesses-**O**pportunities-**T**hreats) Analysis – as one of the first steps used within the PCM core tool, the **Logical Framework Approach (LFA)** – represents the perception of the Working Groups, and neither the opinion of the consortium nor of the beneficiary.

The country's *Sustainable Development Potentials*, as outlined in detail in Chapter 3, derive from the country's aggregated strengths identified in the individual SWOT analyses and debated in the Working Groups. From the catalogue of weaknesses compiled in each of the sectors and cross-cutting units and as described below, the Working Groups identified *cause and effect relations*, which provide the basis for defining *Problem Trees* and *consecutively* were converted into *Objective Trees* by means of positively reformulating the weaknesses and problems, respectively (Annex 2 and Chapters 4, 5 and 6). Thus, the objectives and results outlined in full detail in Chapter 5 and 6 are not a kind of 'wish-list', but are the outputs of intensive group debates using the best available knowledge, and following the Logical Framework Approach (LFA).

### ***Policy and Legal Framework***

#### **Strengths (S)**

**S1 Existing legal framework for most of the sectors relevant for SD.** The basic legal framework in the economic, social and environmental sectors has been already in place, although not complete with respect to all relevant SD aspects. In addition, the quality of the current legislation is more advanced in particular sectors (environment, SMEs, foreign investment, etc.). Hence, the existing legislation provides a comprehensive base for introduction of the relevant SD aspects.

**S2 Existing institutional structure for most of the sectors relevant for SD.** The main institutional structure in the economic, social and environmental sectors has been already in place. Although there are certain weaknesses in the horizontal and vertical communication among the institutions, the current institutional structure could serve as a reliable base for setting SD policy and legislation, as well for creation of the mechanisms for their implementation.

**S3 Stabilisation and Association Agreement (SAA) with the EU.** The Republic of Macedonia has signed Stabilisation and Association Agreement (SAA) with the EU in 2001. It came into force in 2004, due to the

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<sup>13</sup> European Commission: Aid Delivery Methods, Volume 1: Project Cycle Management Guidelines. Brussels 2004.



ratification process of the EU members. SAA was the precondition for the country to apply for the EU membership in March 2005, which resulted in EU candidate status for the Republic of Macedonia in December 2005. In that respect, the SAA contributes to the credibility of the country in the international environment. With regards to the policy and legislation, the SAA stipulates harmonisation of the large part of the Macedonian legislation with the EU acquis within the timeframe of 10 years (till 2011).

**S4 European Partnership and Action Plan 2005.** The European Partnership was introduced in 2003, as an instrument for better coordination of the EU integration processes of the Western Balkan countries. The European Partnership and Action plan 2005 for the Republic of Macedonia serves as the supporting document of the SAA, identifying priorities for EU integration in different sectors, accompanied with specific tasks and obligations that should be fulfilled by the relevant institutions. In addition, the European Partnership and Action Plan 2005 enables control of the realisation of undertaken/planned obligations (along with NPAA that focuses on harmonisation of the legislation) of the Republic of Macedonia towards the EU and provides basis for annual progress reports of the country, prepared by the European Commission.

**S5 Strategy for integration of the Republic of Macedonia into the EU.** The Strategy for integration of the Republic of Macedonia into the EU was adopted in 2004, defining strategic objectives and goals towards EU membership. The Strategy elaborates on political and economic criteria, as well obligations from the EU acquis. The criteria on administrative capacity have also been taken into consideration. The Strategy sets the strategic course of the EU integration, while specific measures are defined in the operational documents, such as NPAA and European Partnership and Action Plan 2005.

**S6 National Programme for Approximation of the Acquis (NPAA).** A National Programme of Approximation to the Acquis (NPAA) was created to serve as a mechanism for coordination and control, checking of the harmonisation in different sectors (as stipulated in SAA). NPAA provides input for the annual country's progress reports prepared by the European Commission, with regards to the harmonisation of the legislation.

**S7 Started process of harmonization of the legislation with the EU acquis in some of the sectors relevant for SD (environment, employment, SMEs, forestry, etc.).** The process of harmonisation of the legislation with the EU acquis has already started in all sectors relevant for SD, although noticeable progress has been achieved only in certain areas. There is advanced harmonisation of the legislation in the environmental sector, while the harmonisation of the economic and social legislation is less advanced, due to the complexity of the sectors (especially the economic one).

**S8 Spatial Plan of the Republic of Macedonia.** The Spatial Plan of the Republic of Macedonia was adopted in 2004, defining strategic objectives and goals of the spatial planning of the country till 2020. The Plan elaborates on socio-economic specifics on the territory of the Republic of Macedonia, with focus on natural resources, the demographic situation, human settlements, protection of the environment, and natural and cultural heritage. The Plan provides broad priorities for SD related sectors' policies and strategies and serves as the basic document for integral policy-making.

**S9 National Development Plan.** In 2006, A National Development Plan of the Republic of Macedonia was adopted for the period 2007-2009, focusing on the priorities for the country's development, with respect to the different sectors – economic, social, etc. The revised and extended version of NDP was elaborated in 2007 for the period 2008-2013. The priorities defined into the NDP should serve as a basis for specific allocation of the EU pre-accession assistance.

**S10 Second NEAP (National Environmental Action Plan).** The second NEAP of the Republic of Macedonia was adopted in 2006, defining the current level of environmental conditions in the country and focusing on the priorities for environmental protection. The first NEAP was adopted in 1996 and served as a base for the second NEAP that further elaborates on the environmental aspects on natural resources, energy, mining and other sectors. The NEAP provides inputs for sectors' strategies with respect to the environmental issues.

**S11 Elaborated strategies in some of the sectors relevant for SD.** There are already elaborated strategies in some of the sectors relevant for SD, which define strategic goals, objectives and activities in the specific sectors. Although these strategies most often do not incorporate SD dimension, the main SD priorities could be derived. Currently, the elaborated/revised strategic documents in the field of environment, forestry, employment and SMEs are more advanced with respect to the SD.

**S12 Numerous signed and/or ratified conventions in the areas relevant for SD.** The Republic of Macedonia has signed/or ratified numerous conventions in the area of environment, as well in the area of



investment, taxation, etc. The conventions define common rules for specific issues, providing base for acceleration of the harmonisation of the legislation with the international regulation and EU acquis.

**S13 Numerous signed bilateral, regional and multilateral agreements for issues relevant for SD.** In the last decade, the Republic of Macedonia has signed numerous bilateral, regional and multilateral agreements in the area of environment, as well in the areas of investment, taxation, etc. The agreements serve as basis for bilateral, regional and multilateral cooperation and provide valuable input for sectors' policy-making.

**S14 Started process of decentralisation.** The process of decentralisation has started in 2002, while fiscal decentralisation was projected for July 2007. The fiscal decentralisation was partially applied in the set term, due to the difficulties of some municipalities to fulfil the defined criteria. The legal framework for decentralisation stipulates transfer of competences from the central to the local authorities in the areas of urban planning, environmental protection, local economic development, communal activities, culture, sport and recreation, social and children protection, education, health and fire protection. The transfer of the competences to the local level opens lots of opportunities for SD.

**S15 Geopolitical position.** The geographic location of the Republic of Macedonia enables good connection with the neighbouring countries and provides access to the seaports, while the regional political constellation had provided significant role to the Republic of Macedonia in the last decade. The geopolitical position is considered as favourable factor in the process of European integration of the Republic of Macedonia.

#### **Weaknesses (W)**

**W1 No integral legal framework for SD.** Although sectors' legal framework is already in place for most of the sectors relevant for SD, there is no integral SD legal framework that encompasses all relevant aspects. The legislation is more advanced in certain sectors, such as environment, but it is not sufficient. There is lack of SD cross cutting synergies among sectors' legislation, which needs to be improved.

**W2 Inefficient and insufficient capacities at central and local level for elaboration and implementation of legislation, strategic and programming documents.** Complexity and size of the EU acquis require strong administrative capacity of the relevant institutions for harmonisation of the regulation with the EU acquis and its implementation. The current situation in the Republic of Macedonia is featured with inefficient and insufficient staff specialised for SD in the relevant institutions at the central, as well as local level. Also, narrow speciality of the lawmakers (in most cases) provide for limited inclusion of the SD component into the regulation.

**W3 Inadequate human resource policy in the institutions at central and local level.** The limited capacity for SD in the relevant institutions is main obstacle for creating effective sectors' policies, as well integral ones, such as SD policy. This unfavourable situation is closely related to the inadequate human resource policy in the institutions at central and local level, resulting in mismatching of jobs' specification and skills of the employed personnel. Also, there are deficiencies in the policy's aspects dealing with specialisation of the staff and proper use of the acquired skills of the personnel.

**W4 Weak horizontal and vertical communication among the institutions at central and local level.** The communication among the institutions at the central level, as well between the institutions at the central and local level is rather poorly coordinated and limited to the consultation procedure. The horizontal exchange of information and data between the institutions is weak, but there are also weaknesses in the vertical communication within the institutions. This situation creates unfavourable basis for policy-making and legislation drafting, especially on integral issues such as SD.

**W5 Disrespecting the participatory approach in decision making at the central level.** The general policy-making approach in the Republic of Macedonia is top-down. The bottom-up approach is rarely applied, which results into the policies that do not reflect the actual situation and the needs of the stakeholders. The lack of participatory approach is especially negative with the respect to the integral policies, such as SD policy.

**W6 Unclear or inadequate division of cross sectors' competencies among the Ministries.** There are identified weaknesses in division of the competences between the line ministries and/or between the central and the local government, especially with regards to the multi-dimensional areas of competence (such as water management, local economic development, etc.). Unclear or inadequate division of the cross sectors' competencies leads to the partial policy-making with serious implications on the implementation of policies.

**W7 Inadequate budget planning for implementation of the sectors' policies.** There is rather poor coordination between policy-making and financial aspects related to the implementation of the policies. The





strategic documents are usually not supported with adequate budget planning, which causes delays in their implementation. Budget planning weaknesses are present in short, as well as medium term and especially jeopardize the integral policies, such as SD policy.

**W8 No integration of the environmental aspects in sectors' policy-making.** The awareness about the importance of the environment was raised in the past few years, but the progress is not sufficient in the process of policy-making. If the major policy issue does not refer to the environment, the policy makers rarely consider the environmental aspects. This situation does not provide solid ground for facilitation of SD policy-making.

**W9 Non existence of the key strategic and programming documents in some of the sectors relevant to SD (transport, agriculture, energy, tourism, industry, etc.).** There is lack of strategic documents in many sectors, especially in the economic and social pillars. On the other hand, most of the already elaborated sectors' strategies do not include SD dimension. Enforcement of the SD policy should imply revision of the existing strategies from the SD perspective, along with inclusion of the SD component in any further elaboration of strategic documents at national level.

**W10 Not complete legal framework in most of the sectors relevant for SD.** There is no complete legal framework for most of the sectors relevant for SD, especially with regards to the secondary legislation. The situation is especially critical in the economic and social pillars, while essential environmental legal framework (primary and secondary) is in place. Absence of complete and relevant legal framework is a serious obstacle to the introduction and implementation of the SD process in the Republic of Macedonia, taking in consideration the medium-term time frame needed for its completion and enforcement.

**W11 Unsatisfactory level of implementation of the primary and secondary legislation.** Although most of the primary legislation within the environmental pillar is already in place, as well to the some extent in the economic and social pillars, the implementation is not at satisfactory level. The problems are largely attributable to the limited institutional capacity of the relevant stakeholders for implementation of the Laws, but there is also lack of secondary legislation necessary for enforcement of the primary legislation.

**W12 Non implementation of the procedure for impact assessment of the investment on environment.** The current legislation stipulates compulsory impact assessment of the investment on environment, but it is very poorly implemented. Non-implementation of this impact assessment cause serious implications to the advancement of the SD process in the Republic of Macedonia.

**W13 Non implementation of the procedure for impact assessment of regulation on business.** The current legislation stipulates compulsory impact assessment of regulation on business, but it is very poorly implemented. Non-implementation of the impact assessment causes serious implications to the policy-making, especially with regards to the creation of favourable business climate for investments.

**W14 Slow pace on implementation of structural reforms.** Although the structural reforms are defined as top priority in all strategic documents of the Republic of Macedonia, as well specified as precondition for the EU integration, their implementation is rather slow and limited to certain areas. The structural reforms are especially important for SD process, due to its fundamental integral dimension.

**W15 Problem with statistical data and indicators, from the perspective of their completeness, correctness and availability.** Statistical data and indicators are crucial input for sectors' and cross cutting policy-making. Availability of the data from the official sources (State Statistical Office, National Bank of the Republic of Macedonia, line Ministries, municipalities, etc.) is limited, and there are also problems with regards to the accuracy, completeness and comparability of the data from different sources.

### Opportunities (O)

**O1 Candidate status of the country for membership in EU.** The Republic of Macedonia has acquired status of a candidate country for the EU membership in December 2005. The time frame of the EU membership is not defined and depends on the country's ability to fulfil the set criteria. Still, the candidate status provides many opportunities for the country and opens prospects for development.

**O2 Implementation of the reforms required for the EU accession process.** The EU integration of the Republic of Macedonia is related to many reforms needed for fulfilment of the EU criteria. The EU candidate status is expected to reinforce the reforms, especially with regards to the capacity building. Reforms are also very important from the perspective of the SD, due to the need of establishing policy, legal and institutional setting for development and implementation of this new concept in the Republic of Macedonia.

**O3 Setting up of a solid legal system through harmonization of the Macedonian legislation to the EU acquis.** The EU integration of the Republic of Macedonia is related to harmonisation of the Macedonian



legislation to the EU acquis. The National Programme of Approximation to the Acquis (NPAA) schedules the dynamic of the legal harmonisation and fulfilment of the other acquis obligations, and serves as mechanism for coordination and control checking of the harmonisation in different sectors. Therefore, the harmonisation is conducted under the auspices of the EU, and opens prospects for setting up of a solid legal system in the Republic of Macedonia. This also refers to the SD legislation, as existing legal framework is rather partial and limited to sectors' regulation.

**O4 Introduction of the EU standards in many sectors, as part of the EU accession process.** The process of EU accession imposes implementation of the structural reforms and harmonisation of the Macedonian legislation with the EU acquis, which should result in introduction of the EU standards in many sectors. Introduction of the EU standards is a necessity for building competitive economy and better quality of life in the society. Therefore, the obligation for their introduction could serve as an accelerator of the reforms and development.

**O5 Eligibility for EU pre-accession assistance (IPA) and other donor assistance programs.** The EU candidate status enables access of the Republic of Macedonia to the EU pre-accession assistance (IPA), as well as other donor programs. The IPA provides support in different areas within its five components: Transition assistance and Institution Building, Regional development, Cross-border cooperation, Human resources development and Rural development. Other donor programmes are also focused on specific issues, but they all provide considerable opportunities for developing of a reliable policy-making capacity essential for the EU integration process.

**O6 Access to numerous Community and other Programmes for capacity building.** The EU candidate status enables access to numerous Community and other Programmes for capacity building (TAIEX, Twinning, etc.). With respect to the detected weaknesses of the public administration capacity, opening of such programmes for the Republic of Macedonia is an opportunity to increase the institutional capacity needed for the process of EU integration, as well as for facilitation of the SD process.

**O7 Membership in European and international associations.** The Republic of Macedonia has already joined many European and international associations from different spheres. Also, the country has signed numerous bilateral, regional and multilateral agreements. This opens prospects for enhancement of the country's bilateral and/or regional cooperation with other countries, enabling improvement of its position in the international context, especially from the perspective of donors' support.

**O8 Potential for attraction of foreign direct investment (FDI).** The Republic of Macedonia created favourable legal framework for foreign direct investment, offering many privileges in taxation, profit repatriation, etc. Also, the country is part of the regional market (member of CEFTA) and SAA enables free access of the Macedonian products to the EU single market. Although the Republic of Macedonia is a land-locked country, its openness and geographical position provides potential investors with opportunities for profitable businesses. FDI attraction is also important from the perspective of the SD, especially with regards to the economic component and setting of a practice to apply the EU standards in the country.

**O9 Development of the public-private partnerships (PPP).** The public-private partnerships has been recognised as important instrument for development, although their practise is rather limited in the Republic of Macedonia. The partnerships among the central and/or local authorities with the private sector are possible alternative to encourage domestic investment, especially those aiming to provision of the services to the citizens. The PPP could be very important from the perspective of SD, especially with regards to the environmental component that requires significant investment, which is not easy to be provided by the individual investor (either public or private).

## Threats (T)

**T1 Slow process of EU integration of the Republic of Macedonia.** The Republic of Macedonia acquired the status of EU candidate country in 2005, but the time frame of actual membership is not predefined and depends on the country's ability to fulfil the criteria for the EU membership. The European Commission publishes annual country's progress report in November every year, with assessment of the level of achievements towards the EU criteria. Two EC Reports were produced since the candidate status was granted to the Republic of Macedonia and both Reports (November 2006 and November 2007) have not assessed the country' progress as sufficient for setting of a date for start of the negotiations for membership. This delay could have very negative implications and poses a serious threat for the country to lag behind other countries in the region with respect to the EU integration.



**T2 Low institutional capacity for complete and goal oriented absorption of the EU pre-accession assistance and other donors programmes.** The Republic of Macedonia has access to the EU and other funds targeted for acceleration of the EU integration process and other specific goals, set by the donors. Still, the absorption of the available funds is very low, due to the limited institutional capacity of the public administration and other institutions. The low absorption capacity poses serious threat to the implementation of the structural reforms and overall process of the EU integration, essential for development of the country, including the SD dimension, as well.

**T3 Decrease or cut off of the foreign assistance due to the low absorption capacity.** The low absorption capacity of the Macedonian institutions is a bad signal for the donors. Limited absorption of the available funds poses serious threat for a significant decrease of the funds or even complete cut off of some programmes, which will imply negative consequences and delays in the implementation of the reforms and fulfillment of the criteria for the EU membership.

**T4 Socio-economic lagging of the country, compared to other countries in the region.** In the past few years, most of the countries in the region recorded faster growth rates than the Republic of Macedonia. The socio-economic lagging, along with the small domestic market are serious constraints for attraction of FDI that are considered as important source of accumulation of the capital in the country. The slow pace of development could also imply negative consequences on the process of EU integration of the Republic of Macedonia, compared to the other countries in the region.

**T5 Pursuing of development measures without respecting the economic, social and environmental balance.** The development measures in the Republic of Macedonia are usually targeted towards short-term results that include only one dimension of the problem, while others are neglected. The current policy approach is considerably affected by the weak horizontal and vertical communication between the relevant institutions. That results in measures without respect to the economic, social and environmental balance. This practice of policy-making could be very negative for implementation of the SD policy, as well for the overall process of development.

**T6 Brain-drain.** In the last decade, the Republic of Macedonia faces serious problems with the "brain-drain" or intellectual emigration. This process implicates human capital loss that holds back the potential economic growth of the country. The current structure of the labour force in the Republic of Macedonia shows share of around 50% of persons with less than secondary school degree in the total labour force, alarming that migration of the highly educated persons seriously jeopardise the human capital that is essential for development in general, and especially for SD.

**T7 High dependence on energy import.** The Republic of Macedonia's imports of electricity accounted for more than 23% of total domestic consumption in 2006. The rise in the electricity import bill in 2006 brought financial difficulties to industry and some disruption to power supplies. The vulnerability of the Macedonian economy to electricity prices is largely explained by the absence of mechanisms for the smooth adjustment of domestic to market prices. Current lack of government's measures to adjust prices, reduce costs, improve payments administration, make provisions for large energy importers and safeguard electricity supplies to the public could produce considerable negative implications in the future, especially with regards to the SD.

**T8 Cross-border environmental pollution.** The small country's size and borders with two non-EU countries (Serbia and Albania) pose threat for cross-border environmental pollution in the Republic of Macedonia, even if the environmental standards in the country are in full compliance with the EU acquis. The EU countries are obliged to apply high standards for environmental protection, which increases the possibility for the non-environmental investment to be placed in the non-EU countries. Therefore, the process of SD in the Republic of Macedonia could be jeopardized, regardless of the commitment and institutional set-up for SD.

**T9 Transfer of dirty technologies.** The obligation for high environmental standards in the EU countries implicate transfer of the dirty technologies in the non-EU countries. Further delay of the Republic of Macedonia's process of EU integration and economic backwardness of the country could encourage transfer of the dirty technologies into the country. This poses serious threat to downgrading of the current environmental conditions in the Republic of Macedonia, and also creates negative preconditions for SD.

## **Environment**

### **Strengths (S)**



Generally, the strengths in the field of environment in RM are represented in hitherto enacted legislation established international agreements, signed protocols and developed strategies. Existence of the **separate Ministry for Environment** in the scope of RM government the core group considered as the only one isolated (apart of passed legislation and ratified EU documents) strength. Finalized **Inventory for industrial hotspots** and **Preliminary assessment on environmental risks** represent a good basis for further improvement of the environment. On the other hand, still preserved nature and very rich biodiversity in RM represent a solid historical background for SD if the real environmental values are recognized and promoted. Unique geo-morphology, ancient lakes, pristine high mountain regions and vast highlands and pastures represent the real strength remarkably recognized and appreciated as the RM thread mark. SD based on economic and social prosperity that firmly relies on environment in RM (eco-tourism and rural development, organic food production, clean energy and transport, etc.) is and will be the real strength for the people in RM.

### Weaknesses (W)

#### **W1 Institutional Framework of the Ministry for Environment and Physical Planning not finished -**

Regarding *administrative capacity*, the Ministry of Environment and Physical Planning (MEPP) is in charge of formulating and implementing environmental policy. It is under an obligation to prepare a report on the state of the environment every three years. The MEPP has insufficient staff and, in particular, lacks specialised staff in areas such as environmental impact assessment, monitoring, integrated pollution prevention and control, and climate change. The Environmental Laboratory carries out measurements and analyses of pollution. Staff levels and skills should be enhanced to ensure adequate performance. The Spatial Information System and the Environmental Information System cover spatial information and environmental data management respectively. The State Environmental Inspectorate which operates within the MEPP supervises the implementation of laws and other acts, as well as enforcement of and compliance with the conditions stipulated in individual permits. The number of inspectors is clearly insufficient while the number of prosecutions for breaches of environmental law indicates that enforcement levels are very low. This can be attributed to various factors, such as the lack of human and financial resources, the weakness of the legal system and the judiciary, and deficiencies in the legislation. Reinforcement of implementation, training on enforcement of environmental law for inspectors and judges was carried out. Significant further efforts are needed to ensure effective enforcement of the *acquis*. Further legislative action is needed to allow the state environmental inspectorate to impose fines directly. In 2005, only two criminal charges related to environmental issues were brought, and no charges have yet been brought in 2006.

#### **W2 Not appropriate split of Competences among Ministries regarding Environmental protection and Spatial Planning and**

**W3 Insufficient Inter-sectoral Cooperation and Coordination** - In addition to the MEPP, a number of other ministries and bodies are directly responsible for environmental matters. The existing fragmentation is partially being overcome by the adoption of new environmental laws providing for greater integration of environmental management. Monitoring of different environmental sectors is not clearly defined and co-ordinated between the competent institutions and the situation is similar with enforcement.

#### **W4 Insufficient Central and Local Capacities for implementation of passed Laws and Low level of Law Implementation**

- Progress on the institutional framework has been limited. The government established an inter-ministerial body in November to coordinate the drawing up of the strategy for regional development, led by the Minister for local self-government. In May, the government established an inter-ministerial body to coordinate the preparation of the national development plan for the period 2007-2013, led by the minister of finance. The role of local administrations in the future management of the structural and cohesion funds has yet to be defined. The regional level of government does not exist, as the regions on NUTS 3 level are only statistical regions. The Law on Local Self-Government provides for municipalities to cooperate in common development projects. However, structures for co-ordination between national and local levels are still not in place. Preparations in this area are at an early stage. No significant developments can be reported in the areas of administrative capacity, programming, monitoring and evaluation. An implementing agency for the regional and social components, which will be the precursor of the authority for implementing structural and cohesion funds, still needs to be established.

**W5 Low Administration Efficiency** - With regard to the priorities related to the political criteria, the Republic of Macedonia has launched major reforms in the judiciary, the police and in order to make further



progress towards the full implementation of the Ohrid Framework Agreement, as well as with the aim of reinforcing democracy and the rule of law. Progress has been made in the area of human rights and the protection of minorities. The country has played an active role in regional co-operation. Nonetheless, considerable and sustained efforts will be necessary to consolidate the rule of law, to fight against corruption and to make further progress in the areas of public administration reform and respect for human rights. More generally, ensuring an effective implementation of the reforms and enforcement of the legislation adopted remain challenging tasks and will require a great deal of effort. In order to meet the priorities of the European Partnership, a considerable amount of work remains to be done and the pace of reforms should be accelerated.

**W6 Laws still not passed and**

**W7 High number of not passed by-laws together with**

**W8 Program for Implementation of Spatial Plan not passed and National Plan for Waste Management not passed** - extensive comments on p.25-33 AA Report.

**W9 EU *acquis* not fully incorporated into National legislation** - The basic elements of a legislative framework are in place, although much of the legislation is quite recent. Implementation and enforcement are in some cases only in their initial stages. Major weaknesses in the country's enforcement capacity need to be addressed before the *acquis* can be effectively implemented. Data collection needs to be strengthened in a number of areas to enable the country to adopt, implement and enforce legislation in a satisfactory manner. Overall, the Republic of Macedonia will have to make considerable and sustained efforts to align its legislation with the environmental *acquis*, and especially to implement and enforce it, in the medium term. However, effective compliance with EU legislation requiring a high level of investment and considerable administrative effort (e.g. in the areas of waste management and water treatment) could be achieved only in the long term.

**W10 Inappropriate allocation of budget resources in Environment and Spatial Planning and W11 Alternative financial sources for Environment not developed** - Lack of sufficient financing sources is often seen as one of the main constraints for implementation of environmental improvements. The Macedonian economy is not strong and macro economic progress has been slow. Thus, rising of domestic financing for major environmental investments has proven difficult in the past, and will continue to be difficult for also for the years ahead. It is thus a key challenge to attract donor support and to use it in an effective manner. Addressing this challenge is to a large extent a matter of ensuring that the appropriate institutional set-up is provided around the environmental projects, and ensuring a sufficiently high quality of the proposed projects from the very beginning.

The table below shows the estimated current supply of finance.

Contribution from	Annual supply	
	Million MKD	%
National budgets including the Environmental Fund	640	15
User charges total		72
Households	2000	48
Industry and others	1000	24
International grants	500	12
Total	4140	100

Source: Built-up estimate on the basis of various sources.

The main current source of finance for environmental purposes is the user charges despite the low collection rates. The user charges finance the most of the environmental infrastructure in water and waste. The overall picture that derives from the above table is quite similar to what is seen in other similar countries. For the



financing of *investments*, the experience from other countries suggests that the share of international grant financing is somewhat higher than for the total costs shown above.

**W12 Environment as a Priority not officialized in the Government and lack of integration in the Sectoral Policies and**

**W13 Insufficient Public Awareness on Environmental Protection and Sustainable Development Concept** - It is evident that the lack of overall awareness for Environmental Protection creates a feeling that environment in Macedonia does not need great attention. Economic, social and political problems have gained much more interest instead in the past. It is still reflected in the Development Plans (Table 6), although some attention has been given to rural development and tourism. Much has to be done in public awareness creation that could significantly increase governmental decisions on the issue as well.

	2007		2008		2009		Total	
	Volume	%	Volume	%	Volume	%	Volume	%
1. Improving infrastructure and quality of education	9.80	13.55	5.00	11.84	4.00	9.55	18.80	12.02
2. Education supporting employability	8.70	12.03	1.50	3.55	1.00	2.39	11.20	7.16
3. Strengthening infrastructure for labour market	3.35	4.63	1.90	4.50	3.00	7.17	8.25	5.27
4. Enhancing R&D development	7.20	9.96	7.20	17.06	6.00	14.33	20.40	13.04
5. Supporting social protection	1.01	1.40	1.78	4.22	2.16	5.16	4.95	3.16
6. Upgrading health care system and institutions	36.89	51.01	21.43	50.75	17.45	41.68	75.76	48.44
7. Enhancing administrative capacities	5.37	7.43	3.41	8.08	8.26	19.73	17.04	10.90
<b>TOTAL</b>	<b>72.32</b>	<b>100.00</b>	<b>42.22</b>	<b>100.00</b>	<b>41.87</b>	<b>100.00</b>	<b>156.40</b>	<b>100.00</b>

Source National Development Plan of RM 2007-2009: Investments.

**W14 Lack of National Program for Environmental Monitoring,  
W15 National Systems not completed and**

**W16 Environmental National Set of Indicators not prepared** - This group of questions are part of different already mentioned *weaknesses* like institutional capacities, inter sectoral cooperation and communication, and not approximated EU legal framework. MEPP tends and have the crucial role in all these areas, but has not yet produced expected results. It seems much more appropriate to spread the monitoring activities of the environment among scientific institutions that are capable of implementing the scientifically based monitoring system, than to concentrate all the activities in MEPP. The Ministry should be in charge of data collection, info systems and support of the developed environmental monitoring network, including so called supervision by eligible and prominent domestic and foreign institutions.

**W15 Lack of remediation systems (ecoremediation) for preventing and improvement of environmental deterioration and**

**W16 System for Citizen's Responsibility for environmental damages fragmented** - Apart of very limited attempts for preventing the possible environmental pollution in Macedonia, reflected in a insignificant number of waste water treatment plants and industrial filters, there are no methods for preventing or restoring the polluted environment or habitats. Lack of citizen's responsibility is also in line of this moment. The system of ecoremediation methods offers easy applicable and not expensive intervention in environment to prevent, reduce or remediate pollution. Therefore it should be immediately included in all legal documents and offered to public as **a must tool** for improving the quality of the environment.

**W17 Lack of cooperation with MEPP in processes of privatization and concession approval** - Ministries of Environment are somehow always governmental bodies "in opposition" also not just in Macedonia. This point should be surpassed with overall strengthening of the MEPP, improving of its position within the government and capacity building.

**W18 Insufficient ecotourism development and**

**W19 Insufficient support to Healthy Food Production** - Both areas belong to SD environmental priorities and have never been approached significantly in the past. For a small country as Macedonia, predicting its development as ecotourism and safe food based country is both intriguing and beneficial. There is a very wide area for economic and social development in both of these activities that is also environmentally



friendly, the basic SD approach. It is of immense importance to promote and take activities for development of these economic endeavours that will enable generations in Macedonia to live in clean prosperous healthy environment, recognized in the process of globalization as eco and a quality food tourist place.

**W19 Not effective Regional Cooperation in Implementation of Integral Regional Management** - There is only one example for this question in the "Prespa Park" project, amid all efforts in Ohrid Lake area. The results of this attempt will be most beneficial for future promoting of the Regional Cooperation, especially with Republic of Greece and Bulgaria that are almost completely aside environmental cooperation and regional management.

### Opportunities (O)

**O1 EU Accession Country** - This position, on the road of becoming an EU member, is considered as a great opportunity in almost all areas of human and environmental endeavours for RM.

**O2 Possibility to utilize EU Accession Funds** - RM has already started to utilize the new financial opportunities enabled by EU.

**O3 Membership in EU Environmental Agency** - Membership in different EU bodies can be considered as a opportunity for developing the institutional framework in RM, but it also poses a significant obligation towards meeting the EU requirements in different SD areas.

**O4 Participation in LIFE+ Program** - The same can be stated for this opportunity, since now RM can fully participate in EU programs, like LIFE+, FP7 and other open instruments for research, development, people mobility and transfer of technology.

**O5 Development of International Cooperation** - "Considering the commitment of the Parties to contribute by all means in the political, economic and institutional stabilization in the Republic of Macedonia as well as the region, through the development of civil society and democratization, institution building and public administration reform, enhanced trade and economic co-operation, the strengthening of national and regional security, as well as increased co-operation in justice and home affairs". "Considering the strong links between Parties and the values that they share, their desire to strengthen those links and establish a close and lasting relationship based on reciprocity and mutual interest, which should allow the RM to further strengthen and extend the relations established previously".

**O6 Increased number of Foreign Direct Investments** - The Republic of Macedonia has a number of international counterparts in the field of environment with the European Commission obviously playing a major role. Close communications are maintained with the European Environmental Agency (EEA) e.g. through EIONET. The Republic of Macedonia participates actively in the cooperation initiative on Regional Environmental Reconstruction Programme for South East Europe (REReP) under the Stability Pact for SEE. Also, the RM reports to the UN-ECE in relation to the regional UN Conventions to which it is a Party or a signatory. Also, close working relations exist with UNDP on development issues and with UNEP and UNIDO in regard to global environmental conventions.

The Republic of Macedonia has received international support mainly from the European Agency for Reconstruction (EAR) as the international donor under the EU PHARE and CARDS programme. Also, assistance in the field of environment is provided from bilateral donors and sources of financing such as the Swiss Government; GTZ and KfW; the German Government; SIDA (Swedish Government); The Japanese Government and JAICA as well USAID and the PSO programme of the Dutch government. Support has also been received from IFIs such as EBRD and is expected from EIB as well. Other multilateral donor assistance has been provided mainly through GEF- UNDP; and GEF-World Bank implementation agencies.

**O7 International Technical Support in preparation of projects** - the same as O6.

**O8 Foreign Interest for cooperation in Environmental Protection** - Environmental cooperation at global and pan-European levels takes place mainly within the framework of international organizations, such as the United Nations Economic Commission for Europe (UNECE), the United Nations Environment Program (UNEP), the Global Environment Facility (GEF), the United Nations Development Program (UNDP), international financing institutions (IFIs), such as the World Bank, the European Investment Bank (EIB) and the European Bank for Reconstruction and Development (EBRD), the Council of Europe, and the Organization for Security and Cooperation in Europe (OSCE), amongst others. The participation of the country in multilateral environmental agreements (MEAs) on a global, regional or sub-regional scale is another stimulus to legal and policy reforms, and offers a framework for cooperation, technical assistance and capacity building. Within the United Nations system, UNDP is an important partner which, through its resident office, provides support, including capacity-building, strengthening of the Ministry of Environment



and Physical Planning, training of staff in project management, implementing various projects, and as a GEF implementing agency (e.g. the first national communication on climate change). GEF is a major international source of funding for environmental projects, such as the Lake Ohrid project (implemented through the World Bank), the national biodiversity strategy (World Bank), or the development of the national implementation plan for the Stockholm Convention on Persistent Organic Pollutants (with UNEP).

**Current situation:** RM has a number of international counterparts in the field of environment, of which the European Commission with its agencies plays a major role. RM communicates closely with the European Environmental Agency (EEA) e.g. through EIONET. The Regional Environmental Reconstruction Programme for South East Europe (REReP) under the Stability Pact for SEE is another cooperation framework, in which RM takes an active part. Further, RM reports to the UN-ECE in relation to the regional UN Conventions to which Macedonia is a Party or a signatory. Close working relations are established also with UNDP on development issues and UNEP in terms of global environmental conventions. Regional cooperation takes place e.g. through the BERCEN network supporting in strengthening environmental compliance and enforcement in line with the obligations under the Stability and Association Process to the EU.

**O9 International Education** - As an accession country, RM has already adopted and started to implement the Bologna Convention on Credit Transfer System. Other EU instruments (ex. the Marie Curie program in FP7 framework) are also open to RM applications and have started the very complex student exchange matrix forcing the mobility, transfer of knowledge and implementation of gained experiences in the Western Balkan Countries. Being one of the central SD pillars, education on various environment issues occupies one of the top priorities and students in RM have significantly increased chances for education in various prominent EU centres.

**O10 Ecotourism Development Stimulation** - Although stated as an opportunity in NDP of RM and as one of the important investment areas, there is nothing stated for the eco-tourism plan, development and investment, amid the obvious focus on needs for rural, cultural, winter or hunting tourism development. It is clear that the concept of eco-tourism should be significantly improved and elaborated in RM to become the real strength.

**O11 Healthy Food Production Stimulation** - the same comment applies for the healthy food production or so called "sustainable agriculture" as for the eco-tourism in O10.

#### Threats (T)

**T1 Transborder Environmental Pollution** - The basic global threat considering transboundary environmental problems has been recognised in Agenda 21, continuing today in the Paris Report on the global climate change. Macedonia is a very small country to significantly participate in the global World environmental events, but the global events can immensely influence the environment in RM. It is therefore an imperative for RM to contribute to the global efforts for decreasing the pollution intensity to environment and eventually diminish the global threat.

**T2 Postponing the EU Accession** - A real threat to all development efforts of RM including the SD of environment.

**T3 STOP of Foreign Donations** - A threat that is most unlike and deserves no further comments.

**T4 Complicated Procedures for Accession Funds Projects** - This threat can be a real obstacle according to experiences gained in certain environmental fields so far.

**T5 Ignoring Policy in Environment (regional and wider)** - In present situation, RM is surrounded by 2 neighbouring EU countries (Greece and Bulgaria) and one accession country (Serbia) that are obliged by EU regulations to respect the EU policy in environment. So, it is quite unexpected that the nearest countries will disobey EU environmental acquis; on the contrary they are forced to implement it. RM should also express a positive attitude and respect the already signed and approximated EU regulations on its own territory and help in their implementation in the region.

**T6 Transfer of "dirty technologies"** - This is a real threat, but it seems that it is more in hands of RM government and its regulations, than in outside impacts. The rules on EIA should be strictly applied to every old or new technology working on RM territory.





**T7 Increased transfer of Environmental Threats (nuclear power stations, global pollution, etc.)** - This is a real external threat to RM. One example is the possibility of a new nuclear power station in the region, like the proposed one in Bulgaria in which Macedonia has expressed interest to participate aiming to secure the electricity supply in the future. From the environment point of view this kind of economy development is considered as major risk by the great number of EU member countries and regarded as the most critical threat to global environment, in the same level as the global warming, ozone depletion and natural catastrophes. In this contest RM can only prepare the measures for decreasing the impacts on the environment (renewable energy sources, decreasing on energy consumption, biofuels, electrically powered transport, ecoremediation methods, etc.) and join the EU efforts in preserving the environment according to Agenda 21 while intensively supporting the Sustainable Development.

## Energy

### Strengths (S)

**S1 Geographic location.** In the context of the regional energy market and recently established Energy Community, the favorable geo-strategic location provides prospects for becoming very important transit country in the energy sector. On these grounds, the intensified connection to the energy systems of the neighbouring countries is one of the elements underlying the further development of the energy system in the country.

**S2 Potential of the renewable energy sources.** The total installed power for production of electricity from hydro power plants is 504 MW from six big hydro power plants, and 36 MW from 22 small hydro power plants. According to the Energy Balance 2006 the annual production of hydro power is around 1.5 billion kWh. An extensive list of more than 400 prospective sites was compiled which leads to overall potential in the order of 255 MW in capacity, and 1100 GWh in terms of annual possible energy production providing an adjacent weighted average utilization factor of 4300 hours per annum. Furthermore, the National Power Utility identified 44 potential sites with a total capacity of 174 MW and annual possible energy production of 645 GWh. For these sites, studies of some level of detail are available.

Macedonia is quite rich in **geothermal** sources suitable for different uses except for the production of electricity. The biggest part of geothermal occurrences in Macedonia is connected with the Vardar tectonic unit. There are 7 main geothermal fields in Macedonia with 18 localities with thermal waters, and there are more than 50 occurrences as springs and wells where thermal water appears. The biggest amount of thermal waters can be found up to the altitude of 400 m above the sea level. Only the Kozuv Mountain springs and Baniste wells have altitude of 600 m above the sea level. Temperatures of the flows vary in the range from 24-27°C to 70-78°C. Total mean temperature is 59.77°C. About 15 geothermal projects have been developed in the Republic of Macedonia during the 70's and 80's. Some of them are still in operation but others are abandoned or work below the designed capacities. Four of them are very important and have an important influence to the development and application of geothermal energy in the country. These are the Kocani geothermal project, the Smokvica and Istibanja agricultural geothermal projects, and the integrated project in Bansko.

The annual average for daily **solar** radiation varies between 3.4 kWh/m<sup>2</sup> in the Northern part of the country (Skopje) and 4.2 kWh/m<sup>2</sup> in the South Western part (Bitola). The total annual solar radiation varies from a minimum of 1250 kWh/m<sup>2</sup> in Northern part to a maximum of 1530 kWh/m<sup>2</sup> in the South Western part which leads to an average annual solar radiation of 1385 kWh/m<sup>2</sup>. The climate characteristics - high intensity of solar radiation and its sunshine duration, temperature and air humidity, provide favourable conditions for the successful development of solar energy. The continental climate with hot and dry summers makes Macedonia a country with higher potential for the utilization of solar energy than the average European countries.

The **wind** energy potential is not adequately examined in the Republic of Macedonia. Although the issue is discussed since many years, very few references to wind energy can be found in studies and papers. Wind data are measured in meteorological stations throughout the country. Published data are scarce and in some occasions rather vague. Special measurements for the identification of wind energy potential in specific promising sites have not been carried out. Therefore the available data can be considered indicative



only. The Vardar river basin from Kumanovo to Gevgelija is considered as the most favourable area for wind energy applications. Other areas of possible importance are the Pelagonia region, Kriva Palanka, Ohrid and other mountainous areas. Also the area around Stip is one of the most favourable in terms of wind speed.

According to the energy balance for the year 2005, **biomass** contributes by 6.2 % to the gross inland consumption. Biomass, in the form of wood and charcoal is almost exclusively used in the domestic sector. Industrial or other uses are very small and represent less than 1% of the total biomass final energy consumption. In addition, there is relatively high potential in the country for utilizing biogas from animal manure for energy generation purposes, as well as growing crops for production of biofuel.

**S3 Restructuring of the power sector.** The Republic of Macedonia has progressed with the energy sector reform. The 1997 Energy Law and its amendments provided a basis for the restructuring of the energy sector and liberalisation of the energy market. An independent energy regulator was established in 2002. The restructuring of the electricity sector started in 2004 with the separation of power generation, distribution and supply from power transmission and grid management within the state owned power company ESM (Electrostopanstvo na Macedonia). Consequently, in 2005 ESM was split, initially into a transmission company (MEPSO) and generation and distribution company (ESM). Further on separate companies for generation and distribution were established and put into privatisation procedures. In the beginning of 2006 electricity distribution company AD ESM was successfully privatized by 90 % of its shares. In the oil sector privatization is completed and competitive markets exist. The gas sector was also restructured and its privatization has advanced.

**S4 New legislation in compliance with EU regulation and Athens Memorandum.** This strength first of all is related to the new Energy Law which governs: the objectives of the energy policy and the manner of its realization, energy activities and the manner of regulating the energy activities, construction of energy facilities, functioning of the Energy Regulatory Commission, introduction of market for electricity, market for natural gas, market for oil and oil derivatives, as well as market for thermal or geothermal energy, requirements for realization of energy efficiency and promotion of the utilization of renewable resources and other important issues from the energy field.

Further to this, Macedonia developed the independent regulatory body - Energy Regulatory Commission (ERC) in fully compliance with the EU regulations. The ERC is responsible for the price regulation and adopts methodologies for setting the prices of electricity, gas, geothermal energy, central heating and oil. The methodologies for setting the prices for electricity, gas, central heating and geothermal energy are based on incentive based methods and the oil prices are set on the basis of cost plus method. No subsidies are considered in all tariff methodologies.

In addition, worth mentioning is the foundation of the Energy Agency, which as by the Energy Law of 2006, will have an important role in promoting the activities in the area of EE and RES upon the following terms: to develop initiatives, propose and coordinate studies and projects for EE and RES; to cooperate with the Ministry of Economy for implementation of the Energy Efficiency Strategy and the related Action Plan; to issue guarantee for origin for electricity produced from RES; to propose and incorporate measures for environmental protection in the energy projects

**S5 Establishment of Sustainable Energy Financing Facility.** A Sustainable Energy Project in Macedonia has been approved by the Global Environment Facility (GEF) in December 2006. Under this project a grant of USD 5.5 million will be received, through the World Bank as an implementation agency. The project started implementation in March 2007 and will be completed in September 2010. The development objective of the project is to develop a sustainable market for EE and RES by supporting the development of an enabling framework, institutional capacity, and necessary financing mechanisms. The project has three components: (1) Market Framework, (2) Support to Utility-based ESCO and (3) Sustainable Energy Financing Facility (SEFF) consisting of a loan guarantee facility and a loan facility (a revolving fund), on a co-financing basis with commercial institutions and the Macedonian Bank for Development Promotion (MBDP). The MBDP will co-finance the SEFF with an amount not less than \$2.5 million. The SEFF is expected to leverage private sector financing and also to build capacities in commercial banks for financing EE projects on a commercially sustainable basis. This financing component will provide a guarantee facility for EE loans and a credit facility for EE and RES, co-financed with the MBDP and commercial banks.

## Weaknesses (W)

**W1 Lack of sectoral strategy.** Macedonia obviously lacks a comprehensive long term Energy Strategy. The previous studies regarding the development of the energy sector more or less are not in compliance



with the new economic and geopolitical reality and none of them has been adopted by any of the previous Governments as relevant national strategy. On top of this, the changing of Governments was accompanied by inconsistencies in the policies and priorities.

Macedonian government must foster the realization of the Energy strategy, as high priority. Recognizing the fact that Macedonia should actively promote its interests in the future energy projects in the frame of the common South European Energy market and in the wider European energy market, there is an urgent need for Macedonia to define the national priority energy projects and to include them in the new Energy Strategy.

**W2 The country is poor with domestic energy resources and strongly depends on energy import.** In absence of domestic sources, the total needs of oil and natural gas, as well as part of the oil derivatives are covered by importing. In the recent years the situation is impaired by ever-increasing import of electricity. Namely, several years ago, due to stagnation in the industry, particularly in heavy, energy-intensive industry, the domestic production of electricity was enough to cover the needs of industry and households. This entailed devaluation of electricity prices lagging behind the prices of other energy sources. Furthermore, the whole power system was affected negatively, maintaining the same level of electricity production capacities as of the year 1991. (The single example of a new plant since 1991 is the hydro power plant Kozjak, with construction period of 10 years and electricity production comparable to 3% of the total electricity needs.)

**W3 Unfavorable energy mix.** 80% of the whole electricity production is based on domestic low quality lignite which is highly polluting. The rest of the electricity needs are covered by hydro energy or imported electricity. The utilization of the gas is poor as only 10% of the capacity of the gas pipeline is used, mainly for industrial purposes.

During the transitional decade the main electricity producer was the power plant Bitola (the power plant Negotino was not in use due to the high price of the crude oil), which has depleted the reserves of the corresponding mine Svudol and increased 4-5 times its exploitation costs. Moreover, the price of the final product – electricity does not contain mechanisms to ensure investment in new lignite mines or new electricity sources of other types. Instead, there is a long term trend of treating the electricity price as a social category. As a consequence, in residential sector industry, significant amount of electricity is inefficiently used, converting it back to heat needed for space heating.

**W4 Poor condition of the power distribution system.** System losses of the Macedonian electricity sector are another huge problem. Distribution system losses are estimated to be more than 17% of power available. Power distribution system faces ageing equipment and stealing of electricity. On top of these, the troubles with payment of electricity bills in residential and public sector, as well as in industry, are still present.

**W5 Structure of the industry.** Almost one third of the total electricity consumption is related to high energy intensive industries. The largest consumers are SILMAK (production of ferrosilicon) FE-NI Industry (production of nickel) and MAKSTIL-Duferko (production of iron and steel), which annually consume more electricity than is produced by the all hydro power plants in the country. Electricity supply of these consumers (which are private companies) is problematic in terms of the amounts of electricity they need and the prices of electricity purchased at regional electricity market.

**W6 Lack of supportive legislation for sustainable energy.** Following the adoption of the new Energy Law additional efforts should be put to provide specifications/quantifications of the general provisions from the new Energy Law. A secondary legislation is missing which should define the national targets regarding renewable energy sources and energy savings, dynamical plan for target implementation, as well as the associated institutional, regulatory and economic aspects (terms of concessions, grid connection rules, standards, taxes, and other rules and regulations). Relevant programs (action plans) including specific measures with specified roles of the institutions, timing and financing are also missing. There are laws and regulations from other sectors (construction/building, transport, environment, etc.) which address sustainable energy issues but are deficient in their crossings and harmonization.

**W7 Lack of supportive infrastructure for sustainable energy.** This problem becomes more severe when going from personal to institutional and finally, to systemic level. At the personal level, the available human resources are not enough and there is a need for training and other types of improving the existing skills and knowledge. The same holds for appropriate awareness rising activities aimed at modification of the behavior of the stakeholders, their attitudes towards the sustainable energy technologies, as well as the criteria according to which the energy-related decisions are adopted. The stimulation of demand for energy services when more efficient technologies are applied is not an issue, since in Macedonia, the energy prices still are relatively low. The institutional and systemic capacity is not sufficient to create supportive institutions and to



design, implement and enforce policies for sustainable energy technology transfer, as well as to monitor their results.

### Opportunities (O)

**O1 The Energy Community.** The Republic of Macedonia is one of the Parties of the Treaty for establishing Energy Community. The Energy Community has its task to organise the relations between the Parties and create a legal and economic framework in relation to Network Energy in order to: Create a stable regulatory and market framework capable of attracting investment in gas networks, power generation, and transmission and distribution networks, so that all Parties have access to the stable and continuous energy supply that is essential for economic development and social stability; Create a single regulatory space for trade in Network Energy that is necessary to match the geographic extent of the concerned product markets; Enhance the security of supply of the single regulatory space by providing a stable investment climate in which connections to Caspian, North African and Middle East gas reserves can be developed, and indigenous sources of energy such as natural gas, coal and hydropower can be exploited; and Improve the environmental situation in relation to Network Energy and related energy efficiency, foster the use of renewable energy, and set out the conditions for energy trade in the single regulatory space.

**O2 Strong relation between Energy and Climate Change.** Energy and Climate Change together are top priorities in the European agenda for achieving sustainability. The rationale behind this strong relation lays in the fact that all sustainable energy projects/interventions/practices result in corresponding reduction of greenhouse gases emissions, contributing effectively to climate change mitigation. The Republic of Macedonia as a country that does not have a binding GHG emissions commitment under the Kyoto Protocol (Non-Annex I country), can participate in GHG mitigation activities and create carbon credits through the Clean Development Mechanism (CDM). By generating additional revenues related to the reduced GHG emissions, the CDM is seen as an opportunity to improve the economic feasibility of the sustainable energy projects, thus enhancing their potential to attract foreign investment.

**O3 Open field for SMEs.** The transfer and diffusion of sustainable energy technologies in the country could not be realised without all stakeholders' support, including substantial "buy in" from the private sector. Therefore, development of specialized national private companies that would assume the financing and execution of technological breakthrough is strongly recommendable and deserves serious consideration. This holds true also for the Energy Service Companies (ESCOs).

### Threats (T)

**T1 Uncontrollable rise in energy prices.** This is inevitable reality, as a threat, but also as an opportunity.

**T2 Restricted industrial activity/development due to lack of energy.** Energy is an essential input to all production processes. Therefore the lack of energy means industrial stagnation.

**T3 Darkness and horse carts.** Some extreme opinions make question of the survival of the national power system.

**T4 Carbon market uncertainty.** The current uncertainty related to the Kyoto Protocol commitments beyond 2012, induces additional risks for CDM projects as the generated certified emission reductions might lose their monetary value.



## **Rural Development (Agriculture, Forestry and Tourism)**

### **Agriculture**

#### **Strengths (S)**

**S1 Mobilized workforce.** Agriculture like no other sector is mobilising labour force due to the nature of agriculture practices and applied technologies. Unemployment rate in Republic of Macedonia could be decreased (absorbed) by agriculture. Proper rural development could accelerate “mobilisation of labour force”.

**S2 Sufficient workforce.** Existing market of labour and relatively high unemployment rate with proper agriculture policy and sector system solutions, rural development, better organisation and building of the sector capacity could be used in the future like “workforce pool”.

**S3 Experience and tradition.** See S1.

**S4 Harmonized legislation referring to food safety.** In the field of food safety, the Republic of Macedonia has taken steps to align its legislation with EU requirements. There has been progress in parts of the area of food safety, veterinary and phyto-sanitary policy. However, the enactment and implementation of legislation is lagging behind, requiring considerable and sustained efforts. Alignment with the *acquis* is at an early stage.

**S5 Rich biodiversity.** The Republic of Macedonia in the perception of the WG is still a country rich in biodiversity (agro-biodiversity). This strength is the ultimate base for a proper politic of conservation of rear species in combination with economically suitable rural development programs. This national heritage is one of the Macedonian precious.

**S6 Old/not intensive technologies – basis for ecological/organic production.** The extensive technologies are percept by WG like basis for ecological/organic production due to the estimation that old traditional agricultural practices are mainly based on low input of different modern agricultural inputs (chemicals, pharmaceuticals and other additives and repro materials) and not always healthily production of food. Good example for this hypothesis is production of light lambs in Macedonia which is very extensive and “unofficially” recognised type organic production. Relatively easy transformations in direction of EU promoted GAP could be done according proper plan.

**S7 High share of agriculture in the GDP of R. Macedonia.** The high share of agriculture in the GDP of Republic of Macedonia are percept by WG fist of all like the fact that this sector is historically highly important for our country and nation. However like strength this fact could be used in direction of generation of added value approach and efficient usage of this “economical space” for the benefit of the sector and political willingness for his better improvement in the future.

**S8 Still unspoiled ecosystems.** The extensive technologies are percept by WG like basis for ecological/organic production <still unspoiled systems> due to the estimation that old traditional agricultural practices are mainly based on low input of different modern agricultural inputs (chemicals, pharmaceuticals and other additives and repro materials) and not always healthily production of food. Good example for this hypothesis is production of light lambs in Macedonia which is very extensive and “unofficially” recognised type organic production. Pastures used for sheep’s herds are mainly unspoiled eco systems.

**S9 Potential skilled personnel & experts in this field.** WG percept potentially skilled persons / experts in the sector of agriculture. The new generations of agronomists with height education in the field of agriculture and biotechnology are very good pool of “sector personnel” necessary for proper sustainable development of the sector. The pool of new skilled personnel could be generated from existing 5 agricultural height schools and 3 State Universities with Faculties and institutes from the field of agriculture and rural development.

**S10 Good soil and climate conditions, geographical location and natural resources.** National resources are appointed like very strong strength of Republic of Macedonia and good soil and climate conditions are very good base for traditional production and comparative advantages of some sub sectors.

**S11 Comparative advantages of some sub sectors.** National resources, special climate conditions are very good base for traditional production and comparative advantages of some sub sectors like vegetable production, vine production, special livestock products (light lambs) like examples of regional Macedonian export products.



**S12 Huge variety of traditionally high quality agriculture products and potential for tourist products.**

Huge variety of traditional high quality agriculture products are potential for various projects related with sector of tourism. Generally this strength of our country is not recognised properly until now, but could be very strongly used in organised way in the future with additional proper way. Indirectly we could export our products from Macedonia (classily) and within Macedonia (with proper synergism with tourist sector). This strength could be used in various EU programs (traditional and regional products).

**Weaknesses (W)**

**W1 Poor business environment.** This problem is recognised by members of the WG as a very serious and complex one. The main reasons behind are administration barriers, no PPP until now, long inspections on the border, grey economy, no optimal movement from the agricultural sector (no brands, no market information's).

**W2 Consulting services in agriculture are not professionalized.** The advisory market in the field of agriculture is not arranged (early beginning). The NEA (National Extension Agency) is subject of never-ending political solutions and decisions without proper happy end. The consulting service in Macedonian agriculture (private and state) need to be arrange as soon as possible.

**W3 Not intensive production.** Extensive production is recognised like of the weaknesses of Macedonian agriculture. Mainly this weakness is related with not modern stated and upgraded technologies of prime production. This is especially in the direction of possibilities of improvements for "added value" production.

**W4 Lack of communication and interconnecting in the sector.** This detected weakness is a central problem for agriculture and rural development in general. It addresses the cooperation of different stakeholders and proper integration of the sector as well as the proper flow of relevant information's within the sector.

**W5 Weak institutional capacities.** This very frequently addressed problem in Macedonia in general does apply to the Macedonian agricultural sector as well. Mainly this problem is connected with MAFWE as the top institution in the sector of agriculture. The problem is well known in sector community and some projects are designed to overcome this troubleshooting situation. However, all institutions from the sector need to work together in order to overcome this problem in the next couple of years, and most likely before and immediately after EU accession.

**W6 Improper or nonexistent agricultural policy.** According to the experience and facts presented from the past, the WG addresses this problem as one of the problems with higher priority. The slow decision making of MAFWE and the presentation of not always optimal solutions, as well as slow or not executing of the strategic documents and programmes are just part of this problem.

**W7 Weak management skills of producers and processors policy.** Weak management is part of the problem related to the early stage of Macedonian private agriculture sector. The transition period mainly was used for ownership setting up with old mentality toward technology of production. However for proper efficiency and productivity new skills/knowledge are necessary in the future.

**W8 Division of land on small properties (inheritance).** The so-called land politics is one of the urgent problems in the country to be solved. The old way of inheritance of land from one age generation to another from an economical point of view create too small plots, which can't be efficiently utilized for agricultural production. Indirectly the low capacity of such farmers limits proper specialisation of the production in general and the efficiency of individual producers.

**W9 Few brands and weak promotion of MK products on foreign markets.** Not significant and well recognised brands from agriculture together with weak promotion of MK products on the foreign markets are also one of continuously present problems. This issue is massively addressed by various projects supported by foreign donors in Macedonia, sometimes with positive outcomes, but mainly this problem is still persisting in the country.

**W10 Old and unused capacities.** The country's still not stimulated and prosperous economy is one of the reasons why old capacities in agriculture are not used. Mainly the privatisation period is finalised. However, there are still capacities left which are not re-started yet. The new investment programs are some possible solution for adaptation and restart of such capacities which are most of the time not in use due to the not proper regional development politics and inappropriate municipality development programs.



**W11 Lack of finances and investments in the sector.** This is a very old problem in the sector of agriculture. Proper development programs need proper financial resources for successful investments. The attitude of banks in the last period of time is characterized by negligence of agriculture. The credit risk and not always attractive and fast profits (turnover) related to agriculture are also among the reasons for banks to avoid this sector. The high interest rate (sometimes close to 13%) and very difficult conditions for the credit applicants are major bottlenecks. These conditions are sometimes close to unrealistic requests like "hypothec-apartment in downtown of Skopje" and some other types of unacceptable guarantees asked from the farmers. On the other hand programs like IFAD are relatively good development examples. However, no program could be realised without domestic banks which are finally the partners of their clients - the farmers.

**W12 Low education of direct producers.** Appropriate programs of education and training of direct producers need to be implemented with focus during the next couple of year. Life long learning is not practiced in the Macedonian agriculture. The level of knowledge and skills of direct producers is mainly related to old systems of production which is a major problem if it is combined with the old fashioned and negative mentality from the socialistic period – not to be open for new things and to keep old habits in the production.

**W13 Insufficient information for ecological aspects of the agricultural production.** The Understand of the ecological aspect of the agricultural production is still at the early stage in the Republic of Macedonia. Not only related with possible organic production, but maybe now more important related with pollution and GHG emissions form agriculture production, not proper use of chemical preparations and others.

**W14 Agriculture – the biggest consumer of water.** This problem was neglected in the past. Nowadays, more and more awareness is created. Appropriate water management combined with acceptable capacity of irrigations systems are very essential issues addressing the future sustainable development of the rural regions of the country. Indirectly this problem is also connected with problems related to pollution especially in the intensive livestock production.

**W15 Weak capacity of administrative personnel.** The capacity of administrative personnel is under the questions due to various reasons, which are not always related to individual capabilities. The organisation problems and institutional capacities are the environment behind this weakens. Low motivation and low salaries are also great problem behind such weakness – part of negative selection of the personnel in the past and penetrations of political influences in the organisation structure of the state institutions.

**W16 Decision making in the Ministry of Agriculture.** Until recently MAFWE's decision making process was very slow and not adopted on various needs of the sector. Moreover, in the past decision making process on regular requests showed major time lags, no proper application procedures were established and sometimes no reaction was received from this Ministry at all. Due to the fact that MAFWE is recognised as one of the most important stakeholders this is a very important issue and a very serious problem which need to be solved as soon as possible. It is assessed that in the past it was mainly due to the organisation problems within MAFWE that the sector showed poor progress.

**W17 Lack of coordination between science and practice.** Although it is for sure not a general problem, some cases that occurred and in fact weakened the adaptation of Macedonian agriculture toward EU give enough evidence that this issue needs to be addressed. Coordinating science and practise is crucial in order to support faster changes. Some of the project executed in Republic of Macedonia, like MAASP project supported by SIDA, are recognising the problem and working on it. However, new conditions push University staff more and more toward practical applications of latest knowable and this process needs external support.

**W18 Non-regulated domestic market.** Domestic market of agricultural products is not organised in the EU manner. So-called measures of internal market regulations and proper EU mechanism need to be introduced as soon as possible. The elements of globalisation and adequate politics toward domestic production need to be regulated according to well known measures from the CAP of EU.

**W19 Imprecise or non-existent strategies.** Relevant strategy documents were constantly drafted during the past but no implementation was realised and thus no acceptable outputs were produced. In addition, the recently drafted Strategy for Agriculture and Rural Development is still pending and the sector is waiting for a clear, operational and strategic direction.

**W20 Not carrying out reforms in the agriculture/food sector.** The perception of the WG related to this weakness is due to the EU Progress Reports. Carrying out the reforms in the sector is very essential for the country and its overall economy because of great portion of Agriculture contributing to GDP. EU Progress



Reports for good reasons could not be positive with regard to pending reforms in the sector of agriculture and rural development.

**W21 Insufficient human resources for EU integration on a local level.** In the past only limited number of personnel related to agriculture was engaged in the Secretariat for European Affairs (SEA). It is mainly SEA that manages relevant issues for the sector. Unfortunately, support by MAFWE and some sector projects do not always provide acceptable solutions and positive outcomes as well as logical steps toward the Macedonian agriculture EU integration.

**W22 Low application of standards.** Generally EU standards are still not implemented in an acceptable level in the sector. Some companies are doing this without support and any control from the state institutions.

**W23 Insufficient motivation for changes.** Motivation for appropriate changes is very limited in the entire sector. However, this process is always connected with ownership and natural capitalistic attitude. Due to the fact that still some of the companies are not moving forward and due to limited capacity of administrative personnel this weakness connected with people's mentality is a great challenge.

**W24 Unused educated workforce.** The unemployment problem is one of the biggest problems in the agriculture sector as well as in the country. On the one hand educated workforce in this moment is not enough absorbed in the sector because of low investments. On the other hand, and if investments would be realised, diploma supplements need to be implemented, which means that the society shall provide additional investments in the education system (agriculture high schools and agriculture universities).

**W25 Agriculture is only declarative priority of the Government (no real action taken).** For the political purposes and good public relations the importance of agriculture in the past was highlighted by almost all political parties and governments. However, this was only a declarative priority. No real actions were taken to support development in agriculture after elections. This needs to change in the future.

**W26 Not agreed production. – lack of communication between producers and processors.** No integration is the simple explanation for this weakness. The horizontal and vertical organisation within the sector is still pending in Macedonia. Mainly the positions and opinions of the various actors are very extreme and not focussed on the overall interests and optimal solutions for the benefit of the society.

## Opportunities (O)

**O1 Cooperation of participants/entities in the sector.** The integration of the sector is of utmost necessity. The cooperation and better understanding of different stakeholders within the sector is a prerequisite for any improvement in the sector.

**O2 Raising awareness on food safety.** This issue is a strong opportunity for better and more ambitious EU integration of the agriculture sector. The awareness related to food safety could be an excellent opportunity for future appropriate investments in the sector, both in technologies used as well as in human capacity.

**O3 Focusing on specific, strategic and competitive products.** Specialisation of the agriculture technologies and production is most probably a very new focus of promising projects in the future. The added value way of thinking needs to be behind such ideas. Better and complete Macedonian agricultural products are the future solution for our sector.

**O4 Integration (adaptation) toward new market conditions.** New market conditions and high quality level of market demands could be taken up to motivate changes within the sector. More serious programs and better production are needed in order to comply with the new rules and conditions on the complete EU / World Market. This could be a very stimulative opportunity for overall sector of agriculture.

**O5 Potential for organic production.** This opportunity has already been taken into very serious consideration in the Macedonian agriculture expert community. The recognised possibilities of Macedonia are elaborated in the new National Strategy for Organic Agriculture 2008 – 2011 by MAFWE. In the future this type of production is considered to be very promising in combination with other activities to promote rural development, such as rural spa tourism.

**O6 Educating producers.** Improvement of Macedonian agriculture in general is fundamentally based on an improved level of knowledge of direct producers. The appropriate transfer of know-how, in particular transfer of technology know-how, needs to be performed by means of adequate education courses and training of direct producers.





**O7 Production of safe food.** Implementing food safety in Macedonian agricultural production is a very important and challenging task. Until now only the experts' community is very much aware about EU obligations in terms of food safety. The Agency for Food Safety is one of the institutions which are working very intensively to accomplish this issue. Agricultural production in respect of food safety is an imperative according to EU obligations and from this point of departure new opportunities (but also threats !) arise for Macedonian agriculture.

**O8 Easy access to financial assets.** New investment programs are a precondition for appropriate and faster improvements of Macedonian agriculture. Access to financial assets is a very significant opportunity also related with EU accession.

**O9 Increase of productivity before EU accession.** The expected EU accession in general is an opportunity for Macedonian agriculture. However, this is only valid if we increase the productivity of our agricultural production before we become part of a well-organised and very competitive EU market.

**O10 Application of GAP (Good Agricultural Practice).** GAP codex is the first step towards implementation of this opportunity. The implemented GAP in Macedonian reality is a real challenge and opportunity for the future from all aspects related with sustainable development agriculture. Other opportunities like food safety can not be realised without implementing of GAP in Macedonian. "Added value" production is very much connected with this opportunity.

**O11 Natural resources.** Respect of the natural resources utilized for agricultural production is fundamental without any additional explanation, in particular when we have in mind Sustainable Development. If we do not take care for a balanced way of their utilization, the national resources for agricultural production can easily switch from opportunities to threats. This in particular refers to the water and soil resources.

**O12 Implementation of EU regulations.** Adopting and implementing EU regulations in Macedonian agriculture provides the frame for future Macedonian agriculture. EU regulations from a development point of view offer new opportunities for production. However, at the present development level of our sector some people also might understand them as threats.

**O13 Implementation of EU standards.** Adopting and implementing EU standards not only offer new opportunities for production, but at the same time also provide new opportunities for utilising EU funds related to increased competitiveness of Macedonian agricultural products in the relationship to EU market demands.

**O14 Agro tourism.** The synergism with tourism is of utmost importance for Macedonian agriculture and rural development as a whole. Agro tourism is one of the new opportunities envisaged for the country. This could be realised only with better and closer collaboration between the two sectors.

**O15 Trainings for improvements of the sector.** Improvement of Macedonian agriculture is very much connected with the level of knowledge of direct producers. Appropriate transfer of know-how and transfer of technology need to focus on direct producers by means of adequate education courses and training. Beyond this all levels of managers in the sector need to be trained. This opportunity could bring new added values to Macedonian agriculture.

**O16 Access to EU funds.** For Macedonian agriculture access and utilisation of EU funds is one of the very realistic opportunities. However, this topic needs to be treated in a very serious manner and with good and professional plans coordinated by the State and related agencies and institutions.

**O17 Increasing competitiveness of agriculture.** This can be an opportunity as well as it can easily turn into a threat if it is not considered in a very serious manner. Many Macedonian companies in the sector understand the necessity of improving their competitiveness although it is clear that this is very complex challenge.

**O18 Added-value products.** Due to the fact that until recent years the country was known only for "raw" or not finalised agriculture products with underestimated value, this needs to be addressed at least as an opportunity for future Macedonian agriculture, which, however, is not fully under our control. In fact, if we could address the production of not finalised products as a SWOT weakness and transform this in an objective, Macedonian agriculture could gain tremendous power for future improvements, which will give the sector a complete new shape and image. Many other opportunities can be connected with the added-value topic.

#### Threats (T)

**T1 Pollution of soil, water and air.** All activities in our sector are threats in terms of pollution of soil, water and air. This is very important to have in mind, especially at the beginning of the implementation of this



NSSD when various stakeholders might focus on the economical pillar alone and are rather prepared to neglect the environmental and social/cultural pillars of Sustainable Development of Macedonian Agriculture.

**T2 Endangering biodiversity.** Activates in our sector are also a threat for biodiversity. Biodiversity needs to be one of the very serious concerns for any future development of the sector. Due to this fact we will have special short-term expertises as additional support in the NSSD activates in order to prevent troubleshooting related with biodiversity in Macedonian agriculture and in order to increase the possibilities for proper public awareness rising.

**T3 Un-preparedness to make proper use of pre-accession EU funds.** Access and utilization of EU funds for Macedonian agriculture is one of the opportunities which are indeed realistic. However, this is only valid if this issue is treated very seriously and if state institutions and related agencies are prepared to coordinate the application process in a professional manner. If this is not the case, which was the experience of some neighbouring countries before they entered EU, the opportunity can easily turn into a threat by spending time for zero results and consequently causing a lot of frustration.

**T4 Loses in the trade with food, tourism and catering industry.** If Macedonian agriculture stays on the present developing level and is not ready for EU accession, low competitiveness will most likely create threats and losses. In addition and while not using the synergisms with tourism, threats for losses are expected in this sector as well.

**T5 Health hazards from unsafe food.** Opposite to the opportunity identified in related to food safety (see O7).

**T6 Non-existent political consensus for development and strategy of the sector.** It is a very serious threat, if political parties are not willing to leave "populist politics" towards agriculture and if they can not achieve consensus related to necessary strategic developments. Some elements of this threat may be "weaknesses", such as information and awareness raising, but others are external factors, which are not under control of this NSSD project or at least difficult to predict in terms of their impact.

**T7 Competitive EU products sector.** Opposite to the opportunity identified in related to competitiveness (see O17).

**T8 Import of low quality & unsafe products (food).** If Macedonian traditional agriculture fails to re-orientate towards Sustainable Development Agriculture, then the country will face a situation to become even weaker in terms of agricultural production competitiveness, which in addition will increase its dependency to import agricultural products from the world market. This might open the door for low quality and unsafe products.

**T9 Non-competitive products for export.** Opposite to the opportunity identified in related to competitiveness (see O17).

**T10 Slow reforms – EU future ?** Opposite to the opportunities identified in related to competitiveness (see O12 and O13).

**T11 Intensification of activities without control of negative effects for the environment.** See T1.

**T12 Global pollution of the environment.** See T1.

**T13 Development without sustainable development in terms of social, environmental and economic balance.** See T1.

## Forestry

### Strengths (S)

**S1 The forest in Macedonia as a resource with enough potential.** The total forest land in the Republic of Macedonia is 11,596 km<sup>2</sup> (1,159,600 ha) out of which forests are 947,653 ha. The total wood mass is 74,343,000m<sup>3</sup>, and the total annual increment is 1,830,000m<sup>3</sup> with average annual increment of 2.02m<sup>3</sup> per hectare. Forests in the Republic of Macedonia are characterized with a rich biodiversity. Macedonia has significant non-timber forest resources: medical plants, mushrooms, forest fruits, game, etc. The importance of forests is emphasized by the fact that the main part of the territory of the protected areas in this country are under forest.

**S2 Afforested areas.** With the help of the Aforestation Fund (that was active until 1990) more than 140,000 ha of bare lands were planted and an increment was achieved of afforestation with index an index 1.6. The



afforested areas have a great potential as a resource. They are covering about 10 % from the total forest area of Macedonia.

**S3 Professional staff.** Republic of Macedonia has a very professional staff in the forestry sector. In the P.E. "Macedonian forests" are employed: Ph.D – 2 persons, MSc.-10 persons and 432 persons with faculty's degree.

**S4 High transparency of the forestry.** In order to achieve a proper public opinion for the forestry in Macedonia its transparency is very important. According to the current situation, Macedonian forestry works on a transparent manner.

**S5 Existing legal and regulatory framework.** The Law on forests, in power since 1997, is a good framework for regulating work in forestry, i.e. in the management of forests (private and state owned forests).

**S6 Existing system for monitoring of health condition of the forest.** About 25 years ago has been established centre for monitoring of health condition of the Macedonian forests. It exists in the frame of the Faculty of forestry in Skopje (department - Forests and wood protection) and its name is centre for Diagnostic-Prognostic-Reporting-Service of Republic of Macedonia (DPRS). Its role is to conduct monitoring of the health condition of our forests, to make diagnose of the discovered pests, diseases etc., to predict there development in the future, to propose measures and to prepare annual Report for that.

**S7 Existing strategic development documents.** At the moment, there are a several current and official documents regarding to the forest and development of the forestry in the Republic of Macedonia:

- *Strategy for sustainable development of forestry in the Republic of Macedonia*  
Adopted by the Government of the Republic of Macedonia in June 2006
- *National strategy for biodiversity and action plan*, Skopje 2004
- *First National Ecological Action Plan of Republic of Macedonia*, Skopje 2003
- *Spatial Plan of the Republic of Macedonia*, Skopje 2004

**S7 Existing of services for forest protection (forests police and forest rangers).** In the frame of the Ministry for agriculture, forestry and water economy exists service for physical forest protection i.e. illegal logging. Also, in the frame of the P.E. "Macedonian forests" exists a similar internal service called forest rangers.

#### **Weaknesses (W)**

**W1 Improper sanctions.** There are many illegal activities in the forest in the Republic of Macedonia. One of the reasons of their permanent increment is improper sanctions. If we want to decrease these illegal activities in the forest and forestry it is necessary to increase the level of sanctions.

**W2 Unfinished land registry (cadastre), demarcation.** One of the most important factors with a great negative influence of the work's activities in the forestry is unfinished land cadastre. It is a basic precondition for efficient management with our forests. Also, it is very important to make distinction of among state and private owned forests. In order to achieve a more efficient management with our forest we should to upgrade the cadastre of the forests and to complete distinction of state and private ownership.

**W3 Human resources.** As we mentioned before, Republic of Macedonia has a very professional staff in the forestry sector. In the same time there is a lack of staff in particular department of the forestry i.e. forests police, inspectorate etc. In order to improve that situation there is need for employment of new staff or replacement of some staff from the other departments into departments with lack of human resources.

**W4 Bad organizational structure in the PE "Macedonian forests".** The one of the reasons for a bad working and bad economic results of the forestry in Macedonia is the bad organizational structure in the PE "Macedonian forests". It was recognized many times in the past but even now is started process for its transformation. There are several models for its transformation at the moment. One of them should be chosen as a model for transformation of the PE "Macedonian forests".

**W5 Poor affirmation of forestry.** In the past, the forestry in Macedonia has done a lot off positive things, for example: afforested about 150 000 ha (Vodno, Gazi Baba, etc.), well organized forest fire protection network, breeding of wild animals during the cold winter's etc. At the same time there is very small publicity for that and very big publicity for some bad things in the forestry and forest, even they are not caused by foresters' i.e. illegal logging.



**W6 Insecure and insufficient financial resources.** The forestry by its nature is sector where physical results of its work and financial results, very often, can be reached after long period (sometimes after 30 years). That is one of the factors why "nobody" wont to invest in the forestry. The second reason maybe is that the main source of finance in the forestry comes from logged timber and fuel wood without any valorisation of the public forest functions (production of oxygen, protection of soil, influence on the climate, carbon sequestration e.t.c.). According to the previous, one of the possible solution for financing of the forestry is valorisation of the public forest functions as a basis for financing the forestry by the state.

**W7 Overlapping of competences regarding to integrated management of the forest land (space) and utilization of the natural resources.** The Government of the Republic of Macedonia administers the forests and forestlands of state ownership through the following institutions:

- Ministry of Agriculture, Forestry and Water Economy;
- Ministry of Environment and Physical Planning;
- Public Enterprise "Macedonian Forests";
- National Parks and Hunting grounds;
- Public Enterprise "Jasen".

The State Inspectorate of Forestry and Hunting functions as a body within the Ministry of Agriculture, Forestry and Water Economy, controls and supervises the enforcement of the Law on Forest, Law on Hunting and all other laws and law binding acts that are in the function of forestry and hunting. The Forestry Police as a sector within the Ministry of Agriculture, Forestry and Water Economy protects the forests in accordance to the Law on Forests. Within the framework of the Ministry of Environment and Physical Planning, functions State Inspectorate for protection of the environment that controls all legal and physical entities in the part of protection of the environment. In accordance with the regulations in the Republic of Macedonia, the management of a certain natural resource is segmented in different areas. So on one natural area - a mountain, several legal entities are governing. For example:

- with the forests - PE "Macedonian Forests";
- with the waters - PE "Water Economy" of the Republic of Macedonia;
- with pastures - PE "Pastures";
- with game - hunting association, PE "Macedonian Forests" or other legal entities;
- with other natural resources (stone, ore etc.) - the enterprise that gets the concessions from the state.

Thus on one area, there are several subjects with different interests and a conflict of interests arises. This means that in the Republic of Macedonia the territorial governance is not addressed well.

**W8 Illegal logging.** Illegal logging is a serious and long-term problem, jeopardizing sustainable forest management as well as forest value in a broader perspective. As a result, to the illegal logging natural regeneration is disturbed, it creates possibilities for erosion, forest fires, diseases and pest calamities, disturbances to the water regime etc. Illegal logging and illegal sale of wood create economic losses to the state sector.

**W9 Conflict of interest (of individuals) in PE "Macedonian forests".** Recently, in the forestry in Macedonia was conducted process of privatisation of some equipment, mechanization and parts of the working process. Some of them were sold among the people employed in the P.E."Macedonian forest" or among their kinsfolk's.

## Opportunities (O)

**O1 Expanding woodland.** There are two reasons for the expansion of the woodland/forest cover land. The first one is "concording" of the abandoned agricultural field from the close forest. The second one is the afforestation of the bare lands.



**O2 Forestry as global phenomenon.** Because of the lot of threats in the world (climate changes, desertification, renewable energy etc) forestry has and will have in the future a very important role in the salvations of these problems.

**O3 Making use of the strategy to get financial assets from foreign donors and the Budget of R. Macedonia.** In the frame of the Strategy for Sustainable Development of the Forestry in the Republic of Macedonia there are many actions and project which should to be used money providing (Budget of R. Macedonia, foreign donors etc).

**O4 Development of hunting tourism.** In the R. of Macedonia are existing about 240 hunting places with big potential to develop hunting tourism.

**O5 Integrated management of the space.** This is one of the main precondition for sustainable forestry in Macedonia. If the Government succeed to provide that, than the forestry could to play very important role in the development of Macedonia.

**O6 (Paying attention to) generally useful functions.** Non wood goods and the forest amenity have to get proper treatment in terms of their economic value.

**O7 Presence of political climate.** In the last few years there is a positive political climate for salvation of the problems in the forestry.

**O8 Integrating forestry policy into other sector policies.** The forestry has very close and strong relations with other sectors. Because of that the forestry policy should to be integrated into policies of other sectors.

**O9 Alternative products and services.** The mane input in the forestry today is coming from timbers and fuel wood. In the concept of the sustainable forestry the alternative products and services have very important role. It could be a significant source of money for the forestry in the future.

#### Treats (T)

**T1 Not providing financial assets for carrying out the Action Plan 2007-2009.** The establishment of the concept of sustainable forestry in Macedonia depends of carrying out Action Plan 2007-2009.

**T2 No interest for investing in the forests.** The results from the work and investments in the forestry usually can be seen and expected after long time (sometime after 20-30 years, even longer). Because of that there is not too much interest for investing in the forestry.

**T3 Uncontrolled woodcutting (illegal logging).** One of the most negative factor which has influence on the forestry in this moment certainly is illegal logging. Without its elimination there is no environment for creation of sustainable forestry in the R. of Macedonia.

**T4 Usurpation of the forests and forest land.** In some parts of Macedonia this process has negative influence of the forestry, too.

**T5 Climate change.** The consequences from the global climate changes are treats for our forests and forestry, too.

## Tourism

#### Strengths (S)

**S1 Favourable geographical position.** Geographically, Republic of Macedonia is within the South Europe lying on Balkan Peninsula. What is characteristic for this position is the cross-road of numerous roads with continental and intercontinental dimensions. Also the geographical position should be seen from the point of view of country's position towards the main tourist flows, outbound tourist regions and countries. For Macedonia the most important is the East-Mediterranean direction that connects countries of North-West, Central and Eastern Europe with Adriatic, Aegean and Black Sea including big number of outbound tourist regions and countries that are main tourist markets for Balkan Countries. Macedonian position within this direction can be valorised through creating possibilities for development of transit tourism, by using the values that it possesses on this direction, although the main part of the transport on this direction doesn't have tourist character.

**S2 Combination of Mediterranean and continental climate and geomorphologic elements** represents a very important strength for creating tourist offer that is based on natural values, particularly climate and



geomorphology. The vicinity to Mediterranean and influence of the Mediterranean climate is particularly evident in the part of river Vardar Valley, and the presence of continental climate is in the other parts. The presence and combination of such climates enables conditions for developing certain types of tourism, particularly those related with recreational summer activities, but as well as winter sports.

**S3 Abundance and diversification of conserved cultural attractions from different periods (archaeological cites, monasteries, churches, mosques etc.)** is identified as strength on which particularly should be paid attention. Macedonia as a country, although on relatively small territory, has an abundance of cultural heritage from different historical periods. Many of them are conserved and used for public visit. Not enough of them are properly maintained and used for tourist purposes but yet there is evident number of such cultural and historical values that can be included in tourist offer. This heritage has a very big potential for creating the cultural tourist offer, particularly in the field of creation of "cultural heritage trails".

**S4 Tradition, folklore and hospitality of the people.** The existence of many forms of tradition and their practicing is used and can be used for creating a particular niche market oriented types of tourist products. For example Epiphany, St. Joan, Strumica Carnival, Vevcani Carnival for celebrating the coming of the "Old New Year" and other events closely related to the tradition in Macedonia. These elements should be included in tourist offer for foreign as well as domestic tourist. The question that comes out is why domestic? Domestic tourists are actually bigger potential market because of their acquaintance with many local traditions and folklores that could be much more interested than the foreign tourists. Inclusion of these elements in tourist offer is particularly desired for the opportunities for prolonged tourist season.

**S5 Areas with their "originality and undisturbed nature".** Natural areas, National Parks (Galicica, Pelister, Mavrovo), preserved areas (Jasen), rural areas (particularly in Mariovo and Berovo) are recognized as to be regions with the biggest potentials for rural tourism development.

**S6 An existence of tourist regions.** Upon the existence of natural and cultural attractions, within the "Spatial plan for the Republic of Macedonia" which was adopted in 2002 and is still in force, according to which tourist regions are divided in 10, with zones and tourist cites inside them. It is a solid basis for further researches of tourism taking into account the spatial dimensions with all the characteristics, although in practice there are tourist regions that differ "by themselves" as they actually functioning: Ohrid-Prespa Region, Mavrovo-Popova Shapka Region, Skopje, Tikvesh Region, Eastern Region and South Region.

**S7 Traditional production of food.** It is tradition of Macedonians that is still present, particularly in many of the rural areas. The production of cheese, wine, honey, different vegetables and fruits and their products (marmalades, jams, juices, ajvar, ljutenka), and traditional dishes should be taken into consideration. The traditional production of food and their combination within particular tourist product as a part of agri-entertainment programs in rural areas is a very good basis for development of rural tourism.

#### **Weaknesses (W)**

**W1 Competitive destinations in the region.** Macedonia is surrounded with countries that are its most competitive competitors on international tourist market, particularly in the region. This is due to their stronger and higher concentration of tourist offer, mainly as a result of their sea outlet (Croatia, Montenegro, Albania, Greece, Bulgaria and Turkey), and more developed tourism (Serbia, Croatia, Montenegro, Greece, Bulgaria, Turkey). The competitiveness is also as a result of the concentration of cultural attractions, as well. Also Macedonia can't cope with the competitive destinations because of its weak and poor offer on international market, and uncompetitive prices.

**W2 Macedonia still uncovered destination on international tourist market.** In Macedonia there are still potentials to be discovered and used for creation of attractive tourist offer. On the basis of existence and inclusion of these potentials in tourist offer, certain regions or places can be developed as tourist destinations. Mainly this is in relation to the interest and trends on international tourist market for destinations that are not yet fully "tourist industrialised" with composition of different elements mostly based on natural and cultural heritage.

**W3 Prices** are not very much competitive compared to its direct competitors (see W1). Although the quality of services is not on the same level as of its competitors, yet Macedonia offers prices that are not competitive to them. Having in mind particular differences in the structure of main tourist offer based on natural tourist values (sea) of the competitors and Macedonian, the position, and the image it is more than needed to create and promote prices that will attract visitors and contribute to promotion of Macedonia as "new revealed Balkan Tourist destination".



**W4 Insufficient/undeveloped general and tourist infrastructure and accessibility to tourist destinations.** It needs improvements particularly on the local and regional level. Although the road network from Skopje to Gevgelija, Kriva Palanka - Kjafasan, Ohrid-Veles is most frequently used, it needs improvements to meet the passengers' needs. The access towards many destinations is not on a satisfactory level. But yet it should be stressed that unlike the rail network which in the moment actually doesn't functioning, the road network and air transport are on satisfactory level for servicing the passengers. This situation should be an initiating motive to further improvement of this sector.

**W5 Improper and lack of signalization (roads, destinations, cites).** This is big issue that needs to be solved. Road network as most exploited transport network in Macedonia needs big improvements towards signalization, and as well as on the level of destinations. Except transport and local signalization, very crucial problem is the signalization of cites, and also signalization within the institutions, for example museums.

**W6 Lack of awareness for clean/ecological environment** mostly from the local population. But it is as well with tourists, mainly domestic, but not excluded foreigners too. Present development of tourism is seen only from economic point of view, neglected the environmental dimension. Campaigns for awareness increase for clean environment.

**W7 Weak image of tourist destinations and Macedonia as tourist destination on international tourist market.** Macedonia is still not recognized as tourist destination on international tourist market. There are attempts of its promotion on international tourist fairs, particular those in neighbouring countries, Germany, Russia etc., but the results are still modest. The main problem for Macedonian weak image on international tourist market is mostly as a result of absence of continuing directions for promotion of Macedonia abroad, absence of tourist representative offices abroad and lack of harmonization of promotional activities for Macedonian tourism.

**W8 Insufficient governments' support for continuity of development directions of tourism.** During all the period of independence of the country, what lacks are continuing activities towards future tourism development in all governments. This is identified weakness that needs to be overcome. Although tourism is recognized as a sector that has big potentials for Macedonian economy as a part of real sector there is still absence of essential documents that will give directions for future tourism developmental orientations.

**W9 The institutional network actually not appropriate functioning.** The main involved subjects that contribute to the creation of the institutional network of tourism in the Republic of Macedonia faces certain difficulties related to many reasons. Many of undertaken activities are not realized, or not produced expected results as expected. It is mainly as a result of absence of communication and coordination among the involved of certain activities.

**W10 Insufficient use of potentials for tourist development** is recognized as main weak point and was a starting point from which was created a problem tree. The insufficient use of potential for tourism development in the Republic of Macedonia is in fact as a result of no innovations in tourist offer, non-competitive prices, improper functioning of the institutional network, and the lack of national strategy for tourism.

**W11 Accommodation capacities.** Besides the basic accommodation capacities (board and lodging establishments), additional facilities have an important role for the attractiveness of tourist destinations. The analysis concerning their structure in Macedonia has shown that the presence of such content of additional facilities is not enough and even in some destinations it is on a very low level. The lack of such facilities is present more or less all over the country. In the vicinity of the large urban centres and even in tourist destinations, there is a need for well-organized picnic areas, recreational areas, complex sport and recreational centres, pedestrian and bicycle tracks, etc, for the purpose of overcoming the existing disproportion.

**W12 Rapid saturation of tourist offer/no innovation.** Macedonian tourist offer is facing with the problems of no or very low innovation of tourist offer. It is a very negative trend, and must be abandoned since tourism is very dynamic sector that needs appropriate timely, and target oriented tourist offer. Because of the absence of innovation in tourist offer (ex. Inclusion of additional entertainment activities, new tourist trails, cultural trails etc.), Macedonia has already started to loose the step and to be behind its competitors. It is in very close relation with W13.

**W13 Improper promotion of Macedonian tourist offer abroad.** Macedonian tourist offer abroad is mainly based on printed materials, and it lacks of modern techniques of promotion. But still there are very positive



attempts of internet promotion of Macedonia as a tourist destination. What lacks the most in this point is creation of a brand name for Macedonia as a tourist destination.

**W14 Insufficient development of rural, spa, cultural and transit tourism.** In previous period spas were seen as centres for medical treatment and rehabilitation, different from the concept of use of spas worldwide (particularly in European developed countries) as wellness and self-ness centres for relaxation of visitors. Not developed rural areas with lack and improper transport and infrastructure are main obstructers for developing, and at same time main reasons for not developed rural tourism in Macedonia. Although is seen as possibility for increased incomes from transit passengers in Macedonia (particularly on road directions Skopje-Gevgelija, Skopje-Ohrid-Bitola and Kriva Palanka – Kjafasan) still there are no conditions for developing transit tourism.

### Opportunities (O)

**O1 Use of funds for developing tourism.** Different programs, donors, funds may contribute to developing tourism. The availability of such funds as an opportunity may be used for promotion of certain types of tourism, strengthening the ties among tourism stakeholders, development of tourist regions, etc.

**O2 High interest on international market for cultural, religious, rural, eco and golf tourism.** These are types of tourism that represent niche markets, for which in last period there is a higher interest. Actually, particularly eco tourism, rural, religious and cultural tourism are such types of tourism which existence and development needs to respect the main issues of sustainability. Macedonia has good basis to use the most significant and for tourist interest segments of cultural heritage and to incorporate it in tourist offer by creating specific type of tourism. Also the needs for rural and eco tourism can be meet as Macedonia has such predispositions (rural areas, preserved areas, natural parks).

**O3 Regional and cross border cooperation.** Having in mind the geographical position of the territory of Macedonia and the location of its most developed tourist region (Ohrid-Prespa Region) on the border with Albania and Greece, and also the Eastern Region with Bulgaria (Maleseviija (MKD) and Pirin(BG)), and South Region (Gevgelija, Dojran- Thessalonica) there are possibilities for its promotion within this cooperation. The tourism sector is seen as sector with the most potential in the Ohrid-Prespa Lakes region and its cross-border promotion and development.

**O4 Regional supervene through regional network of BAHA (Balkan Alliance of Hotel Associations).** Since the Republic of Macedonia is situated on Balkans and has borders with 4 neighbouring countries for the purpose of better promotion on international tourist market (mainly in regional frames) the regional network between professional associations gives great opportunities for Macedonian tourist promotion and presentation on targeted international tourism fairs. But it also gives opportunity for increasing of tourist flows to Macedonia and oriented towards incoming tourism, which in this period is not on satisfactory level.

**O5 Support to EU Strategy for Sustainable Development.** Tourism sector WG as component of the Project “Support to the Preparation of National Strategy for Sustainable Development in the Republic of Macedonia” is consulting relevant documents dealing with issues of sustainable development. Among them is the EU Strategy for sustainable development, as well as the Renewed EU Tourism Policy (2006).

**O6 International appreciation of Macedonia as a tourist destination.** Although identified as an opportunity it is at same time an obligation to further maintaining and improving of such an appreciation. Macedonia slowly became to attract foreign visitors (particularly in the last 5 years), mainly from neighbouring countries and the region. An exception is the increased number of tourist from Netherlands (4000 tourists in 2006) and this years projection for tourists from Great Britain in Ohrid.

### Threats (T)

**T1 Prices of competitors.** Not competitive prices of Macedonian tourist products makes tourist offers loose the pace with competitors' prices. This is particularly for those competitors who have in their tourist offer sea outlet, as well as cultural tourism in neighbouring countries, and represent our direct competition.

**T2 Turbulent/unstable region (economically and politically).** The recent events that has happened in the very near surrounding of Macedonia, and in Macedonia as well (1992-2001), the ongoing instability in the





region (Kosovo) and economic situation vis-à-vis payment abilities of populations in the neighbouring region mainly contribute to decrease of tourist flows not only in Macedonia but in the region as well. Such situation is unfavourable for future development of tourism in Macedonia.

**T3 High competitive destinations in the region with seas and regional competition particularly of the neighbours.** Macedonia is bordering with three countries that have sea outlet. It is a very competitive advantage of the countries (Bulgaria, Albania, and Greece) and asks very intensive and serious approach towards creation of competitive tourist offer. Apart from neighbouring countries with sea outlet, Macedonia has strong competition from the other neighbouring countries.

**T4 Environment pollution** can be seen as threat for tourism development as well. It is particular with the relation tourism-environment and intentions for developing eco tourism. The presence of the polluters, as for example FENI in the very near vicinity of Kavadarci and Tikvesh Wine region is a danger for local/regional tourism development.

## **Social Issues (employment, health and education)**

### **Employment**

#### **Strengths (S)**

**S1 The prepared National Employment Strategy 2010 (NES)** that defines the main labour market challenges, targets and specific employment, and overall economic, policies to achieve objectives. It was prepared within the frame of the enlarged partnership among the relevant ministries and institutions.

**S2 The National Action Plan for Employment – NAPE 2006-2008** presents action that will be taken in order to fulfil NES and will assist the country in future integration in the EU through convergence towards the Guidelines of the European Employment Strategy.

**S3 The Law on labour relations** from 2005 increased the flexibility in the labour market, for example in the area of flexible work-arrangements. In addition, the Law on Temporary work agencies from 2006 allowed for temporary employment.

**S4 Employment policy in Macedonia** is being transformed into a set of active labour market measures aiming at promoting the creation of new job opportunities, at activating jobless people and introducing human resources management.

**S5 Doing business 2008 (World Bank) ranked Macedonia as 4-th world reformer.** The ranking in terms of the current business environment improved by 21 places in a year, from 105<sup>th</sup> to 84<sup>th</sup>.

**S6 The intensive reform agenda of the Government** (see Government programme 2006-2010) that would, on a medium to long-run, foster growth, employment and higher standard of living.

**S7 Started tax and social security system reforms** that would reduce the tax wedge (especially for low-wage earners) and hence stimulate job creation.

#### **Weaknesses (W)**

**W1 Low capacity of LM institutions**, in particular the MoLSP, ESA, Labour Inspectorate.

**W2 Lack of technical and human capacities of the ESA** to integrate into the European Employment Services (EURES).

**W3 Inefficient active and passive labour market policies**, strong need for complementary measures, as well as for the introduction of a performance management.

**W4 Low level of institutional and human resources capacity of the Ministry of Education and Science and its bodies**, as a main institution(s) shaping the education system and hence the labour supply (or human capital).

**W5 Relatively low quantity and quality of educational attainment of the labour force** as measured by the enrolment, drop-out, ranking of Macedonian students on international education tests and studies (PISA, TIMSS, PIRLS), etc.



**W6 Though the Government introduced a flat and lower personal income tax rate of 10% from 2008** (12% in 2007) which reduced the tax wedge, the latter is rather regressive limiting job creation at lower pay ladder and stimulating informal employment in that segment.

**W7 Low quality signals between labour market and schooling system causing mismatch between demanded and supplied human capital.** This causes lower job creation, lower productivity (if the match is inefficient) and very small reduction in unemployment.

**W8 Insufficiently developed regulatory and reporting system on health and safety at work** which is important to analyse working conditions in Macedonian firms and to protect workers (increased flexibility should be combined with greater security, including health and safety at work).

#### Opportunities (O)

**O1 In recent years, especially from gaining the candidate status, the RM is under the “pressure” from the EU for constant improvement in all areas.** The EU is helping the RM to become a full member by technical support, capacity building but, starting from 2008, the country would get IPA funds for five components: Transition Assistance and Institution Building, Cross-border Cooperation, Regional Development, Human Resources development, Rural Development.

**O2 Probable NATO membership would improve foreign investors’ perception about the Macedonia,** and would increase investments from worldwide, leading to higher growth and employment.

#### Threats (T)

**T1 Postponement of the EU integration process in Macedonia** either because of non-met criteria or because of the regional approach towards accession for the Western Balkan.

**T2 Low utilisation of available IPA funds** for the unprepared public administration for preparation of necessary documentation, or late authorisation of national bodies for the use of IPA.

**T3 Since all countries in the region compete for attracting the FDI,** there is a threat that neighbouring countries develop and reform faster than Macedonia, and hence attract main FDIs.

## Health

#### Strengths (S)

**S1 The legal framework guarantees the right to compulsory health insurance to every citizen of the country.** Every citizen deserves to live in a country with clearly given legal framework, based on which he can enjoy the right to the mandatory health insurance. The legal framework that currently exists in the Republic of Macedonia in general is clear to the people as they know their rights regarding the health insurance.

**S2 Access to health services is generally adequate.** Currently, the health infrastructure gives acceptable access to the main health services, provided to the citizens. The knowledge by the medical staff is comparable with the knowledge of the staff in more developed countries, which jointly gives presents a strength for the access to the health services.

**S3 Abundant supply of quality human capital.** In the Republic of Macedonia, there is now match between supply and demand for medical staff. The supply of human capital is greater than the demand, which is considered to be positive factor and gives impetus for the future development of this sector. Most of the transition economies are handicapped with human capital shortage in the medical field.

**S4 Basic institutional framework for effective consumer and health protection is largely in place.** In the Republic of Macedonia, primary, secondary and tertiary health services, as well as the proper medicaments supply are established. This is considered to be strength as the very expensive infrastructure is already present and there is no need to be established one more time.



**S5 Finances allocated to the Health sector are sufficient given the possibilities of the country.** Namely, the percentage of the General government budget expenditures for health is comparable with the more advanced transition economies. Though, nominally we spend less on health care, in real terms (which basically gives the possibility of the country) we spend on average as the more advanced economies.

#### **Weaknesses (W)**

**W1 Certain groups of the population are disadvantaged in terms of health insurance status and access to health services.** This is not acceptable in the present as every citizen deserves health protection. This is especially the case for the poor population, for which the state must make all the efforts to improve the access to health insurance.

**W2 The health system does not function as an integrated and coordinated system.** Most of the times, the primary health care is not used properly, and the secondary is being misused which creates congestion with the tertiary health care. This creates waste of resources as much of the work can be finished by the primary and secondary health.

**W3 There appears to be a mismatch between the demand for and supply of health services.** This weakness is in line with the previous one. When the health system does not function properly, mismatch between demand and supply for services is being created. Further more, in some parts of the country, the health services are well organized, while at the same time in other parts they are not.

**W4 Productivity and efficiency in health services provision is low.** Productivity is calculated as ratio between the expenditures for health and the quality of the services provided. Most of the cost benefit analyses show that the relation between the amount of money that the country is spending on health and the quality of the services that are being provided is not favourable.

**W5 The legal and strategic framework in a number of areas is incomplete.** Though, most of the legal framework exists, there are many problems with the execution of the laws. Some of the problems are due to the incomplete areas of the legal framework and some with the capacities of the institutions. Further more, even though there is a medium term health strategy, the fulfilment of the objectives is hard to be measured.

**W6 Institutional capacity in the Macedonian Consumer and Health Protection systems is weak.** Even though there is over supply of labour, there is continuous shortage of medical staff in the hospitals, especially doctors. On the other hand, there is significant over employment of administrative staff which is a huge burden for the system and creates low level of institutional capacity.

**W7 Health insurance payroll contributions are contributing to the large labor tax wedge and the informal sector in the country.** Out of the total gross salary, 9% are being paid for health insurance and contributes to the severe tax burden of the labour in the Republic of Macedonia. This puts Macedonia in to the group of countries with expensive labour force.

#### **Opportunities (O)**

**O1 Government commitment to reforms in the health sector.** The Government of Macedonia is clearly committed to reforms in the health sector, which are clearly stated in the Health strategy. The political will for the reforms is extremely important for successful reforms in the health sector. This commitment can be seen clearly from the government programme as well.

**O2 EU Accession process will address some of the weaknesses of the consumer and health protection sectors.** As it can be read from the Chapter 28 of the National programme for the adoption of the Acquis, the EU accession process will address some of the weakness, especially those defined on medium term. This process will make Macedonian legal framework compatible with the European one.

**O3 Awareness in the public that reforms are badly needed.** Last campaigns that the government is undertaking are giving some positive results. This gives an opportunity in the field of health sector, as a campaign for the health protection consumer rights is necessary to improve the public awareness about their rights and obligations.

#### **Threats (T)**

**T1 Despite relatively good outcomes, satisfaction with services is dismal.** Working with people is the hardest job that exists. It will take some time for the attitude of the medical staff to change and to be appropriate for the medical services consumers. This will require further campaigns and training especially for the medical staff.



**T2 The aging of the population will further challenge the sustainability of health financing.** New born babies in the Republic of Macedonia are declining every year, which will be a serious problem and a strong burden for the future generations to support the health system. Improvement of the management of the health financing is necessary to amortize the aging problem in the future.

**T3 Greater regional and EU integration will increase the need for vigilance.** The process of EU integration will increase the need for better health protection not only for the citizens of Macedonia, but also for the European citizens. This will require serious attention and care for the Macedonian government in the process of the improvement of the health system.

**T4 Regional instability is a major threat to the efforts to improve consumer and health protection.** Regional instability is continuously present in the countries of the Balkans peninsula and represents one of the major threats for the country.

## **Education**

### **Primary, Secondary and Tertiary Education**

#### **Strengths (S)**

**S1 Increased focus on education.** The 2006-10 programme of the Government of the Republic of Macedonia has education as a key area for achieving the overall objective of higher and sustainable economic growth. Education expenditures were increased in the 2007 budget, and the share of education expenditure in GDP is expected to further increase.

**S2 Well-developed school network.** The Republic of Macedonia has over 1,000 primary schools (including satellite schools), almost 100 secondary schools, four state universities and a number of recently established private universities. The fact that this basic infrastructure is already in place means that improvements in education do not require large infrastructure investment. However, improving maintenance of the school network is crucial.

**S3 Primary and secondary education is compulsory, and primary education enrolment is high.** If properly implemented, this policy should result in increased enrolments (also in tertiary education). Higher enrolments will create a larger and more knowledgeable work force.

**S4 Legislation and strategic documents are in place.** Macedonia has a strategy for education until 2015, and most primary laws in this area have been enacted. This provides a solid basis for further reforms in the sector.

**S5 Private provision is gaining momentum.** In recent years, the number of students attending private secondary and tertiary programmes has increased tremendously. Particularly in higher education, this trend has resulted in increased competition among public and private universities. This in turn leads to improved quality of education.

**S6 Membership in the Bologna process.** Macedonia has embarked upon a major reform of higher education as a part of the Bologna process. The implementation of these reforms will align Macedonia's higher education system more closely with those of the EU Member States.

**S7 Strong involvement of donors in the education sector.** A number of international and bilateral donors have been active in the education sector. Macedonia has a history of participation in EU's TEMPUS programme. The presence of donors lead to a transfer of international best practices in a number of areas within the education sector.

#### **Weaknesses (W)**

**W1 Low quality of the education system.** Macedonia has participated in a number of international assessments of students, and in all cases the performance of Macedonian students has been very low, compared both to EU countries and its neighbours. This means that focusing only on increasing enrolments will not have much results, unless reforms are made to improve the quality of education.



**W2 Insufficient resources, in particular for maintenance and capital investments.** Most of the education expenditure goes to teacher salaries and other recurrent costs, leaving insufficient amount of funds for maintenance of buildings and equipment, teaching materials and other capital investments. This is a big constraint to other reforms in the sector, e.g. introducing new teaching methods.

**W3 Mismatch between supply of skills (through VET programmes) and labour demand.** The output produced by educational institutions does not equal the economic reality. Graduates enter the labour market without the appropriate skills and competencies. Businesses find it difficult to recruit employees with required skills and spend significant resources to train new employees.

**W4 Outdated curricula and teaching methods.** One of the main reasons why graduates lack the appropriate skills is the use of outdated curricula and teaching methods in all levels of education. The substance and methods used does not respond to the needs of the modern world: they understate the importance of functional skills (e.g. problem solving and critical thinking), and do not prepare students for functioning in a knowledge based society.

**W5 Low level education in some groups (minorities, rural population).** The extremely low level of enrolment in particular groups (e.g. Roma, remote rural areas) should be of strong concern for policy makers. To achieve high enrolment rates, special focus should be put on these groups with low level of education.

**W6 Lack of implementation of legislation.** Despite the good progress made in enacting primary legislation, full implementation of the laws has not yet been achieved. This is a result of either lack of secondary legislation, or lack of administrative capacity to enforce the legislation.

#### Opportunities (O)

**O1 Introduction of ICTs through the project “Computer for all students”.** The full realization of this project will have numerous positive effects and will induce changes to other parts of the education system. For example, the purchase and use of PCs for all students will by definition require changes in the teaching methods used and will help students become IT literate.

**O2 Use of IPA funds (components I and IV) to further develop the educational system and participation in Community Programmes in this area.** Macedonia has access to all five components of the Instrument for Pre-Accession Assistance and should use the funds available to improve the education system by implementing the education strategy. The funds from component IV could also be used to promote life-long learning and to help individuals that have finished their formal schooling to further develop necessary skills. Furthermore, Macedonia can participate in Community Programmes in the area of education, which could help to align Macedonia's education system with those of the EU Member States.

**O3 VET programmes redesigned to meet the needs of businesses.** VET is an important part of secondary education, accounting for some two thirds of the students. The programmes that students are attending should be redesigned in accordance with the market demand. VET schools should develop closer relationships with the private sector in order to better determine the skills needed by businesses.

**O4 Exploitation of synergies and complementarities between different policies, including social, employment and education policy, defined in the Strategic Coherence Framework 2007-2013.** Education reforms are closely linked with the reforms in other sectors. To achieve the desired results, the reforms in the education sector must be complemented by appropriate reforms in other areas. Social and employment policies are of particular importance.

#### Threats (T)

**T1 Insufficient funding remains.** It is evident that the reforms in the education sector require additional funding in some areas. This means that the Government should provide additional resources to the education sector, or restructure expenditure in a more effective way.

**T2 Continued slow implementation of the legislation.** The implementation of the law on VET and the Bologna process has been slow. If the pace of reforms and implementation of legislation does not rise, the overall effectiveness will be limited.

**T3 Aging of the population and expected decline in the number of school-aged population.** The projected demographic trends in Macedonia raise strong concerns for the future of the education system.



The number of school-aged population is expected to decline drastically in the next two decades. The effects of the smaller number of students should be anticipated properly and addressed.

**T4 Problems could arise from the decentralized system of education.** Macedonia is currently in the second phase of the decentralization process, which includes significant transfer of competences from the central to the local government in the area of decentralization. Potential problems could arise in this process which might have negative effects on overall education system.

**T5 Over-establishment of higher education institutions results in overall low quality of education.** Whereas the increased private provision, particularly at tertiary level, is a positive development, some risks of overcrowding could arise. The number of private universities is growing each year, and if strong control and monitoring is not exercised, the quality of education could dissolve below the minimum standards established by law.

## ***SMiLEs (SMEs and Industry)***

### ***SMEs***

#### **Strengths**

**S1 Availability of educated workforce.** The existing workforce has relatively high skills and education level, especially regarding the workers with the skills from the industrial production. The potentials of the labour force in the country is strong, and can be efficiently utilized.

**S2 Potentials of creative young people.** Thanks to the improvements in the educational programs under the influence of EU declarations and our efforts for accession, as well as because of the dynamic transitional environment, creative young people have the potential of becoming the leading force in further SME development. Particularly, having in mind the number of gifted young talents as a percentage of the total population.

**S3 Existence of developmental documents at national and regional level.** Within the 17 years of transitional efforts under the technical assistance of different EU programs and under the leading position of the European Agency for Reconstruction, Macedonian authorities have developed and enacted relevant documents that provide favourable environment for development of the SME sector.

**S4 Stable macro-economic environment.** Stable and growing macro-environment facilitates the growth of the SMEs through provision of the friendly conditions of doing business in Macedonia. The low inflation rate, national reserves, and the growth rate of 5% are the basic pillars that provide favourable environment.

**S5 Legislative framework for local economic development.** The process of decentralisation as well as the adoption of relevant legislation creates huge potentials for differentiated economic development at local municipal level. Decentralization is one of the factors that will have an impact over the economic development.

**S6 SMEs adaptability to unstable economic environment.** Thanks to the viability of the SMEs they can survive and easily transform within the turbulent environment. Consequently the SMEs in Macedonian economy not only sustained but also succeeded to grow. The increased growth rate of the Macedonian economy is also due to the growth of this sector.

**S7 SMEs efficiency - fast reactions to the market challenges.** Having in mind the small size of the SME's resources they can easily and fast adapt to the market challenges, regarding their products/services differentiations, cost-cutting, pricing, networking, clustering etc. Especially having in mind that all registered SME's in Macedonia have registration for huge scope of activities (such as in production, services, exports etc.)

**S8 Possibilities for provision of good quality of the goods/services.** The uniqueness of the Macedonian civilization/cultural history and heritage since ages, good climate and fertile soils, beautiful nature and long tradition in industrial and agricultural production, Macedonian SMEs have huge potentials for provision of the good quality of whatever they produce.

**S9 Geographical location.** The cross-road position of Macedonia between the East and West is very favourable for the SMEs because of their central location and relatively low transport costs in each direction.

**S10 Good roads.** Relatively well developed road infrastructure provides easy and fast access for Macedonian SMEs to the international highways and their connection to the regional, EU and East markets.



**S11 Good communications.** Well developed telecommunication network and since 2006-2007 wireless connection to Internet, provides good communication possibilities to the SMEs.

**S12 Natural resources and beautiful nature.** Both potentials provide perspectives for the development of the SMEs within the mining industry, production or tourism and organic food production.

**S13 Well developed SME sector (99.7% of all enterprises are SMEs).** Continuously growing SME sector provides good basis for its further development especially toward horizontal/vertical networking in value-added chains. Also

**S14 Flexible, adaptable, viable, creative SME sector.** Innovations and creativity are the features of the SMEs that enforce their viability and provides potentials for recognisable achievements regarding the SD.

**S15 Dynamic attitude.** Regarding the alternative and renewable resources of energy, waste recycling, organic production etc. provides arguments for the dynamic attitude in the SME sector and its role in the SD.

**S16 Beautiful fairly undisturbed nature** gives huge potentials for development and improvement of the SMEs in tourism and organic farming.

**S17 Acceptance of the main documents of the EU regulations, regarding the SMEs role etc.** provides stable and perspective framework for further development of the SMEs streamlined with the good practice/experience in EU.

**S18 Long entrepreneurial tradition (craftsmanship).** Entrepreneurial spirit and skills are available in the country thanks to the long tradition within the craftsmanship, which provides solid basis for the sustainable development of the SME sector.

#### **Weaknesses**

**W1 Low capacity at central and local level administration to implement planned reforms/objectives.** Insufficient human resources, lack of contemporary knowledge and skills for public administration at central/local level, lack of interference and coordination between different state administrative authorities, political parties' influences in staffing etc. are only a part of the insufficiencies of the state administration that hinders and jeopardise faster and bigger growth of the SME sector.

**W2 Inactive approach of the relevant stakeholders.** Relevant stakeholders (such as state authorities, business community, NGO and civil sector) behave inactively regarding their cooperation, coordination, connection and joint involvement in creating public-private partnerships for different issues, that might contribute to the sustainable development of the SMEs.

**W3 Very often: system's changes, personal changes (state administration' human resources), non-transparent changes, insufficient information about the changes in public.** Thanks to the efforts for approximation of the national legislation to the EU, as well as thanks to the frequent changes (after each parliamentary elections) of the state administration' staff, and of course thanks to the underdeveloped practice and infrastructure for public relations, SMEs have to operate under non-transparent conditions in the business environment.

**W4 Underdeveloped practices for local economic development at municipal level.** Centralized role of the central authorities hindered development of the municipal potentials for local economic development. Although the decentralisation process is underway, it needs time for the development of favourable conditions at municipal level for provision of the local economic development, through the SD of SMEs.

**W5 Insufficient (non) financial support to SME development.** Oligopoly structure of the banking sector and underdeveloped financial market in the country, limited the financial support to the SME development, significantly. This is especially regarding the funding possibilities for SD of SMEs.

**W6 Fictive/non-existing enterprises.** Almost 2/3 of the registered SMEs do not operate although they are not deleted from the register of SMEs, thanks to the existing regulations for closing the SMEs. However this burden of fictive enterprises will be removed thanks to the so called "guillotine" process for reduction and synchronization of the laws/under-by-laws in the administrative procedures.

**W7 Unfair competition because of the grey economy-** because of the slow growth of the economy and insufficient number of jobs in the country, lot of unemployed workers (almost 37% of the working capable population) the grey economy jeopardise the competitiveness of the legal economy.

**W8 Migration (brain-drain).** There is no official evidence of the migration of the highly educated young population (brain-drain), but it is a huge obstacle for the SD of SMEs in the country because of losing the potentials of the most viable and skilled workers.

**W9. Stagnation (very slow economy growth).** The growth rate of the GDP of 3% in the last 15 years of transition didn't provide economic trigger for the faster growth of the SME sector.



**W10 Lack of locomotives of development (illusion that SMEs could be a driving engine of the economy).** The failure and bankruptcy of the previously existing big industrial companies and agrarian combinats were not substituted with new leading companies, so SMEs couldn't develop in the areas of industrial and agro industry production.

**W11 Strong competition from the neighbouring countries.** Especially those that are not in process of accession to EU or WTO, run unfair competition to Macedonian SMEs because of different subventions of different industrial and agricultural products, as well as because of preferential export-import treatment of Macedonian products, and other non-tariff barriers.

**W12 Inappropriate knowledge base of the management and sustainable development of SMEs.** Thanks to the obsolete management educational programs that dominate at the high and higher education level, there is a huge lack of contemporary management skills and knowledge for SD, which is evidenced in all relevant international assessment reports of the competitiveness of Macedonian SME sector.

**W13 Market research has not been recognized as a tool in decision making.** Thanks to the inappropriate knowledge, market research is poorly applied in the business practice of managerial levels within the SME sector.

**W14 Under-skilled work force for the new-age businesses (lack of knowledge of foreign languages, ICT technologies, obsolete education).** Although reforms in the educational system and programs are underway, the existing work-force on the labour market is not properly education regarding the requirements of the contemporary knowledge in foreign languages, ICT technologies, managerial tools etc.

**W15 Low level of technological development among the majority of the companies (innovations, alternative energy sources etc.).** Thanks to the political crises in the region and war conflicts, transfer of technology is under the level of the socialistic period. On the other hand, SMEs don't have financial capacity for R&D, and are not sufficiently supported through the financial market. The low level of technical and technology development reflects at the total level of efficiency of the SME sector.

**W16 Low level of investment (lack of ideas where to invest, short-term thinking, lack of strategic planning skills).** Dominant business logic at the SMEs level is the strategy to survive, and investment is gradual and low. Because of the lack of the legislative framework that will enforce development of contemporary funding sources (such as business-angels networks, PPP etc.), and because of the insufficient information flow in both directions (business ideas versus potential investors, rigid credit conditions within the banking sector), the existing investment level is far below the real potentials.

**W17 Very small number of firms that have implemented quality standards.** Standardization and certification processes in the SME sector are faraway from the European level and from the level necessary for the globalized market. The reasons for the lack of the quality standards in the SMEs are because of their small size and capacity to operate only at domestic market, lack of financial support from outside sources for funding the process of standardization, insufficient information about this process and insufficient supply of domestic certification institutions.

**W18 Absence of R & D (only 11% of the research projects funded by the Government, are ordered by the business sector).** Lack of finance, vision and dominant orientation at local markets in the country, contribute to the low level of R&D in the SME sector.

**W19 Inappropriate horizontal and vertical cooperation between companies.** The mentalities of the entrepreneurs as well as the lack of incentives for enforcement of the cooperation between the SMEs contribute to the individualised and separated entrepreneurial initiatives and business logic in running SMEs.

**W20 Obsession with the past.** Significant number of entrepreneurs, unemployed or laid-off workers (as technological surplus or bankruptcy), strongly believe and ask for state involvement and back-up for resolving their problems.

**W21 Insufficient energy supply.** Insufficient use of renewable energy sources, as well as limited level of the own electricity power and imported fuels put limits to the higher and faster development of the SME sector.

**W22 Non-harmonized: legislative and tax system for SMEs with the EU legislation.** Despite the efforts for harmonization of the national with EU legislation still, there is a gap between them, especially regarding the SD of the SMEs. The recent tax reductions (2007) improved significantly the favourability of the environment for investment and doing business, however the effects can be expected only in the future.

**W23 Obsolete data base for the SME sector.** Lack of proper statistical data base, harmonized with the Eurostatistics hinders in-depth and permanent assessment of the features of the SME sector, regional





or/and international comparison. All this reduces the basis for research and scientific evaluation of the SME sector with the negative impact over the development of proper strategy and policies of the Government.

### Opportunities

**O1 Membership in international associations and possibilities for regional cooperation.** Recently enacted CEFTA agreement between the countries in the Western Balkans, membership in the WTO and pre-accession status to EU, facilitates international and regional cooperation of the SME sector.

**O2 EU accession – Macedonian candidate status** provides to Macedonian SMEs possibilities for easier access to the EU market, and makes Macedonian economy more attractive for foreign investments because of it. All this will contribute to the increase of the economic potentials and bigger economic growth of the SMEs.

**O3 Transfer of know-how and experiences from EU through different programs/funds for development.** Besides the above mentioned advantages of the candidate status, another important issue is the possibility for access and inclusion in the EU networks for innovations, new technologies, SD etc. thus providing to Macedonian SMEs highly needed technology development.

**O4 Globalization.** Creation of the world market is affecting Macedonian SMEs in several ways: first of all through increase of the competition from the international companies, than through enforcement of the product/service differentiation strategies etc.

**O5 Joint ventures.** Further improvement of the business environment contributes to the potentials for joint-ventures of the Macedonian SMEs with domestic and foreign partners.

**O6 New markets.** Enhancement of the financial markets, and enlargement of the potential market for the SME sector.

**O7 More possibilities for employment.** Growth of SMEs thanks to all the above mentioned opportunities will contribute to the enlargement of the number of new jobs and new employment possibilities, that is will contribute to one of the pillars of the SD of SMEs.

**O8 Foreign funds for support of SMEs, EU RTD/IPA funds.** Not only that the expected financial support from the pre-accession funds from the EU will contribute to the enforcement of the SMEs, but even more contribution to SD can be expected.

**O9 Growth of SMEs in the service sector.** Having in mind the contemporary trends of sector development in developed economies, as well as the rising demand for different types of services in the globalized market will have impact on the growth of the SMEs in the service sector.

**O10 Peripheral EU.** As soon as Macedonia will become EU member, and yet it will be underdeveloped compared to the first 15 EU Countries, it will be attractive to FDI in the SME sector, because of easier entry conditions, lower taxation level and easier access to the EU market.

**O11 Previous markets.** The Balkan Region as well as the former Soviet Union Countries represent huge potential for the Macedonian SMEs, especially until they become sufficiently competitive to enter the more developed EU market.

**O12 Tourism development** is an underused potential for SMEs development. SMEs in this sector have potentials for much bigger growth of the existing businesses, as well as for establishment of new and diversified SMEs.

### Threats

**T1 Globalization.** The fierce competition on the globalized market might hinder the development of the SME sector, if it does not become sufficiently competitive (for example because of the competition from the developed economies, fast growing economies on the global market).

**T2 EU Policy (economic leadership), IMF and WB (double standards for the non-member countries in EU).** Double standards and non-tariff barriers might hinder the SME sector and lower it's chances for higher growth.

**T3 Environmental pollution and impoverishment of natural resources.** Lack of SD perspective in the SME sector might reduce the potentials of the country regarding the environment preservation and natural resources utilization.

**T4 Caprices of neighbouring countries.** Thanks to different historical, political and other interests and caprices in the countries in the Balkan Region, it often happens that economic cooperation on the regional basis is blocked or hindered thus limiting the growth possibilities of the SMEs.



**T5 Regional Barriers.** Formal and non-formal barriers exist because of the above mentioned reasons in the neighbouring relationships and jeopardise the market potentials of the SMEs especially regarding their sustainable development (e.g. some of the countries in the Region that are still not aware of the SD - three pillars - aspects of the SMEs thus reducing or hindering sustainable development).

**T6 Unfair competition from the neighbouring countries.** All the countries in the Region used to apply protection measures (sometimes as subventions for the host products, or different types of taxes for the imports etc. despite the bilateral agreements of Macedonia with each of them). However it is expected that the CEFTA agreement will contribute to abolish such unfair practices.

**T7 Political instability.** Since the 90-ties up till now the political instability in the Region significantly hinders SD of the SME sector.

**T8 Visa regime** limits all the potentials for bigger and faster growth of the SME sector and is a high barrier for SD of the SME sector (regarding all the three pillars: economic growth, human capital development and environmental friendly).

On the basis of the above SWOT analyses, the following levels of weaknesses in the SME sector, should be stressed and considered as very important problems which should be overcome at first, especially regarding sustainable development:

**Macro-environmental level that considers:**

- Insufficient energy supply
- Non-harmonized: legislative and tax system for SMEs with the EU legislation
- Obsolete data base for the SME sector
- Insufficient (non) financial support to SME development
- Fictive/non-existing enterprises
- Unfair competition because of the grey economy
- Obsession with the past
- Migration (brain-drain)
- Stagnation (very slow economy growth)
- Strong competition from the neighboring countries

**Macro-administrative level:**

- Low capacity at central and local level administration to implement planned reforms/objectives
- Inactive approach of the relevant stakeholders
- Very often: system's changes, personal changes (state administration' human resources), non-transparent changes, insufficient information about the changes in public

**Meso – municipal/regional/association level:**

- Underdeveloped practices for local economic development at municipal level
- Inappropriate horizontal and vertical cooperation between companies

**Micro – enterprise level:**

- Lack of locomotives of development (illusion that SMEs could be a driving engine of the economy)
- Inappropriate knowledge base of the management and sustainable development of SMEs
- Market research has not been recognized as a tool in decision making
- Under-skilled work force for the new-age businesses (lack of knowledge of foreign languages, ICT technologies, obsolete education)
- Low level of technological development among the majority of the companies (innovations, alternative energy sources etc.)
- Low level of investment (lack of ideas where to invest, short-term thinking, lack of strategic planning skills)
- Very small number of firms that have implemented quality standards
- Absence of R & D (only 11% of the research projects ordered by the business sector)



## **Industry**

### **Strengths (S)**

**S1 Macroeconomic politics.** There is a consensus in the country but also in the respective international organizations and bodies (World bank, International Monetary Fund etc.) that with the dedication for reforms good macroeconomic elements have been created and achieved, like: stable macro economy with a very low inflation rate, tax reduction, reduced taxation on income etc.

**S2 Completed privatisation.** Among other elements, it can be reported that the process of privatization has been finished (with some small exceptions) and has allowed freeing of all private initiatives toward more efficient economy.

**S3 Resources.** In the bloc of Resources, it has to be stressed that the managers with their dedication and experiences are the main driving force. Besides this human capital, there are natural resources for certain industries (metal, non-metals, geothermal water, sunshine, wind, wood, resources for the food industry).

**S4 Improved competition.** Competitiveness of the Macedonian industry has not been still improved (actually, it has been ranked lower than previous) but, there are some elements that can be identified as factors for a potential competitiveness: existence of some clusters (in the meantime, there are more than the starting five clusters), low manufacturing costs (based on all elements that build the product/services price), mobilized labour force etc.

**S5 Market liberalization.** The liberalization of the national market through the agreements in the frame of the WTO and especially the regional organization CEFTA (where the last members signed the agreement in autumn 2007) allows the Macedonian market to be considered by the investors and partners not only as a local but as a regional one.

**S6 Proximity of EU market.** The proximity of the EU market is a fact that plays a big role in the current situation and especially for the future attractiveness as an investment point (R. Macedonia increases steadily the exchange rate with the member-countries of EU).

**S7 Industry with tradition.** The industrial tradition, i.e. tradition in managing of companies in the environment that was very near to the market economy (not planned economy that was present in almost all former socialistic countries) and the respective employee, allowed quick acceptance of the rules of the market economy.

**S8 Reduced administrative barriers.** Reduced administrative barriers (like one-shop stop, or the prepared low for different administrative documents) can be also considered as a strength.

### **S9 Existence of documents dealing with the matter (for industry)**

One of the important blocs is the existence of the documents dealing with the issues for the industry. Although pretty much should be done in the near future, here some documents should be mentioned like: National strategy for small and middle-sized businesses, 2003 (in this frame, National Council for Competitiveness has been established), National strategy for Reconstruction of steel industry in R. Macedonia, 2005, Study for uncovering administrative barriers and procedures for investing and attracting foreign investments in R. Macedonia, 2003, Program for stimulation of investments in R. Macedonia, 2003 – 2006, New program for improvement of investments in Republic of Macedonia, 2007-2010, Creating and implementing the National strategy for development of the Republic of Macedonia, 2000, Frame program of economic development and reforms, 2003, Strategy for textile development, 2007, National Development Plan 2007-2009, February 2007, Program for Development of the Entrepreneurship, Competitiveness and Innovation of SMEs (2007-2010), April 2007, Strategy for the Industry Policy (ongoing project).

**S10 Decision for fighting the corruption.** Although the results are still not satisfactory, there is a consensus in the country for fighting the corruption. The political decision turns now in practical actions; there is even a big campaign in the media.

**S11 Decision and dedication to the implementation of the legislative.** The dedication to the implementation of the legislative has been realized as a first priority for the EU accession; therefore, there is not a dilemma that this process will proceed with more dynamic and appropriate results.



## Weaknesses (W)

All identified weak elements, according to their characters, have been enclosed in seven groups or blocs of elements:

- Low technology development
- Weak manufacturing factors
- Weak human factors
- Weak institutions
- Weak financial support
- Weak legislative
- Undeveloped infrastructure

**W1 Low technology development.** It should be stressed the importance of the first bloc where “Technology development” has a broad context but also a deep meaning; here are elements like absence of policies, strategies, plans, programs, priorities upon system areas, sectors, departments etc., but also elements like “no concept for replacing the shortage of locomotives in the industry” and “no horizontal and vertical links” that should imply projects and solutions for new organizational concepts making the industrial systems and especially SMEs more efficient and competitive on the market. Not less important are the elements like:

- slow dynamic in restructuring of companies (not only the ownership restructuring as many experts from the non-technical provenance usually imagined, but mainly technological, that can contribute for their efficiency and competitiveness),
- high participation of traditional industries (metallurgy, textile) that of course should not be “forbidden” but are branches where pollution and the working environment have to be controlled and improved,
- insufficient investment for development, poor implementation of EU quality standards, poor connection/collaboration with advanced foreign companies causes low level of technological innovations and sophisticated products that leads to poor participation on the World market with high-tech products and technology for the environment.

**W2 Weak manufacturing factors.** Manufacturing factors include mainly: labour force, manufacturing systems and equipment and resources (materials, energy, etc.). Because of its importance, the labour force will be separately considered. The low efficiency level of the manufacturing systems is due to: low usage of capacities, out of date equipment, low usage of industrial waste and new resources that lead to a low productiveness, low competition and low export of goods and services. Main weakness, as the EC also emphasizes (in the RENEWED EU SUSTAINABLE DEVELOPMENT STRATEGY, June 9, 2006) seems to be the low connection of the companies with educational and scientific institutions that should contribute for the needed restructuring/ improvement of the companies.

**W3 Weak human factors.** The bloc of elements that refer to the Human resources identifies the brain-drain as a very serious problem that face all the countries in a similar situation (transition, weak economy that can not absorb all the young people who finished their study). On the other side, the low investment in education and training leads to reduced educational quality, bad educated managers who are insufficient flexible for the changes and not enough capable to manage the complex operations in the companies, especially when they grow from a micro, over small to medium sized companies.

**W4 Weak institutions.** Generally, there is a lack of trust in the institutions that have been detected either by domestic and foreign experts (but also the citizens in the country who feel the effects). This statement comes from many different sides like: political impact on the economy that causes (un)fair functioning of the institutions, personal interest while making judgements, slow institutional reforms, fluctuating struggle with corruption, grey economy. In this context, a very serious weakness is the disrespect in implementing the contracts (and even laws!) by the highest institutions and the generating and implementing legitimate regulation (transfer of putting the documents in pledge in whole and than concrete measures). The identified “insufficient public administration” (especially in the Cadastre Register, Ministries), leads to a poor governmental support and, what is very important in this period when the pre-accession funds will be open for R. Macedonia, to a bad quality of managing projects/grants in the country (many ideas and projects can not be carried out as a consequence of that).

**W5 Weak financial support.** Although there is a progress in the banking system in the country, there is still a lack of financial resources with good offers. New regulation in this sector (for the foreign banks and investment funds) should contribute for a better investment flow.



**W6 Weak legislative.** The needed harmonisation of our legislative with the regulation of EU has not been still finished and on the other side there are also many examples of maladjusted legislative that leads to a conclusion of an unsatisfactory preparation for accession to EU. Insufficient effective judiciary “contributes” to insecure owner’s rights and unsettled ownership status.

**W7 Underdeveloped infrastructure.** Roads and railways are not with a respective network and quality that should enable quick and safe transport of goods and people. A big problem in this electronic era is the access to information of the companies and citizens that, in spite of many efforts, is still unsatisfactory.

#### Opportunities (O)

**O1 Candidate status of the country in EU and NATO.** The Candidate status of the country in EU and NATO is a big opportunity; the experiences of all former candidates (that are now member-states of EU) give us evidence for a big progress in all fields. This is a result of the interest of foreign investors who are always looking for new markets.

**O2 Access for Macedonian products to market with beneficiary customs rate with over 650 million customers.** The access for Macedonian products to market with beneficiary customs rate with over 650 million customers means also benefit for the current and future partners in trade and manufacturing.

**O3 Membership in international associations.** The membership in some other relevant organizations (like WTO, WHO, CEFTA etc.) is also an opportunity for improvement of the overall economy.

**O4 Transfer of technologies/knowledge.** Transfer of the existing and emerging technologies/knowledge from abroad is considered as a big factor for the progress in the whole economy – if it will be respectively managed and nurtured. In this context, some TTC (Technology Transfer Centres) at almost all universities in R. Macedonia have been already established that should facilitate this transfer.

**O5 World’s trends and their impact.** For the time being, the awareness is raising for some acknowledged world trends that could be opportunities for R. Macedonia. That is for example the organic food, the renewable energy resources, environmental protection etc. where companies should search for new products.

#### Threats (T)

**T1 Trust in RM - general context.** Trust in R. Macedonia is considered to be one of the biggest threats that comes generally as impact of some unsolved problems (the name of the country, still not marked border line, former conflicts etc.).

**T2 Unsolved status of the country, conflicts with the neighbouring countries.** These are also obstacles for a peaceful development of the country.

**T3 Unregulated pan-European accumulation of good’s origin.** Good’s origin is still not regulated on a European level and could cause negative effects for some Macedonian producers of certain goods.

**T4 Impact of the political turmoil in the country.** Following the opinions of many experts but also friends of Macedonia, this element seems to be the crucial one. Therefore, if such turmoil does not stop in the near future, it could be a threat for the whole development of the country. Actually, its impact can neglect all possible other efforts.



## ***Infrastructure and Transport***

### **Strengths (S)**

**S1 Transport corridors 8 and 10.** The sector for transport and infrastructure is branded with the two European transport corridors 8 and 10, sub-corridor 10A and the communication junction (Pan Corridor 8). The geographic location of the Republic of Macedonia, places it at the crossroads of South-Eastern Europe, making it an important transit route for land traffic between Central Europe, the Aegean Sea, the Black Sea and the Adriatic Sea.

**S2 The development of the existing road network.** The basic road infrastructure of the country is relatively well established and it can be viewed as a good basis for further modernization.

**S3 Existing air infrastructure and equipment.** Airfield infrastructure is assessed as adequate for the medium term. If we compare Macedonia with the others states in this region, the air equipment can be considered as a strong point of this sector.

**S4 Existing telecommunications infrastructure.** The relatively high level of basic telecommunication services, the ongoing liberalization in all sub-sectors as well as the Spatial Plan of RM can be also considered as strengths of the sector for infrastructure and transport.

**S5 Existing network of public utilities infrastructure.** The strength of this sector is the existing coverage of the territory with the water supply system and the sewage disposal system in urban areas.

### **Weaknesses (W)**

**W1 The former transport policy.** This can be defined as one of the main reasons for the current situation in this sector for infrastructure and transport. From the aspect of sustainable development, the forced development of the road transport and infrastructure only, can be considered as a negative feature. Also, transport and infrastructural policies are not in line with the national, regional and local development needs.

**W2 Undeveloped railway network.** Railway network in Republic of Macedonia is undeveloped. The lack of railway connections with Albania and Bulgaria is a big obstacle to increase our exports towards foreign markets and not only limited to the neighboring countries.

**W3 Current management and investments in transport infrastructure.** The realization of necessary institutional reforms in terms of management of road and railway transport and infrastructure has been identified as a strategic direction and currently is ongoing process. The Government has committed it self to a restructuring the ailing railway enterprises and ensuring its long-term viability and financial self-sufficiency. The transport sector remains in considerable need of new investment and rehabilitation.

**W4 Total suppression of the multimodal transport.** Currently the multi-modal concept and system of transport is little developed in Macedonia. Macedonia has one container terminal close to Skopje near the railway station. The terminal is poorly equipped and currently is out of order. In the Memorandum of Understanding with the SEE signed in June 2004, Macedonia is committed to promote and develop the regional and international transport of goods and passengers i.e. the multimodal transport network. So the need to develop multimodal nodes for interconnectivity and transshipments are a condition for a functional and efficient supply-chain.

**W5 Low level of safety of the road and railway transport.** Each traffic accident, especially where serious injuries or deaths result is a personal tragedy and has a major impact on productivity and implication in the health sector. The data for 2005 indicate that the number of traffic accidents increased significantly by 40% in relation to 2004. The official estimated cost of accidents to the economy was about 1.5 million euros in 2005, not taking into account the cost for recovery, permanent invalidity or death.

**W6 Improper public transportation which does not satisfy the needs of the users.** In the conditions of large cities, the need for passenger accessibility and mobility should be largely met by public transport and non-motorized transport modes which consume less energy and emit fewer pollutants per passenger-kilometer than private modes. As a result from current situation in public transport a lot of people use their own cars.

**W7 Old car fleet.** The car fleet in Republic of Macedonia mostly consists of vehicles older than 15 year. The amount of emissions from these vehicles is very large. Also old cars are very inefficient in terms of fuel consumption, air pollution, and noise.



**W8 Unsolved ownership rights of the land.** The current situation with the unsolved ownership rights of the land is considered a weakness from the aspect of investments in infrastructure

**W9 The key weakness in the telecommunications sector** is the concentration of services in the urban areas, as well as the fact that there is still monopoly in this sector.

**The public utilities infrastructure is characterized with the following weaknesses:**

**W10 Uncompleted legal framework (secondary legislation and regulations).**

**W11 Non-integrated water management.** The holistic management of freshwater as a finite and vulnerable resource, and the integration of sector water plans and programs within the framework of national economic and social policy are of paramount importance for action. The fragmentation of responsibilities for water resources development among sector agencies is proving, however, to be an even greater impediment to promoting integrated water management than had been anticipated. Effective implementation and coordination mechanisms are required.

**W12 Existing condition of the bigger part of water supply systems.** In many urban areas the current condition of the water supply systems is not satisfying in regard to the distribution network, main convey pipelines, water storage tanks, structure and other facilities. The network is mostly worn out, rather old, the capacity of the pipelines is not meeting the growing demand and are constructed of very different materials: cast iron, asbestos concrete, PVC, concrete. The results are very high losses of the total consumed water. During the last years water losses during transportation to the final consumers is between 40% - 80% (average 60%) dependently on the age, type of the pipes and the pressure in the network. In 2004 the water losses during transportation to the final consumers are on the average of 52% of the water received.

**W13 Existing situation in irrigation and drainage systems.** The irrigation schemes are mainly constructed in the period between 1958 and 1980, which means that some of them are under operation for more than 40 years. Out of the total area under irrigation 61% are irrigated by sprinkling, while 39% by other type of surface irrigation.

Due to the long operation period, not regular and on time maintenance, poor condition of some part of the irrigations schemes (canals, network, lift gates etc), small size of the farmer plots, change of the cropping pattern, irrigation schemes have low efficiency coefficient of 49% up to 78%. This is very low use efficiency of the irrigation schemes and the fact that most of the time not more than 50% of the possible areas are irrigated.

The current status of the drainage systems in the Republic of Macedonia is not satisfactory in relation to the recipients and other drainage network with its facilities, as well as the detailed canal network. As a result of malfunctioning of the drainage systems, many areas were flooded in the past. High groundwater appears on the surface and damages the agricultural production, constructions, infrastructure etc.

**W14 Existing situation in sewage disposal systems and waste water treatment.** Existing sewerage systems in major urban areas are designed to collect and convey both wastewater and precipitation water. Only 12 cities have constructed separate sewage systems. From the total number of dwellings 697,529 (Census 2002) 60% are connected to a public sewage system whereas 21% of the dwellings have septic tanks and another 12% only have a system of uncontrolled waste water discharge. The available data indicate average connection rates of about 60%. Compared with the connections to public water supply systems, there is significant difference. Almost 180.000 dwellings, which are connected to the public water supply systems, are not connected to public sewage. Currently, 6 WWTPs are constructed in the country. They serve 7 settlements with 252.000 actual inhabitants or 12.5% from total population. The efficiency of the WWTPs remains low, which in 2003 operate with the 60% of their design capacity. The main causes of the problem are routed in the incomplete/missing sewerage systems in the settlements.

### Opportunities (O)

**O1 Implementation of new ways of investing and the use of EU funds and other donors.** Transport infrastructure is financed today mostly by the state. Governments usually assume bilateral or multilateral debt from commercial banks, through the international bond markets - but, most often, from institutions such as the World Bank and regional development banks through the EBRD. Current ways of investing in the transport and infrastructure sector not offer equal condition for development of all modes of transport and infrastructure.



Implementation of new ways of investing (private investments, public private partnership) in the combination with adequate and efficient use of all other possible sources for investment in this sector will improve the condition of situation in this sector.

**O2 Development of multimodal and inter modal transport.** Development of multi and inter modal transport will increase efficiency of existing modes of transport and will increase quality of transport services. The concept of international multi-modal transport covers the door-to-door movement of goods under the responsibility of a single transport operator.

**O3 Transformation of PE Macedonian railways.** The Government has committed itself to a restructuring the ailing railway enterprises and ensuring its long-term viability and financial self-sufficiency.

The government has already started e reform process of the rail sector and the PE Macedonian Railways will be divide on MR-I (will be a "Public Enterprise" ) while MR-T will be a shareholding company with shares fully owned by the Government. This is opportunity for entering the private capital in railway transport.

**O4 Development of urban railway transport.** There is opportunity for development of urban railway transport using the existing railways lines in Skopje. With investment of 14 million euros for construction of new railway lines which will close rail ring around Skopje, Skopje can have the most unique and practical urban transport.

**O5 Application of new technologies and automation of management.** In order to increase the effectiveness and efficiency of the transport sector is necessary to implement new technologies and to establish integrated transport management in all transport sectors.

**O6 For the sub-sector for telecommunications,** a great opportunity would be if the country would become important communications junction for the neighbouring countries (Pan Corridor 8).

**O6 Development of the information society.**

**O7 Liberalization of the land line telephone communications and providing general services for Internet access at affordable prices,** implementation of digital technology in radio broadcasting sector, development and interconnection of different types of transmission networks, and investments in the infrastructure for new technologies (GPRS for the mobile and ADSL and IP for the land line telephone communications).

#### Threats (T)

**T1 Need for big investments.** Current situation show that the transport and infrastructure sector remains in considerable need of new investment and rehabilitation. Cost is pretty high even for the relative small project in this sector. Source for financing projects in this sector are very limited.

**T2 Current economic situation.** Current economic situation in Macedonia is also limitation factor for increasing the investments in transport and infrastructure sector, especially in the communal infrastructure which is responsibility of local self governments units. Financial situation of local governments in Macedonia not allow big investments in rehabilitation of existing and construction of new communal and local transport infrastructure.

**T3 Regional political instability**

Regional political instability is threats for attracting investment in this sector.

**T4 Un-preparedness of the country to use EU (IPA) funds.** Lack of the capacity in administration on local and central level for preparation of application for using IPA funds is threat for efficiency use of this fund.

**T5 Defined priorities of EU.** The R. of Macedonia is following the concept of EU Neighbourhood Policy into the transport field. The past and present transport policies are mainly focusing on development of transport infrastructure on corridor X which is defined as a priority of EU. This can cause backward development of transport infrastructure on corridor VIII.

**T6 Competition from the neighbouring countries and their priorities.** Investments which are relative high in transport infrastructure in neighbouring countries and development of modern highways, especially in Greece, are big threat which can cause Macedonia to be passed over in the main road traffic.

**T7 The risks that exist in the telecommunications sector are:** unfinished infrastructure, which can cause the country to be passed over/omitted in the international telecommunication channels, and the relatively small market.

**T8 The following risks were identified in the public utilities infrastructure and the local transportation:** limited capacities of local self government and organizational, political, and financial difficulties in the process of inter-municipal (regional) cooperation.





### 3. Macedonia's Sustainable Development Potentials

Solidly based on the discussions among and between the WGs, reported in the 11 Assessment and Analysis Reports (AARs) as of December 31<sup>st</sup> 2006, and consolidated in the Sustainable Development Framework Report (SDFR) – in particular in its chapter on *Knowledge Platform* – as of July 31<sup>st</sup> 2007, the following includes a **cross-cutting and comprehensive description of the sustainable development potentials of the Republic of Macedonia**. A detailed description of the Strategic (SWOT) Analysis of Macedonian Development in the individual sectors and cross-cutting issues is given in Chapter 2.

Sustainable Development promotes:

- ✓ **Change on focus from the expensive “products” (and external assistance) towards development driven products financed by domestic sources**

This is one of the basic elements of new ways of thinking and working. Therefore, and by formulating the National Strategy for Sustainable Development in the Republic of Macedonia, it is first of all necessary to identify the country's potentials to fully participate in the process of globalisation. As a point of departure, the *Sustainable Development Potentials* derive from the country's aggregated strengths identified in the SWOT analysis and debated in the 7 Sector Working Groups and 4 Cross-Cutting Support Units. These *Sustainable Development Potentials* provide the ground for acceleration of investments.





**1. Unique and Beautiful Natural Environment and Rich Geo-/Biodiversity.** The Republic of Macedonia can be proud of its undisturbed beautiful nature, which has become a rarity in many other European countries. The typical transition from Mediterranean to continental climate and outstanding geomorphologic scenery is a tourist attraction on its own. Since the country is still an undiscovered tourist destination, it provides an excellent basis for individually oriented and high quality tourism, which respects the principles of sustainable development.

The richness and the diversity of species and ecosystems is the basic feature of the biodiversity in the country. It results from the country's specific geographical position and its climatic, geological, geomorphologic, hydrographical, and pedological characteristics. The presence of numerous relict species and ecosystems is a testament to the significant impact of geological changes on biodiversity in the past. The richness of biodiversity is illustrated by the outstanding number of over 16,000 floral, faunal and fungal species, out of which more than 850 are endemic and through the large variety of ecosystems host more than 260 plant communities.

Many different relict and recent ecosystems are registered. Forests cover approximately 37% of the state territory and broadleaf forests are dominating. Lake ecosystems are of key importance. Although the flora, fauna and fungi are not sufficiently explored yet, analysis of the richness of the biodiversity across different European countries places the Republic of Macedonia on the very top, taking into consideration its small area. The high rate of endemism represents a special feature of Macedonian biodiversity.

**2. Potential for renewable energy sources.** The Republic of Macedonia has high potential for renewable energy sources. Being awarded the candidate status for EU membership in December 2005, *Sustainable Development Macedonia* supports the EU in reaching the binding and challenging targets of 20% RES and 10% BF by 2020 described in the European Strategic Energy Technology Plan decided by the European Council on 8/9 March 2007.

In Macedonia the total installed power for production of electricity from **hydro** power plants is 504 MW from six big hydro power plants, and 36 MW from 22 small hydro power plants. According to the Energy Balance 2006 the annual production of hydro power is around 1.5 billion kWh. An extensive list of more than 400 prospective sites was compiled, which leads to an overall potential in the order of 255 MW in capacity, and 1100 GWh in terms of annual possible energy production providing an adjacent weighted average utilization factor of 4300 hours per annum. Furthermore, the National Power Utility identified 44 potential sites with a total capacity of 174 MW and annual possible energy production of 645 GWh. For these sites, studies of some detail are available.

Macedonia is quite rich in **geothermal** sources suitable for different uses in addition to the production of electricity. The biggest part of geothermal occurrences in Macedonia is connected with the Vardar tectonic unit. There are 7 main geothermal fields in



Macedonia with 18 localities with thermal waters, and there are more than 50 springs and wells where thermal water appears. The biggest amount of thermal waters can be found up to the altitude of 400 m above sea level. Only the Kozuv Mountain springs and the Baniste wells have altitude of 600 m above sea level. Temperatures of the flows vary in range from 24-27°C to 70-78°C. The total mean temperature is 59.77°C. About 15 geothermal projects have been developed in the Republic of Macedonia during the 70's and 80's. Some of them are still in operation but others are abandoned or work below the designated capacities. Four of them are very important and have an important influence on the development and application of geothermal energy in the country. These are the Kocani geothermal project, the Smokvica and Istibanja agricultural geothermal projects, and the integrated project in Bansko.

The annual average for daily **solar** radiation varies between 3.4 kWh/m<sup>2</sup> in the Northern part of the country (Skopje) and 4.2 kWh/m<sup>2</sup> in the South-Western part (Bitola). The total annual solar radiation varies from a minimum of 1250 kWh/m<sup>2</sup> in the Northern part to a maximum of 1530 kWh/m<sup>2</sup> in the South Western part, which leads to an average annual solar radiation of 1385 kWh/m<sup>2</sup>. The climate characteristics - high intensity of solar radiation and sunshine duration, the temperature and the air humidity – provide favourable conditions for the successful development of solar energy. The continental climate with hot and dry summers makes Macedonia a country with higher potential for the utilization of solar energy than the average European country.

The **wind** potential for energy is not adequately examined in the Republic of Macedonia. Although the issue has been discussed for many years, very few references to wind energy can be found in studies and papers. Wind data are measured in meteorological stations throughout the country. Published data are scarce and in some occasions rather vague. Special measurements for the identification of wind energy potential in specific promising sites have not been carried out. Therefore the available data can only be considered indicative. The Vardar river basin from Kumanovo to Gevgelija is considered as the most favourable area for the application of wind energy. Other areas of possible importance are the Pelagonia region, Kriva Palanka, Ohrid and other mountainous areas. Also the area around Stip is one of the most favourable in terms of wind speed.

According to the energy balance for the year 2005, **biomass** contributes by 6.2 % to the gross inland consumption. Biomass, in the form of wood and charcoal is almost exclusively used in the domestic sector. Industrial or other uses are very small and represent less than 1% of the total biomass consumption. In addition, there is a relatively high potential in the country for utilizing biogas from animal manure for energy generation purposes, as well as growing crops for production of bio fuel.

**3. Huge Variety of Traditional High Quality Agriculture and Forest Products and Potential for Tourist Products.** Macedonia has some comparative advantages in agriculture, which comprise fertile soils, a range of favourable micro-climate features, natural upland pastures convenient for producing some crops, horticultural produce and lamb. About 49 percent of the total area or 1.27 million ha is agricultural land, including



about 700,000 ha of pastures. Another 37 percent of the country (950,000 ha) are forests. Most of the cultivable land (82 per cent or 461,000 ha) is used for production of cereal and other crops and vegetable gardens, 26,000 ha (5 % of the cultivable land) are vineyards, 15,000 ha (or 3 %) are orchards and the remaining 58,000 ha (10 %) are meadows.

The agricultural biological diversity encompasses a large variety of local breeds and species found among cultivated plants and animals of autochthonous origin.

Among the production of tasty and high quality vegetables, especially the early vegetables is one of the most significant potential of the Macedonian agriculture. The early vegetables come a month earlier in Macedonia than in neighbouring countries except Greece, where –however – the prices for agricultural products are higher.

Forests in the Republic of Macedonia are characterized with a rich biodiversity. Macedonia has significant non-timber forest resources: medicinal plants, mushrooms, forest fruits and game. The importance of forests is emphasized by the fact that the main part of the territory of the protected areas in the country are forests.

There is a variety of traditional high quality agriculture and forest products, and in particular certificated organic farming products, naturally form the basis of rural tourism development, such as Wine Trails and Gourmet Tourism, as well as Spa, Wellness and Selfness Tourism, the later being considered a major trigger for prosperity in the rural regions of Macedonia. Biomass energy farming and renewable energy utilization additionally contributes to the diversification of income of the rural population and shall stimulate young Macedonians to invest their gained university know-how in their home regions.

#### **4. Rich cultural heritage, traditional architecture and craftsmanship products.**

Rural tourism with branded products is an indicator of high quality regional sustainable development. Republic of Macedonia does have potentials for development of this type of tourism, because of its rich cultural heritage, the characteristic traditional architecture and craftsmanship products, the unique beautiful natural environment and rich biodiversity (see above), and the diversity of sight-seeing spots as well as the hospitality of people. Spiritual & Cultural Tourism has a well established and visible basis in particular around Lake Ohrid and Lake Prespa.

Renovation of traditional rural architecture with thermal insulation and utilization of renewable energies for individuals as well as tourism is a major job creating machine utilizing the potential of labour with construction experience.

**5. Intellectual Energy and Human Resources Base Potential.** Beyond the potential for renewable energy sources, the Republic of Macedonia possesses Intellectual Energy. Intellectual Energy together with human resource base potential is among the most important and precious natural resources for *Sustainable Development Macedonia*



in the 21<sup>st</sup> century. In this context the Republic of Macedonia shall make immediate and ultimate use of programmes related to the UN Decade of Education for Sustainable Development (2005-2014).

A country in economical transition and small like the Republic of Macedonia can neither afford to lose perspective people nor import foreign ones.. This implies that the country needs to primarily rely on its own capacities for revival of the economy and improvement of its competitiveness in the global integration processes.

Education and life-long learning is a prerequisite for promoting the behavioural changes and providing all citizens with the key competences needed to achieve sustainable development in Macedonia. Success in reversing unsustainable trends will to a large extent depend on high-quality education for sustainable development at all levels of education including education on issues such as the sustainable use of energies and transport systems, sustainable consumption and production patterns, health, media competence and responsible global citizenship.

The promotion of a prosperous, innovative, knowledge-rich, competitive, eco-efficient and socially responsible economy, which provides high living standards and full and high-quality employment, is not only a challenge throughout the European Union, but also for the Republic of Macedonia.

There is the challenge of creating an entrepreneurial society both in the EU member countries and in the countries in transition like Macedonia. The foundation for every entrepreneurial society is the creation of entrepreneurial awareness and culture among all individuals and society at large, where the main promoter should be precisely higher education. It is the higher education that contributes to human resources development and raising awareness about sustainable development, thus shaping the international image of Macedonia. Only a well educated staff can lead the sustainable development process of any country. This is why the *Sustainable Development Campus University (SDCU): A Place to Enjoy New Ways of Thinking, Inventing and Living* – to be newly established outside of Skopje – is proposed as one of the most fundamental SD Pilot Projects in Annex No. 6 (please also refer to NSSD Position Document I, Proposal for Institutional Set-up to Support the Implementation of Sustainable Development in the Republic of Macedonia, July 2007).

**6. Regional SD Potential facilitated by Pan-European Corridors X and VIII and their Sub-Corridors.** Fully in line with the renewed EU SDS (June 9, 2006) is to ensure that the Republic of Macedonia's transport systems meet society's economic, social and environmental needs whilst minimising their undesirable impacts on the economy, society and the environment.

Transport and infrastructure in the Republic of Macedonia is branded with the two Pan-European transport corridors VIII and X, sub-corridor XA and the communication junction (Pan Corridor VIII). Although the current transport and infrastructure development did not



consider Macedonia's internal needs for transport in agriculture and rural development, tourism and other sectors, but was focused on development of sections of roads in Macedonia that are parts of international corridors (corridor X), Pan-European corridors X and VIII and their sub-corridors that serve as development axes as anticipated in the Spatial Plan of the Republic of Macedonia (2004) with an outreach buffer zone of at least 50 km.

Rehabilitation and upgrading of existing main roads and building transport infrastructure is one of the preconditions to activate the regional sustainable development potential. Combined with international standard logistics services, competitive advantage can be provided even for those traditional Macedonian industries, e.g. textile and fashion production, which face global competition.

Railway transport is identified as the most acceptable from the aspect of sustainable development. Although development of the railway system has been in stagnation in the past 50 years, the Republic of Macedonia, while reviewing the situation in 1937, when the country had a railway network denser than today (30 km on 1000km<sup>2</sup> territory), shall re-consider its regional sustainable development potential.

The Republic of Macedonia has put a lot of attention on the development of the telecommunications sector. Over the recent years, a telecommunication network with modern digital technology has been introduced. Ongoing activities for the system's further modernisation are underway with the objective to create necessary conditions for future conversion of telecommunications, information technology and radio broadcasting. Again, it is the rural society and SMEs in rural regions of Macedonia who gain the greatest advantages in having access to a modern telecommunication network and internet.

**7. Stable Macro-Economic Environment, Favourable Investment Conditions and SME-based Economy.** According to the Global Competitiveness Index (GCI), Macedonia is transitioning from stage 1 (competitiveness based on the existence and exploitation of abundant production factors) to stage 2 (competitiveness based on efficiency). To highlight the factors influencing the positive transition of the country, special attention needs to be given to *Higher Education and Training (see above), Market Efficiency and Technological Readiness*.

The performance of the Macedonian economy is expressed through stable GDP growth of around 4%, low inflation rate of 2-3% on average, fiscal discipline confirmed by the international financial institutions and a well-functioning coordination between the fiscal and the monetary policy.

In 2006, the Macedonian economy grew by 4%, which was both services and industry-driven. Inflation, as measured by the Consumer Price Index (CPI), was low and stable at 3.1%. The central government budgetary deficit in 2006 was only 0.5% of the GDP, with surpluses on foreign accounts and the current account deficit around 1% of the GDP.



Furthermore, foreign exchange reserves increased to about 5 months of imports. These positive effects from a disciplined fiscal policy were reflected in the monetary policy, causing a significant reduction in interest rates, which were 8% at the end of 2005 and 5.5% at the end of 2006.

Macedonia has recently become a tax haven in Europe. The new Government introduced a flat tax of 10% for corporate and personal income. In 2007, the corporate rate is 12%, reducing to 10% thereafter. The previous corporate tax rate amounted to 15%, while personal income tax rates amounted to 15%, 18% and 24%. In order to stimulate additional foreign and domestic investment, corporate tax on re-invested profit is set at 0%.

The well developed SME sector – 99.7% of all enterprises are SMEs – is the backbone for sustainable development in the Republic of Macedonia as in all of Europe. Only SME's can be the driving engine for increasing competitiveness, economic growth and enhancing job creation. The continuous identification of synergies between SME's of various sectors, looking at both the horizontal and vertical integration and value added chains, is a challenge both on a national and regional level.

Although the low degree of technological readiness and poor firm-level technology absorption is a major concern in various reports on SME's competitiveness, already identified champions, e.g. in the production of selective coating solar panels, prove the sustainable development innovation potential.

**8. Process of Harmonization of Legislation in Compliance with EU Regulations.** On December 17<sup>th</sup> 2005, the European Council decided to grant the Republic of Macedonia candidate status for EU membership, which implies harmonisation of its legislation and policies with the EU acquis.

Based on the Analytical Report on the Opinion of the Application of the Republic of Macedonia for EU membership, November 2005, the process for harmonization of the legislation with the EU acquis is regularly monitored, the latest document being the EU Commission Staff Working Document: The Republic of Macedonia November 2007 Progress Report. In some of the sectors and cross-cutting issues relevant for sustainable development (e.g. environment, social policy and employment, SME's) notable progress is reported.



## **4. Macedonian Sustainable Development Principles, Priorities and Objectives Hierarchy**

### **4.1 Policy Guiding Principles**

**The Republic of Macedonia (RM) is committed to the Policy Guiding Principles** as outlined in the RENEWED EU SUSTAINABLE DEVELOPMENT STRATEGY June 9, 2006 – 10117/06, and will take actions for their full implementation:

#### **PROMOTION AND PROTECTION OF FUNDAMENTAL RIGHTS**

The Republic of Macedonia (RM) places human beings at the centre of the country's policies, by promoting fundamental rights, by combating all forms of corruption, discrimination and contributing to the reduction of poverty and the elimination of social exclusion.

#### **SOLIDARITY WITHIN AND BETWEEN GENERATIONS**

RM addresses the needs of current generations without compromising the ability of future generations to meet their needs.

#### **OPEN AND DEMOCRATIC SOCIETY**

RM guarantees citizens' rights of access to information and ensures access to justice. RM develops adequate consultation and participatory channels for all interested stakeholders and associations.

#### **INVOLVEMENT OF CITIZENS**

RM enhances the participation of citizens in decision-making. RM promotes education and public awareness of sustainable development. RM informs citizens about their impact on the environment and their options for making more sustainable choices.

#### **INVOLVEMENT OF BUSINESSES AND SOCIAL PARTNERS**

RM enhances the social dialogue, corporate social responsibility and private-public partnerships to foster cooperation and common responsibilities to achieve sustainable consumption and production.

#### **POLICY COHERENCE AND GOVERNANCE**

RM promotes coherence between all European Union policies and coherence between local, regional, national and global actions in order to enhance their contribution to sustainable development.

#### **POLICY INTEGRATION**





RM promotes integration of economic, social and environmental considerations so that they are coherent and mutually reinforce each other by making full use of instruments for better regulation, such as balanced impact assessment and stakeholder consultations.

#### **USE BEST AVAILABLE KNOWLEDGE**

RM ensures that policies are developed, assessed and implemented on the basis of the best available knowledge and that they are economically sound and cost-effective.

#### **PRECAUTIONARY PRINCIPLE**

Where there is scientific uncertainty, RM implements evaluation procedures and take appropriate preventive action in order to avoid damage to human health or to the environment.

#### **MAKE POLLUTERS PAY**

RM ensures that prices reflect the real costs to society of consumption and production activities and that polluters pay for the damage they cause to human health and the environment.

## **4.2 Priorities and Objectives Hierarchy**

**The Republic of Macedonia (RM) is committed to the Priorities<sup>14</sup>** as outlined in the RENEWED EU SUSTAINABLE DEVELOPMENT STRATEGY June 9, 2006 – 10117/06, and will take actions for their full implementation:

#### **ECONOMIC PROSPERITY**

Promote a prosperous, innovative, knowledge-rich, competitive and eco-efficient economy which provides high living standards and full and high-quality employment throughout the RM.

#### **SOCIAL EQUITY AND COHESION**

Promote a democratic, socially inclusive, cohesive, healthy, safe and just society with respect for fundamental rights and cultural diversity that creates equal opportunities and combats discrimination in all its forms.

#### **ENVIRONMENTAL PROTECTION**

Safeguard the earth's capacity to support life in all its diversity, respect the limits of the planet's natural resources and ensure a high level of protection and improvement of the quality of the environment. Prevent and reduce environmental pollution and promote sustainable consumption and production to break the link between economic growth and environmental degradation.

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<sup>14</sup> Referred to as 'Key Objectives' in the RENEWED EU SUSTAINABLE DEVELOPMENT STRATEGY June 9, 2006 – 10117/06, page 2.



## MEETING OUR INTERNATIONAL RESPONSIBILITIES

Encourage the establishment and defend the stability of democratic institutions across the RM, based on peace, security and freedom. Actively promote sustainable development in all regions of RM, both rural and urban, and ensure that the RM's internal and external policies are consistent with global sustainable development and its international commitments.

Based on these *four Priorities*, this National Strategy for Sustainable Development differentiates *five levels of Objectives Hierarchy* as visualized in the Objective Trees below and Annex No. 2:

- Strategic Objective,
- Key Challenges and Key Objectives,
- Overall Objectives,
- Objective, and
- Root Objectives/Results.

Naturally derived from the *Weaknesses* in the *SWOT Analysis*, the formulation and hierarchy of the Objective and Root Objectives/Results<sup>15</sup> followed *EC Project Cycle Management* methodology. Reaching the Objective means that the central problem/weakness in the sector or cross-cutting issue is solved. This will have positive effects in solving subsequently higher level Overall Objectives, Key Objectives and the Strategic Objective. However, it needs to be kept in mind that the stem of the objective tree as visualized below – which indeed is the Objective – can only grow from the roots, and this addresses step by step reaching Root Objectives/Results. Thus, the *Objectives Hierarchy Tree* (Chart No. 5) naturally grows from the roots (Root Objectives/Results). There are internal country Strengths (see Chapter 3) as well as external Opportunities which support the growth, and there are external Threats, which both which are not under our control, that hinder growth.

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<sup>15</sup> Strictly following European Commission: Aid Delivery Methods, Volume 1: Project Cycle Management Guidelines. Brussels 2004, the lowest level of objectives shall be phrased *Results*. However, and following the visualization in the Objective Tree, it appears to be more appropriate to use the terminology *Root Objectives*. In this National Strategy for Sustainable Development in the Republic of Macedonia, both terms are used on a par.



**OBJECTIVE TREE**  
**HIERARCHY**

**OBJECTIVES**  
**TIME LINE**

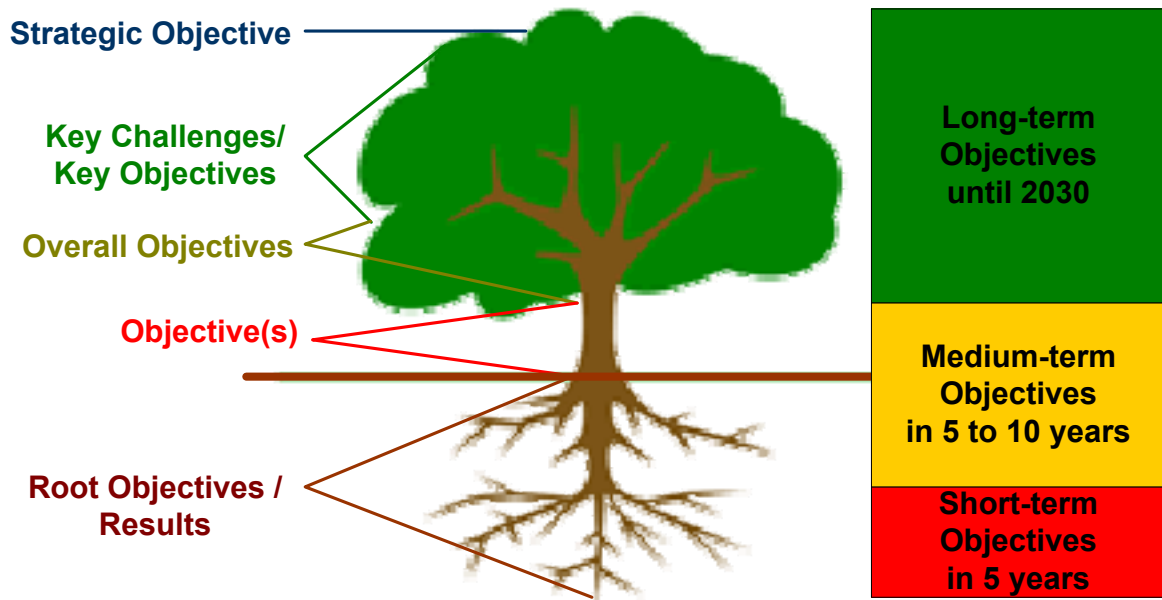


Chart No. 5: The NSSD Objectives Hierarchy Tree.

The highest level of objectives, **the Strategic Objective**

*Sustainable Development in the Republic of Macedonia, encompassing the economic, social and environmental dimensions*

shall be reached in **22 years by 2030** (see Chart No. 6). By 2030 the Republic of Macedonia shall be in the top-20 of sustainable countries in Europe, and in the top-3 in the Region. Accordingly, this National Strategy for Sustainable Development shall be fully implemented.



Chart No. 6: Three major time horizons for a comprehensive strategic framework.

In the next lower level of the hierarchy, **Key Challenges** are addressed as headlines and described as **Key Objectives** in Chapter 5. Eleven (5+6) *Key Challenges and corresponding Key Objectives* are identified and – as natural *long-term objectives* – shall be reached in the time period between **10 and 22 years**. Each of the Key Challenges and Key Objectives, whether they have been derived from the **Renewed EU SDS (June 2006)** or have been described as to be **RM country specific**, contribute to the overall implementation of the National Strategy for Sustainable Development in the Republic of Macedonia as identified and described in full detail in Chapter 5.

**Overall Objectives** are located below the Key Challenges/Key Objectives and shall be reached in the same *long-term* period between **10 and 22 years**. In the context of this NSSD Overall Objectives address the three dimensions of sustainable development – Economy, Social Issues and Environment – in the specific sector or cross-cutting issue.

The **Objective(s)** – in full detail described in Chapter 6 – are derived from the identified *core problem/weakness* within the sector or cross-cutting issue respectively. Naturally, objective(s) are *medium-term objectives* to be reached in the time period between **5 and 10 years** (Chart No. 6).

**Root Objectives/Results** – again in full detail described in Chapter 6 – are derived from the identified *root problems/weaknesses* within the sector or cross-cutting issue respectively. Towards the Objective identified in the Objective Trees (see above), Root Objectives/Results are *medium-term objectives* and shall be reached in the time period between **5 and 10 years**. In the lower part of the Objective Tree hierarchy and depending on their complexity, Root Objectives/Results are *short-term objectives* to be



reached in **5 years** (Chart No. 6). Departing from this general rule some sectors identified long-term Root Objectives/Results, which are considered to be reached only in the long-term time horizon after 10 years. This acknowledges the special situation for example in agricultural practises.

In Chapter 6, Overall Objectives, Objectives and Root Objectives/Results are described in full detail and accompanied by *Strategic Measures* to be taken.

Having prepared this National Strategy for Sustainable Development (NSSD) in the Republic of Macedonia, we are well aware of the fact that only the first step is done to build *Sustainable Development Macedonia* by 2030. Now, we need to **shift our focus towards the implementation of the NSSD, and by this we safeguard the country's EU-accession process.**

Many strategies prepared before lack the participatory approach of preparation and even more strategies were prepared for the book shelf only. Keeping this in mind and having learned lessons from other strategic planning processes, we are convinced that we need to keep on moving ! This is why the NSSD Project Team **with purpose does not** combine its hierarchy of objectives (Chapter 4.2) with a *Plan of Action*. We rather propose *Strategic Measures*, which are understood as immediate Government and other stakeholder actions to reach the outlined objectives in the Objective Trees (Annex 2) and Chapter 6. It is our perception that other strategies indeed failed to be implemented, because it was the understanding of decision makers that 'everything is finalized'.

The implementation of this NSSD is a stepwise process of addressing the various objectives and results. Each result might define a project of its own – starting from the Root Objectives/Results and consequently working upward in the Objective Tree; or it is a set of results in a certain component, which naturally defines a project. However, and not having any funding on-hand for the time being, it is too early to prepare an Plan of Action, which by necessity needs to reflect the available financial and human resources in order to be realistic.

Nevertheless, the NSSD Project Team in this strategy offers **two paths in parallel to motivate in-time implementation. First, there are 'SD Pilot Projects'** (Annex 6) that shall bridge the natural gap between the strategy preparation and its implementation, and it is envisaged that these projects in their majority serve as 'touchable' demonstrations for creating awareness of what is envisaged in the NSSD as a whole. Secondly, and this is what is described in detail in Annex 8, we propose a **NSSD implementation following three essential steps:**

- 1. Starting point: Consolidated definition of the results and timeline;**
- 2. Overall list of projects;**
- 3. Project proposals addressing short-term results (and its financial sources).**

**It is in step 2 and 3 to formulate target-orientated actions, and finally a *Plan of Action*.**



With this approach we ensure that the implementation process keeps up the participatory planning process momentum gained during the past two project years, and at the same time is viable, realistic, appropriate and operational.

## 5. Macedonian Sustainable Development Vision and State Mission: Key Challenges and Key Objectives

Until recently, authors of National Strategies for Sustainable Development have enjoyed all freedom, enabling them to develop strategies that are adjusted to the requirements, the development and the actual circumstances only in the country. However, the situation, at least in the European context, changed in a way when after intensive public consultations the **Renewed EU SDS** was presented in June 2006. This renewed EU SDS demonstrates that Europe is putting its own house in order and is providing international leadership.

By acknowledging the consolidation process in an EU context, and after the Republic of Macedonia was awarded the candidate status for EU membership in December 2005, the NSSD Project Team decided to firmly anchor its strategy at the EU level, but at the same time emphasize the countries' specific key challenges and key objectives. Therefore, the **5+6 Key Challenges and corresponding Key Objectives** together are regarded as two sides of the same medal which form the heart of the vision for Macedonia's future.

By choosing this approach to describe the Macedonian Sustainable Development Vision and State Mission for the future, sectoral planning is left behind and we rather follow the picture of a mosaic: The famous mosaic from Heraklea makes us aware that the individual stones with different colours (sectors) need to be composed in order to display the attractive motives. Hence, the motives and their perfect balance visualize our sustainable development vision and state mission for a better quality of life.

### 5.1 Key Challenges and Key Objectives

#### **RM 1: Good Governance and Better Policy-Making**

Key Objective: To set out an approach for Good Governance and Better Policy-Making based on better regulation and on the principle that sustainable development has to be integrated into policy-making at all levels. This requires all levels of government to support, and to cooperate with each other, taking into account the different institutional



settings, cultures and specific circumstances in the different regions of the Republic of Macedonia.<sup>16</sup>

## **RM 2: Diversification of Income in Rural Regions and Sustainable Development Challenges**

Key Objective: To actively promote sustainable development in order to diversify the income in the rural regions of RM, to generate regional added value-cycles, to facilitate regional and urban sustainable development spatial planning, and to ensure that the Government of the RM's internal and external policies are consistent with global sustainable development and its international commitments.

## **RM 3: Economic Prosperity and Job Creation**

Key Objective: To contribute to increasing competitiveness, economic growth and enhancing job creation by performing necessary structural changes which enables the economy at various levels to cope with the challenges of globalisation by creating a playing field in which dynamism, innovation and creative entrepreneurship can flourish whilst ensuring social equity and a healthy environment.<sup>17</sup>

## **RM 4. Sustainable Human Settlements**

Key Objective: To improve the social, economic, and environmental quality of human settlements and the living and working environments of all people.

## **RM 5: Cross-Cutting Policies contributing to the Knowledge Society**

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<sup>16</sup> In this respect Government institutions at all levels should ensure that major policy decisions are based on proposals that have undergone high quality Impact Assessment (IA), assessing in a balanced way the social, environmental and economic dimensions of sustainable development and taking into account the external dimension of sustainable development and the costs of inaction. Other tools for better policy-making include ex-post-assessment of policy impacts and public and stakeholders participation. Government institutions at all levels should make wider use of these tools, in particular IA, when allocating public funds and developing strategies, programmes and projects.

<sup>17</sup> In this context investments in human, social and environmental capital as well as technological innovation are recognised as prerequisites for long-term competitiveness and economic prosperity, social cohesion, quality employment and better environmental protection.



Key Objective: To stimulate development of a Knowledge-based Society in the Republic of Macedonia which will embody citizens with the key competencies and functional literacy that determines global competitiveness, and will develop citizens' attitude towards sustainable development.<sup>18</sup>

### **EU 1: Climate Change and Clean Energy**

Key Objective: To limit climate change and its costs and negative effects to society and the environment.

### **EU 2: Sustainable Transport**

Key Objective: To ensure that our transport systems meet society's economic, social and environmental needs whilst minimising their undesirable impacts on the economy, society and the environment.

### **EU 3: Sustainable Consumption and Production**

Key Objective: To promote sustainable consumption and production patterns.

### **EU 4: Conservation and Management of Natural Resources**

Key Objective: To improve management and avoid overexploitation of natural resources, recognising the value of ecosystem services.

### **EU 5: Public Health**

Key Objective: To promote good public health on equal conditions and improve protection against health threats.

### **EU 6: Social Inclusion, Demography and Migration**

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<sup>18</sup> Success in reversing unsustainable trends will to a large extent depend on high-quality education for sustainable development at all levels of education including education on issues such as the sustainable use of energies and transport systems, sustainable consumption and production patterns, health, media competence and responsible global citizenship.





Key Objective: To create a socially inclusive society by taking into account solidarity between and within generations and to secure and increase the quality of life of citizens as a precondition for lasting individual well-being.

## **EU 7. Global Poverty and Sustainable Development Challenges**

Key Objective: To actively promote sustainable development worldwide and ensure that the European Union's internal and external policies are consistent with global sustainable development and its international commitments.<sup>19</sup>

### **5.2 Sustainable Development Synergies between Sectors and Cross-Cutting Issues**

By firstly activating the country's inherent SD Potentials as comprehensively described in Chapter 3, *sustainable development* further on is very much based on a harmonic and synergetic development of various sectors and cross-cutting issues. To identify synergies between two and more sectors/cross-cutting issues, to implement modern day spatial planning and thus facilitate coordinated SD investments is of utmost importance for the Sustainable Development of the Republic of Macedonia as a whole.

The following table takes up the catalogue of Key Challenges and Key Objectives for the Republic of Macedonia as formulated above and provides the first overview of the *identified synergetic Key Challenges* between various sectors and cross-cutting issues, thereby highlighting the **change of perspective from sectoral planning towards integrative planning**.

*For example, Climatic Change and Clean Energy are no longer a Key Challenge for the classical Energy Sector alone, but at the same time are of vital interest for Agriculture & Rural Development, Employment, Environment, Forestry & Rural Development, Infrastructure & Transport, Policy and Legal Issues, SMiLEs, Social Issues/Education and Tourism. This, in fact, demonstrates the economic, social and environmental benefits in parallel.*

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<sup>19</sup> EU 7 is taken up and reformulated as **RM 2 Diversification of Income in Rural Regions and Sustainable Development Challenges** according to the specific situation of the Republic of Macedonia.



	Agriculture & Rural Development	Employment	Energy	Environment	Forestry & Rural Development	Infrastructure and Transport	Policy and Legal Issues	SMEs (SMEs and Industry)	Social Issues / Education	Social Issues / Health	Tourism	RM Priorities
<b>RM 1:</b> Good Governance and Better Policy-Making	☺	☺	☺	☺	☺		☺	☺	☺	☺	☺	<b>10</b>
<b>RM 2:</b> Diversification of Income in Rural Regions and Sustainable Development Challenges	☺	☺	☺	☺	☺		☺	☺	☺	☺	☺	<b>10</b>
<b>RM 3:</b> Economic Prosperity and Job Creation	☺	☺	☺	☺	☺		☺	☺	☺	☺	☺	<b>10</b>
<b>RM 4:</b> Sustainable Human Settlements	☺	☺		☺	☺	☺	☺	☺	☺		☺	<b>9</b>
<b>RM 5:</b> Cross-Cutting Policies contributing to the Knowledge Society	☺	☺		☺			☺	☺	☺	☺	☺	<b>8</b>
<b>EU 1:</b> Climate Change and Clean Energy	☺		☺	☺	☺	☺	☺	☺	☺		☺	<b>9</b>
<b>EU 2:</b> Sustainable Transport	☺	☺	☺	☺	☺	☺	☺	☺	☺		☺	<b>10</b>
<b>EU 3:</b> Sustainable Consumption and Production	☺		☺	☺	☺	☺	☺	☺	☺	☺	☺	<b>10</b>
<b>EU 4:</b> Conservation and Management of Natural Resources	☺			☺	☺	☺	☺	☺	☺		☺	<b>8</b>
<b>EU 5:</b> Public Health	☺	☺		☺	☺	☺	☺	☺	☺	☺	☺	<b>10</b>



	Agriculture & Rural Development	Employment	Energy	Environment	Forestry & Rural Development	Infrastructure and Transport	Policy and Legal Issues	SMiLEs (SMEs and Industry)	Social Issues / Education	Social Issues / Health	Tourism	RM Priorities
<b>EU 6:</b> Social Inclusion, Demography and Migration	☺	☺			☺		☺	☺	☺	☺	☺	<b>8</b>
<b>Total</b>	<b>11</b>	<b>8</b>	<b>6</b>	<b>10</b>	<b>10</b>	<b>6</b>	<b>11</b>	<b>11</b>	<b>11</b>	<b>7</b>	<b>11</b>	

Table X: Sustainable Development Synergies as identified from the Review of the *Key Challenges and Key Objectives* in the Objective Trees prepared by the NSSD in Macedonia Working Groups (see Chapter 6 for details).

**First of all**, the identified Sustainable Development Synergies *technically* result in the following **Top 5+6 Ranks of RM Key Challenges priorities:**

1. RM 1: Good Governance and Better Policy-Making
1. RM 2: Diversification of Income in Rural Regions and Sustainable Development Challenges
1. RM 3: Economic Prosperity and Job Creation
1. EU 2: Sustainable Transport
1. EU 3: Sustainable Consumption and Production
1. EU 5: Public Health
2. RM 4: Sustainable Human Settlements
2. EU 1: Climate Change and Clean Energy
3. EU 4: Conservation and Management of Natural Resources
3. EU 6: Social Inclusion, Demography and Migration
3. EU 7: Cross-Cutting Policies contributing to the Knowledge Society.

By acknowledging the fact that all priorities closely meet each other with values between 8 and 10, this ranking in a way reflects the **actual state-of-the-art discussion in the various Working Groups**. For example, at present, *Diversification of Income in Rural Regions and Sustainable Development Challenges* can expect major support by Results and Measures formulated in 10 out of 11 sectors and cross-cutting issues. However, this perception might change and other Key Challenges will become equally or even more important. After the Government of the Republic of Macedonia enacts the present NSSD and the public debate is fully unfolded, future regular updates of the NSSD shall review the ranking of RM's Key Challenges priorities.

**Secondly and on the other hand**, the Sustainable Development Synergies in Table X help to identify **three Strategic Trust Building Blocks of Sustainable Development**



**Macedonia** that contribute to all SD Key Challenges and corresponding Key Objectives as outlined above. These Strategic Trust Building Blocks are:

- ✓ **Small and Medium Enterprises, which today make up 99.7% of all enterprises in the country, and in the future some of these might develop in Large Enterprises;**
- ✓ **Policy and Legal Issues;**
- ✓ **Education, understood as a life-long learning process, which uses modern day Information and Communication Technologies.**

Hence, the **Strategic Trust Building Blocks** shall receive major attention and shall be multipliers in order to meet the Key Challenges and Key Objectives. Strategic Measures that are designed within the three Strategic Trust Building Blocks (see Chapter 6 for details) are expected to have the greatest impact to stimulate Sustainable Development Macedonia, and this refers in particular to SMiLEs, which are considered to be the backbone for e.g. *Diversification of Income in Rural Regions* with a wide palette of business opportunities and creating jobs ranging from innovative environmental technologies, energy saving products and services, renewable energies production, (wellness) rural tourism services, healthy food production, eco-remediation services to social care for an aging population.

**Thus, SMiLEs in the rural regions of the Republic of Macedonia come in focus for Sustainable Development and this should also motivate a reverse of migration process of young well-educated students from Skopje to the rural regions and make the entrepreneurial spirit flourish.**

All three Strategic Trust Building Blocks have in common that they are closely connected with **Information and Communication Technologies (ITC)**. SMiLEs in the 21<sup>st</sup> century shall utilize the Internet as a Virtual Market for offering their products on a global scale and to communicate with their clients. This naturally addresses SMiLEs operating in tourism. Central Government institutions as well as Municipalities shall use e-Government to offer professional services for their citizens and involve them in participatory decision-making. For any kind of spatial planning Geographic Information Systems (GIS) are imperative in the 21<sup>st</sup> century. Life-long learning – throughout all ages and generations – can best be provided by offering e-Learning products, which in return shall be designed by innovative SMiLEs.

**Thirdly**, the detailed evaluation of the objectives and results as outlined in Chapter 6 and at regrouped here under the 5+6 Key Challenges provides a comprehensive picture of what variety of objectives/results need to be reached in the following 22 years to come, and this in particular addresses **SD Innovations blooming from the countries' SD Potentials as well as Investment Needs and Investment Opportunities.**



Mind Mappings (Annex No. 1) visualize the synergies between various sectors and cross-cutting issues, and design the **Sustainable Development Road Map for the Republic of Macedonia**.

### 5.2.1 Good Governance and Better Policy-Making

*The Key Challenge Good Governance and Better Policy-Making Challenges and its corresponding Key Objective is addressed and supported with the Objectives and Results formulated in various sectors and cross-cutting issues:*

The concept of good governance has been widely discussed on the global forum over the last decade, especially with regards to the world's progress towards sustainable development (SD). The three SD pillars' structure (economic, social and environmental ones) imposes a large variety of cross cutting issues that need to be efficiently managed to provide sustainable results. Therefore, the processes of decision-making and implementation of policies and legislation needs to be upgraded to the level of good governance that would provide an efficient and effective performance and sustainable outcomes. The shift towards good governance is a demanding process that presumes introduction of an integral policy-making based on the participatory principle, respect of the best interests of the society and the rule of law, increased transparency, responsiveness and accountability of the institutions and higher efficiency and effectiveness of decision-making and implementation of policies and legislation.

Good governance aiming at SD should ensure achievement of a sustainable economy, which provides prosperity and opportunities for all; accomplishment of a strong, healthy and just society meeting the diverse needs of the stakeholders; and sustainable use of the resources within the environmental limits. These are long-term objectives requesting sustainable governance, as well. In that respect, promoting effective, participative systems of governance focused on engaging citizens' creativity, energy and diversity is also an objective of good governance. SD governance tackles all present generations and bears large responsibility for the future generations, imposing an obligation to the policy-makers to provide science-based governance and to work towards building a knowledge society.

The problem of installing good governance systems with regards to SD is present even in the advanced countries, but more pronounced in countries with lower capacities and experience in this area. The Republic of Macedonia belongs to the latter, as the concept of SD is poorly integrated in its governance system. The Constitution of the Republic of Macedonia enshrines the main philosophy of SD and stipulates equal economic and social opportunities for all citizens, as well a specific protection for natural resources and biodiversity. Nevertheless, the processes of decision-making and implementation of policies and legislation in the Republic of Macedonia reflect limited awareness about SD at all levels of governance and society, absence of SD policy, insufficient co-operation among the policy-makers from different sectors and top-down approach of policy-making that cause difficulties to incorporate the SD dimension in the sectors' policies. The relevant national authorities mostly create the economic, social and environmental



policies individually, rarely providing for SD cohesion among the policies. In addition, there is lack of such cohesion in respect to the sectors' legislation, as it insufficiently includes the SD dimension.

Considering the current situation, the main challenges in installing good governance practises for SD in the Republic of Macedonia are the following:

- To raise public awareness for SD at all levels of governance and society;
- To create a sound SD policy, based on an integral SD policy-making approach;
- To increase policy coherence through integration of the SD dimension in sectors' policies;
- To accelerate the process of harmonisation with the EU acquis, with respect to SD;
- To strengthen public administration capacity for SD;
- To ensure implementation of the policies and legislation for SD.

Limited **awareness about SD** in the Republic of Macedonia imposes a need for actions towards its increase. Understanding of the SD concept at all levels of governance and ensuring continuous training and specialisation of relevant staff by policy areas (covering economic, social and environmental perspectives) is a precondition for designing and implementing a proper SD policy. Moreover, raising awareness about SD should target all sectors of the society, from business entities to non-governmental organizations and citizens. Individuals are the core element of SD and only aware, well-informed and trained people could contribute to achieving a strong balance between economic growth, social prosperity and a healthy environment.

Elaboration of the National Strategy for SD will enable **formulation of the SD policy**, but substantial efforts need to be focused on its enforcement. The Republic of Macedonia is committed to the Policy Guiding Principles as outlined in the Renewed EU SDS as of June 2006, such as Promotion and Protection of Fundamental Rights, Solidarity within and between Generations, Open and Democratic Society, Involvement of Citizens, Involvement of Business and Social Partners, Policy Coherence and Governance, Policy Integration, Use of Best Available Knowledge, Precautionary Principle and Make Polluters Pay.

The three pillars structure and variety of SD cross-cutting issues that occur across different sectors, over a short and a long time frame, impose a need of an integral policy-making approach and adequate institutions. The integral policy-making approach is based on better regulation and on the rule that SD should be integrated into policy-making at all levels. In this respect, all institutions should ensure that major policy decisions are based on proposals that have undergone high quality Impact Assessment (IA), assessing in a balanced way the social, environmental and economic dimensions of SD and taking into account the external dimension of sustainable development and the costs of inaction. Other tools for better policy-making include ex-post-assessment of policy impacts and public and stakeholders (lack of) participation. Bearing in mind worsening environmental trends, the economic and social challenges of the Republic of



Macedonia coupled with new competitive pressures and new international commitments, an integral policy approach is crucial for proper dealing with the key challenges of SD.

Macedonian key challenges for SD correspond to the challenges identified in the EU Strategy for SD: climate change and provision of clean energy; sustainable transport; sustainable consumption and production; conservation and management of natural resources; public health; social inclusion, demography and migration; global poverty and sustainable development challenges, along with the specific Macedonian challenges: good governance and better policy-making; diversification of income in rural regions and sustainable development challenges; economic prosperity and job creation; sustainable human settlement and cross-cutting policies contributing to knowledge society. Accomplishment of the sustainable management of these challenges is closely related to the **level of policy coherence among sectors' policies**. Although the SD policy provides main strategic directions for SD, many areas relevant for SD remain within the sectors' competences, but the existing sectors' strategic documents do not sufficiently include the SD dimension. This is clearly evident within the economic and social pillars. Enforcement of the SD policy should imply revision of the existing strategies from a SD perspective and inclusion of the SD component in further elaboration of strategic documents at the national level. Policy coherence should be particularly focused on embedding environmental protection in the economic and social strategic documents, optimal use of energy sources, enforcing a favourable yet sustainable business climate for economic prosperity and job creation in agriculture, industry and services, ensuring better demographic trends and utilisation of human capital, improved social inclusion and health protection for all citizens, as well as advanced education with respect to SD. Policy coherence among sectors' policies could also be analysed from the perspective of practices of policy-making processes and outcomes, as a vital part of the good governance. In this context, increased policy coherence presumes policy-making based on a participatory principle as stipulated in the Agenda 21, transparency and accountability, along with effectiveness and simplicity of the regulatory acts. Furthermore, policy coherence with respect to SD should be ensured among the policies within one sector or pillar, especially if they encompass many policies. Increase of the policy coherence requires proper institutional set-up for SD, qualified staff and strong cooperation among the relevant institutions. The same applies to the legislation.

Absence of a complete and relevant legal framework is a serious obstacle to the process of SD in the Republic of Macedonia, taking in consideration the time frame needed for its completion and enforcement. The complexity and size of the EU acquis, together with limited administrative capacity of the relevant institutions for harmonisation of the regulation with the EU acquis produce a situation of lagging behind in setting up the necessary regulations for SD. The situation is especially critical in the economic and social pillar, while the basic environmental legal framework is in place, although its implementation is not supported with the necessary secondary legislation and institutional set-up. Therefore, **the process of harmonisation of the legislation to the EU acquis needs to be accelerated**. The harmonisation of the primary legislation is



scheduled with the National Programme for Approximation of the Acquis (NPAA) and follows a certain dynamic, but most often the enforcement of the primary legislation is not possible without secondary legislation and its completion needs to be accelerated. The other problem related to the legislation is the narrow speciality of the lawmakers in particular fields that usually do not provide inclusion of the SD component in the sectors' regulation. Training and education for SD could contribute to alleviation of this problem, as well as use of technical assistance from more advanced countries.

Identified weaknesses in policy-making practises and legislation drafting, as well as in their implementation are largely attributable to the insufficient and/or inadequate public administration capacities specialised for SD. In addition, there is a general problem with the efficiency and effectiveness of the public administration service delivery, especially with regards to multi-sector issues, such as SD. Therefore, advancement of the SD process is inevitably related to **strengthening the public administration capacity for SD**. General knowledge about the SD concept should be acquired at all governance levels, while in-depth knowledge and specialisation by policy areas should be acquired by the staff directly working on SD issues. Capacity strengthening should be done with respect of ensuring sustainability of the capacities, i.e. coupled with proper human resource policy in the institutions at the central and local level providing for valuation of knowledge and skills as primary criteria, as well continuous specialisation of the staff and active use of the acquired skills. Furthermore, **strengthening the cooperation among the relevant institutions for SD** is another aspect of reinforcing the institutional capacity for SD and better usage of the human capital in the public administration.

Strengthening the public administration capacity and cooperation among the relevant institutions is also crucial for **implementing the policies and legislation for SD**. The current situation with regards to the policy and legislation implementation could not be assessed as satisfactory. This particularly refers to the implementation of strategic documents and legal acts that partially or completely regulate multi-sector issues. Considering the novelty of the SD concept in the Macedonian governance system, creation of a coherent policy and legal framework for SD is necessary. For that purpose, already mentioned goals - formulation of a SD policy, increase of the policy coherence among sectors' policies and acceleration of the process of harmonisation of legislation are necessary steps, along with proper institutional set-up. If institutions are inadequate, the country will hardly advance far towards a future that is economically, socially and ecologically sustainable.

Relevant and properly staffed institutions are vital to pursue a SD policy, to structure interactions in the field of SD, to provide ground rules, and to coordinate the activities of all stakeholders, including citizens. In this context, **institutional set-up for SD** should be based on clarified responsibilities among the sectors' institutions with regards to SD, identified SD synergies and mechanisms for cooperation, effective and efficient communication among the institutions, as well as strong cooperation. In addition to the proper institutional set-up, a step forward, towards provision of sustainable results from implementation of the policies and legislation, is **introduction of an e-government**. The Republic of Macedonia has already started an e-governance project with the objective to





develop online access of public services to citizens and businesses. It is a precondition for providing efficient public services, as well for building a competitive and dynamic knowledge-based economy, capable of sustainable economic growth and greater social cohesion. E-government is a sign of an increased openness of the public administration contributing to a stronger participation of the general public, but its usage is likely to be highly correlated with the overall access rate the population has to the internet. Therefore, a governance system introducing e-government should also provide better, easier, and inexpensive internet access for all citizens.

Proper and prompt addressing of the main challenges to install good governance practise for sustainable development in the Republic of Macedonia is necessary. Good governance leads to stronger development and also, stronger development leads to stronger governance. Therefore, **actions must be undertaken immediately to ensure competent and sustainable management of the country's resources and affairs** in a manner that is open, transparent, accountable, equitable and responsive to people's needs. Only such an approach, combined with a strong administrative, financial and personal commitment for sustainable development at all levels of governance and society would ensure a balanced economic prosperity, social cohesion and preserved environment for the present and future generations of the Republic of Macedonia.

#### Strategic Measures

##### Key Challenge Good Governance and Better Policy-Making:

1. Increase the public awareness for SD at all levels of governance and society;
2. Formulate a sound SD policy, based on integral SD policy-making approach;
3. Increase the level of policy coherence among the sectors' policies through integration of the SD dimension into policy-making at all levels;
4. Promote a policy-making practise based on the principles of good governance;
5. Accelerate the process of harmonisation with the EU acquis, with respect to SD;
6. Increase the public administration capacity for SD;
7. Strengthen the cooperation among relevant institutions for SD;
8. Ensure the implementation of policies and legislation for SD;
9. Provide more efficient public services via a strong e-government system.



## **5.2.2 Diversification of Income in Rural Regions and Sustainable Development Challenges (DIRRSDC)**

*The Key Challenge Diversification of Income in Rural Regions and Sustainable Development Challenges and its corresponding Key Objective is addressed and supported with the Objectives and Results formulated in various sectors and cross-cutting issues:*

### **5.2.2.1. The Macedonian 21<sup>st</sup> century synergism of good traditional knowledge and new technologies**

Until today the rural regions of Macedonia are fairly underestimated in terms of their sustainable development potentials as well as in terms of their potential to considerably contribute to economic prosperity and job creation for the benefit of all citizens. Although we have the general feeling that rural regions with their attractive and inspiring natural environments can offer a better quality of life, all the focus is on Skopje, and in particular young educated generations there tend to wait and hope for well-paid job opportunities to arise, if they don't use the capital as a stepping stone to leave Macedonia forever.

This trend of unsustainable development needs to be reversed. Lessons learned from other regions in Europe teach us that the future of countries is rather allocated in the rural countryside than in the cities. Modern information and communication technologies (ITC) today make it possible to produce and offer services in a beautiful natural environment rich in bio- and geo-diversity. Such an environment provides the playing field in which dynamism, innovation and creative entrepreneurship can flourish whilst social equity and a healthy environment are ensured.

It is our overall objective to improve agriculture and the rural economy, and to develop balanced rural regions, socially and environmentally. Sustainable agriculture and integrated regional rural development is our central goal and this means diversifying the income in rural regions, generating regional added value-cycles, and facilitating integrated regional and urban sustainable development spatial planning.

In fact, to have diversified income opportunities is nothing particularly new and it is a well-known strategy of risk minimization in many societies. Sometimes, it is good enough to just listen to our grandparents and incorporate their knowledge and experience, which in terms of sustainable development might be more practical than any academic study or technical report. By saying this, we do not promote going back to our grandparents' lifestyle, but with sustainable development in the 21<sup>st</sup> century, we do promote the synergism of good traditional knowledge and new technologies invented in a 'globalised' world. Thus, globalization provides us the best practical examples for regional and local prosperity. By heading towards the EU we need to shift our focus from quantity to quality.



#### **5.2.2.2 Macedonians - future partners of their own national forestry**

Although the people think that the only role of the forestry is providing timber and full wood, they are wrong. There are 12 sectors and services in the frame of the P.E. "Macedonian forests" and they are: Sector for silviculture, protection and forest ecology, Sector for commercial working, Sector for development, investments, plan and analysis, Sector for economic and financial matters, Sector for forests utilization and primary wood processing, Sector for legal, personnel and general affairs, Sector for forest management planning, Sector for hunting and hunting tourism, Service for marketing and information, Service for internal audit, Service for forest guarding and IT service. It means that forestry is able to create a lot of activities which will lead toward economic and social prosperity in the rural areas in Macedonia, such as: game tourism, mountain tourism, fishing, gathering of non wood products (medicinal plants, mushrooms, forest fruits etc.) etc. Many people from certain rural regions could find their source of existence participating in those activities of the forestry. Also, they could be partners with the forestry through their SME's. A very good example of such an organization is the forestry unit "Malesevo"-Berovo. They have the capacity for ransom and storing of: forest seeds, medicinal plants and lichens. Also, they have a small hotel and factory for extraction of etheric oils. A lot of people from that region, mostly from the rural areas, have found their existence working in those capacities permanently or temporarily.

There is also a possibility for production of souvenirs or toys made from wood.

Taking the previous into consideration, with application of appropriate methodologies for determination of the capacities of non-wood products, preconditions will be secured for their planned use, without any negative effects on the environment. The main role in these activities will include the local population from certain rural areas.



### **5.2.2.3. Macedonia's unique environment precious with "originality of life and fairly undisturbed nature"**

Many of our rural areas have good potentials to improve their future development as an opportunity "to become alive again". Among them, after agriculture as the primary sector for contributing to such achievement, tourism is also identified as a very important part of the chain of rural development. As a socio-economic activity that involves different sectors (transport, communications, food and beverage, infrastructure, etc.) tourism can give significant input to rural areas' development as complementary income alongside more traditional agricultural activities. In addition, it is very closely connected to innovation and increased variety of tourist offers.

By introducing new ideas for farmers to invent a wide variety of "entertainment farming" options, tourism can make a strong socio-economic contribution in rural areas. Agro-entertainment and tourism is a new, highly consumer-oriented type of tourism that may offer additional activities for diversification and stabilization of farm incomes. Organic farming, organic and healthy food production, and particularly traditional production of some products (i.e. cheese, wine), honey production, herbs farming, etc. The mentioned aspects are of high importance, and at same time very good basis for developing wine trails/wine tourism and rural tourism with different types of activities, for example "rural life practicing", "farm-life practicing", "entertainment farming", etc. This concept is actually developed on such issues where all elements are put in favour of enabling tourists to experience the "traditional life practicing". Development of different craft programs with elements of traditional woodcarving, knitting, cooking, harvest, and other, is an additional input for increased incomes in rural areas. Therefore, it is very important to improve typical rural products and promote traditional cuisine as a tool for particular niche tourist markets.

The present spas (Katlanovo, Debar, Gevgelija, Strumica, Kumanovo, Kočani and Štip) in Macedonia create basis for development of spa centres aside the previous concept which has seen them as centres for medical treatment and rehabilitation, but as relaxation and wellness spa centres with different health-care programs for relaxation, complemented with congress facilities. It will be a very valuable additional socio-economic input.

Having in mind the existing tradition, folklore and hospitality of Macedonian people, the Republic of Macedonia is a country that can be proud with areas recognized by their "originality of life and fairly undisturbed nature" which are becoming a rarity in many other countries. Since the sustainability principles of tourism development refer to the environmental aspect, as well as to economic and socio-cultural aspects, sustainable tourism should make optimal use of environmental resources that constitute a key element in tourism development, maintaining essential ecological processes and helping to conserve natural heritage and biodiversity. On the other hand, the environment plays very important role for tourism development, particularly in the field of the use of natural resources as tourist attractions. The link between tourism and environment is primarily accounting for the relation between the sustainable development of tourism and eco-tourism. In that way, tourism will be a part of an integrated regional rural development contributing to sustainable development in rural areas.



#### **5.2.2.4. The “added values” of the Macedonian society from an unexpected direction**

Better level of organisation and planning of the production in the Macedonian agricultural sector will create a better environment in all regions where the diversification of the income in rural areas is possible. However, we need to know that if organisation in the sector is improved the utilisation of different resources will become more feasible and proper from a SD point of view, and if properly planned according future CAP of Republic of Macedonia, production in the rural regions will not be the significant generator of various never-ending problems of the Macedonian agriculture related with inexistent or inefficiently organised internal markets of prime-agricultural products! Finally if this problem is addressed properly, the income of the producers from rural regions will not be so vulnerable anymore!

Moreover, the higher security of the income will make those persons more open and dedicated to other type of activities which are not exactly related “only” with prime-agriculture (to invest in some sort of finalisation of prime-agricultural products from the farm, to combine the resources from the farm with SD resources in the municipality and in the region - *renewable-energy production, to collect products from the forestry or to develop rural tourism on the farm*).

Strong self-organisation of Macedonian farmers will bring multiple positive outcomes and further essential actions from DIRRSDC point of view. The diversification of the income in the rural regions could be more promising if our farmers are well organised and have a clear understanding of their self-capacities. Especially the small-scale backyard farmers, which are recorded as “Individual agricultural holdings” in the latest agricultural census, and whose number, according to the first census results from July 2007, is 192367 needs to be better self organised. Probably the major part of those farmers will not have the level of awareness and the capacity to become real and active members of some of the Macedonian pure agriculture associations or cooperatives. However, all those who will somehow become the member of “some” association or corporations must be recognised by various authorities in the process of DIRRSDC. Easy access to information and future outside assistance *in the process of diversification of the income in the rural regions* can be much better organised and supported in the long-term if separate individual farmers are better organised.

The improved role of the government and public institutions will start to establish an effective farm register system urgently. The proper and effective farm register system in the Republic of Macedonia will bring multiple positive outcomes and further essential actions from the DIRRSDC point of view. The issue related with “farm and farmer types – separate target groups” from the point of view of agricultural policy needs to be supported by accurate and realistic data (the real arguments) and this we will have from the existing and functional national FR system. More than one information needs to be registered in the FR system, such as: the size of the farms (by production and by financial ability), their location – according “cadastre and real estate registration” (in which municipality/ region), the type of farmers by education and profession - professionally oriented or “part-time” backyard small-scale producers), the age of farmers (young/old), the type of farm according to the legal system (SME/company or person) ... These information will be recorded and used for taking proper further steps in the sector of agriculture and rural development. Directly or indirectly, such information could bring proper activities to the micro-level related with DIRRSDC. When



known, that information will be specifically useful for separate target-group support and proper agriculture policy in the rural regions of Macedonia.

The proper agriculture and rural development policy will lead to a better environment in the overall regions where the diversification of the income in rural areas is possible. The tools for future Macedonian CAP in this direction must be good combinations across sectors and across different Ministries and different Government and Non-Governmental organisations.

Macedonian government needs to know the answer for these questions: - Is the Strategy for agriculture and rural development clear for the ordinary people from the A&RD sector? Is the Strategy for agriculture and rural development easy to apply into Macedonian agricultural life to support future diversification of income in the rural regions of our country that's realistic under the SD principles? That's why we will extend the execution of the legal issues of the national agricultural policy urgently on the local level, first as pilot projects, then like long-term policy adapted to regional characteristics and micro-specifics.

We will build the strong institutional capacity of the sector. Various institutions, within new institutional setup will bring the additional power in overall efforts in the process of DIRRSDC. Institutional capacity needs to be equally strong on the micro level where real life related to rural regional development is happening.

The clear competences among various Ministries (different combinations) will strongly support the process of DIRRSDC. These levels of competences need to be implemented on the micro level. The farmer needs to have very easy and free access to DIRRSDC information via Rural Information Centres. The actions will be supported, monitored, and evaluated by an effective coordination of the different Ministries and Departments.

Proper payment of the administrative staff will ensure better services and prevent abuse of the administrative system. The process of DIRRSDC could be harmed very easily if future actions and resources are not properly managed or used. More motivated administrative staff will work also on their own self-improvement, which could additionally bring power to the institutional capacity of the sector and finally on the local level this will lead to a proper process of DIRRSDC.

We will improve our human resources in line with sustainable development. This is essential for extending the new creative ideas related with the process of DIRRSDC.

The proper vocational training of the people from the sector, like general support of the process of DIRRSDC will be organised. The essential problem for a successful DIRRSDC process is well defining target groups for education and training. That's why we will define the target groups before the process starts!

The schools with more creative and innovative capacity in the rural area will be the promoters of SD ideas and the nucleus for expanding the idea for DIRRSDC. For such "mental jump" and proper operational capacity of the people involved into the process larger autonomy and decision-making powers of schools in the rural area will be enforced.

For the proper DIRRSDC we will increase the funding and administrative capacity of municipalities, allocate resources for school maintenance and we will support capital education projects adopted on SD principles. We will arrange a strong start-up of the proper DIRRSDC via IPA funds for projects in primary and secondary education adopted on SD ideas. We will increase investments in education for the proper execution of DIRRSDC in future generations. The improved knowledge related to SD challenges and advantages will be targeted especially at students from the rural parts of the country. The idea related with DIRRSDC in the future will



be led by those “SD infected” students from the rural regions of Macedonia. Particularly, the practical aspect of DIRRSDC idea will be adopted into new curricula and applied during the educational process. The practical SD student projects will lead to a “lovely process of learning” of the feasible elements of sustainable development.

National health system will be strongly supported by A+F&RD sector. The idea of DIRRSDC will lead to GAP procedures and stronger support of organic and healthy food production. At the end of the day, such process will lead in proper sources of Macedonian quality food for the benefit of people from the urban and rural areas. We will arrange adequate health care provision for the people from rural areas. This will support a better environment for DIRRSDC idea.

The agriculture sector will become a valuable instrument in keeping the young people in agriculture in the rural areas. The “young people” from the rural communities will be recognised as a special “target group” in the process of DIRRSDC. The new ideas related to various ways of (not) agricultural diversification of the income in the rural regions will penetrate more easily to separate communities if young people are involved!

DIRRSDC process will support the optimal number of backyard production and part-time farmers identified via FR system. The special multi-sector activities (*pilot projects with strong elements of synergies between sectors*) need to be adapted to this target group from the rural regions.

The attraction of the agricultural sector for possible employment will increase within a period of time especially in the rural regions. The unexplored and unused resources of various regions in the Republic of Macedonia will strongly support the idea “to stay at home” or “not to migrate to the cities”. The comparative advantages of rural regions via different multi-sector programs for DIRRSDC need to insure the prosperity of future generations and new values according the three pillars of sustainable development.

The age and gender structure in rural areas will become more proper with special programs of DIRRSDC organised on the micro level.

We will work on building the proper access to agricultural areas or processing capacities via local roads. We will improve the quality of the water in the rivers and other open water sources, for improved irrigation which will lead to better quality of the agricultural products. In addition, better quality of the water in the rivers and lakes will lead to improvement of fish production. Increasing the irrigation area will lead to increased production. We will stop the water spoilage and loss during transportation and decrease the costs of the production of the agricultural products. This will strongly decrease the pollution from the A&RD sector.

We will solve the large problem with the water supply of the Macedonian villages which are not connected to the city water supply or the villages without any water. Besides this, we will improve the quality of the water in the rural areas.

The motivation for changes and improvements in the sector are the foundation for DIRRSDC. The sustainable development challenges will bring new perspectives in the rural regions only if the sufficient motivation for changes and improvements of the local people is in force. That’s why the special programs for education and public awareness will be implemented on the micro level about various possibilities of the sector via DIRRSDC.

The power of the agricultural sector needs to be recognised by the Macedonian society in a very positive way. Good reputation of the sector will strongly support the process of DIRRSDC. Historical neglect of the rural and agricultural areas must be changed into a very



positive promotion of the universal values of our sector in “every layer” of our society. The special focus needs to be the presentation of the new concept of SD agriculture for kids and young generations. The reputation of our sector will grow as soon as new benefits and advantages of the DIRRSDC process become understandable and visible for ordinary people from the rural regions. In addition, the large and medium specialised agricultural companies who will become “the champions of sustainable development in the field of agriculture” on the national and regional level will push such processes into a very positive cycle of cross-sector cooperation among different SMEs from different rural regions across the Republic of Macedonia. The good stories from the agriculture and rural regions need to be a “refreshed focus” of the Macedonian media and the newspapers with a mission of positively influencing the Macedonian public opinion.

We will create and promote optimal number of adequate brands with much considerable added value for sales on the domestic and foreign markets, on the classical way or via other sectors’ offers (with tourism we will export domestic products “on the spot” to our international guests). In the orchestrated way, the regional A&RD brands will link more than one idea related with DIRRSDC from “synergetic music” performed by various sectors! New added value products (organic and traditional products) will be created on the fundament of environmental friendly production. Production of healthy or special baby food is one of the strong ideas related with DIRRSDC. This will be recognised by farms but also by the government in the process of effective implementation of the Strategy for agriculture and rural development.

We will enforce a favorable SMiLEs’ environment especially for the initiatives in the rural areas. The idea of DIRRSDC will be recognised as a great possibility for both sectors SMILE and A+F&RD. Efficient institutional capacity will facilitate creation of SME’s for off-farm activities for diversification of income in rural regions. Proper legislation for dual-agro and off-farm business activities within the SMILES in rural regions will contribute to the SMILES development and enforcement. A well developed business structure and information flow will significantly enforce diversified and sustainable SME’s as an off-farm business additional to the basic farmer production. High technology utilization within the off-farm business activities will contribute to the creation of efficient and environmentally friendly SME sector in diversified rural areas. Recycling of waste materials from the agricultural production will contribute to creation of diversified SMILES that will utilize raw materials and natural resources in a sustainable way. Financial support is crucial for development of the off-farm sector in the rural areas. We will provide sufficient working capital for SME especially in the rural areas. We will turn this strong present weakness into great advantage with proper financial mechanisms and attractive bank credit programs for the benefit of the idea of DIRRSDC. Additional income resources for the population in the rural areas, thanks to the diversified off-farm SMILES will motivate the labour force (especially during non-agro seasons). Promotion and advertisement of the off-farm SMILES’ products and services will increase the awareness of potential businesspersons as well as the potential customers. Environmental friendly off-farm SMILES in the rural areas can significantly contribute to proper waste management, production of energy from RES and utilization of equipment and technologies/processes that control the pollution in the environment.

The strong inflow of direct domestic and foreign investments support will be organised according to coordinated and well managed projects and programs. This is very essential and





will lead to strong support of the overall process of transformation of the agriculture, forestry and the rural area into SD balanced zones attractive for various investors. Innovative ideas according mind mapping of DIRRSDC will be executed by adopted projects. We will provide sufficient working capital for SMEs especially in the rural areas. We will strongly support the sector with proper financial mechanisms and attractive bank credit programs for the benefit of the idea of DIRRSDC.

Good agriculture practices (GAP) will be urgently implemented with an active role of various SD champions from the A&RD sector. This ultimate process is important because of this long-term goal for the whole country and need to be the foundation of strong idea of the DIRRSDC. All other perspectives of A&RD could collapse if we do not start with the implementation of appropriate agricultural practices (GAP). That's why we will start a.s.a.p. not just with declarations but with proper and effective implementation of GAP procedures all over the Republic of Macedonia.

The new rural economy sectors should be promoted to encourage progressive and innovative opportunities, which would better utilize the existing human, natural and physical potential of the rural areas of Macedonia. Rural entrepreneurs or urban investors who are willing to invest in new innovative ideas related with production and proper utilization of renewable energies in the rural communities could be the one of the first champions of the sustainable development in the Republic of Macedonia. The "Energy Farming" like new style of living and production in the rural area will directly lead to more significant DIRRSDC. The high level of EU standards will be adopted before the idea of the "Energy Farming" will spread around the country. The level of standards is essential because of safe and easy spreading of new technology to A&RD sector. The national level of awareness about the idea of "Energy Farming" will increase and spread around the country. Information about representative pilot projects and advisory packages (know-how) related with usage of energy practices need to be in the special focus of those awareness programs. This will be arranged on the national and local level. In addition, the successful stories all over the country (champions of SD) will be promoted and supported.

The generated diversification of the income in the rural areas on the principles of SD will strongly push our economical, social and environmental quality of life for all citizens of the Republic of Macedonia. The "added values" of our society will come from an unexpected direction, believe it or not from the rural development and improved quality of life in all geographical parts of our beautiful country. The lower migration pressure on the overcrowded and stressful urban zones will create balance in all aspects of modern living. The better quality of life in the rural regions will bring better conditions for balanced sustainable development of our society and country of Macedonia.



## Strategic Measures

### Key Challenge Diversification of Income in Rural Regions and Sustainable Development

#### Challenges:

- Intensify our focus on alternative energy resources, ecotourism development and healthy food production, and utilize the environmental strengths and opportunities in RM to promote regional cooperation and integrated regional management.
- Create conditions for efficient and profitable environment for the forestry sector under the sustainable development principles.
- Start with activities which will lead toward economic and social prosperity in the rural areas in Macedonia, such as: game tourism, mountain tourism, fishing and gathering of non-wood products like medicinal plants, mushrooms, forest fruits...
- Apply appropriate methodologies for determination of capacities for non-wood forestry products under the secure preconditions for their planned use without negative effects on the environment.
- Contribute to the future development of rural regions by creating specific tourist products, which leads to socio-economic contribution in tourism in the rural areas. It will contribute to increased variety of tourist offers like "entertainment farming", "rural life practicing", "traditional life practicing", "wine trails" ...
- Develop different craft programs with elements of traditional woodcarving, knitting, cooking, harvest, and others who can create additional input for increasing the incomes in rural areas within creative tourist offers.
- Improve the level of organisation and planning of production in the Macedonian agro-food and rural development sector. Strong self-organisation of Macedonian farmers will bring multiple positive outcomes and further essential actions from DIRRSDC point of view. The diversification of the income in the rural regions will be a more promising idea if our farmers are well organised and with clear understanding of their self-capacities.
- Adopt the proper agriculture and rural development policy which will lead to better environment in the overall regions where the diversification of the income in rural areas is possible.
- Urgently extend the execution of legal issues of the national agricultural policy on the local level, first as a pilot project then as long-term policy adapted to regional characteristics and micro-specifics.
- Establish an effective farm register system and determinate various target groups of farmers necessary for proper and efficient execution of CAP of Macedonia.
- Build a strong institutional capacity of the sector. Various institutions, within the new institutional setup will bring the additional power in overall efforts in the process of DIRRSDC. The clear competences among various Ministries will strongly support the process of DIRRSDC. Institutional capacity will be equally strong on the micro level where real life related with rural regional development is happening.
- Improve our human resources in line with sustainable development. This is essential for extending the new creative ideas related with the process of DIRRSDC.
- Support and promote schools with more creative and innovative capacities in rural areas. They will be the promoters of SD ideas and a nucleus for expanding the idea for DIRRSDC. For the proper DIRRSDC we will increase the funding and administrative capacities of municipalities, allocate resources for school maintenance and support capital education projects adopted on SD principles. We will increase investments in education for the proper execution of DIRRSDC in the future generations.
- Target especially the "SD infected" student from the rural parts of the country who will extend the idea related with DIRRSDC in the future. Particularly, the practical aspect of DIRRSDC idea will be adopted into new academic curricula and applied during the education process.



- Upgrade our agro-food sector as a valuable instrument to keep the young people in the agriculture and in the rural areas. The "young people" from the rural communities will be recognised like special "target group" in the process of DIRRSDC.
- Take care of the age and gender structure in rural areas and they will become more proper with special programs of DIRRSDC we be organized on the micro level.
- Support the optimal number of backyard production and part-time farmers identified via FR system in the rural regions. The special multi-sector activities, the special pilot projects with strong elements of synergies between sectors will be adapted to this target group.
- Work on increasing the attraction of the agricultural sector. The possibilities for employment will increase within a period of time especially in the rural regions. The comparative advantages of rural regions via different multi-sector programs for DIRRSDC need to insure the prosperity of future generations and new values according the three pillars of sustainable development.
- Upgrade our agro-food sector as a valuable instrument to keep the young people in the agriculture and in the rural areas. The "young people" from the rural communities will be recognised as a special "target group" in the process of DIRRSDC.
- DIRRSDC need to insure the prosperity of future generations and new values according tree pillars of sustainable development.
- Work on building the proper access to agricultural areas or processing capacities via local roads. We will improve the quality of the water in the rivers and other open water sources, for an improved irrigation which will lead to better quality of the agricultural products.
- Stop the water spoilage and loss during transportation and decrease the costs of production of agricultural products. This will strongly decrease the pollution from A&RD sector.
- Solve the large problem of water supply to Macedonian villages which are not connected to the city water-supply or the villages without water at all. Besides this, we will improve the quality of the water in the rural areas.
- Motivate the changes and improvements in the sector as a foundation of DIRRSDC. The sustainable development challenges will bring new perspectives in the rural regions only if sufficient motivation for changes and improvements of the local people is in force. That's why the special programs for education and public awareness will be implemented on the micro level about various possibilities of the sector via DIRRSDC. We will put special focus on the presentation of the new concept of SD agriculture for kids and the young generations.



- Improve the reputation of the agro-food sector and stop the historical neglect of the rural and agricultural activities and areas. We will start with very positive promotion of the universal values of our agro-food sector in "every layer" of our society. The reputation of our sector will grow as soon as new benefits and advantages of DIRRSDC process become understandable and visible for ordinary people from the rural regions.
- Support and promote the large and medium specialised agricultural companies who will become "the champions of sustainable development in the field of agriculture" on the national and regional level. They will push such processes into a very positive cycle of cross-sector cooperation among different SMEs from different rural regions across the Republic of Macedonia.
- Create and promote optimal number of adequate brands with much considerable added value for sales on the domestic and foreign markets, on the classical way or via other sectors offers (with tourism we will export domestic products "on the spot" to our international guests). New added value products (organic and traditional products) will be created on the fundament of environmental friendly production. Production of generally healthy or special baby food is one of the strong ideas related with DIRRSDC.
- Enforce favorable SMiLEs' environment especially for the initiatives in the rural areas. The idea of DIRRSDC will be recognised as a great possibility for both sectors SMiLE and A+F&RD. Efficient institutional capacity will facilitate creation of SME's for off-farm activities for diversification of income in rural regions. Proper legislation for dual agro and off-farm business activities within the SMiLES in rural regions will contribute to the SMiLES development and enforcement.
- Developing of a good business structure and information flow will significantly enforce diversified and sustainable SMEs as an off-farm business additional to the basic farmer production. High technology utilization within the off-farm business activities will contribute to the creation of efficient and environmentally friendly SME sector in diversified rural areas. Recycling of waste materials from the agricultural production will contribute to creation of diversified SMiLEs that will utilize raw materials and natural resources in a sustainable way.
- Financial support is crucial for development of the off-farm sector in the rural areas. We will provide sufficient working capital for SMEs especially in the rural areas. Environmentally friendly off-farm SMiLEs in the rural areas can significantly contribute to proper waste management, production of energy from RES and utilization of equipment and technologies/processes that will control the pollution of the environment.
- Urgently implement Good Agriculture Practices (GAP) around the country via active role of various SD champions from the A&RD sector. This ultimate process is important because of the long-term goal for the whole country and need to be the foundation of strong idea of the DIRRSDC. All other perspectives of A&RD could collapse if we do not start with the implementation of appropriate agricultural practices (GAP).
- Support rural entrepreneurs or urban investors who are willing to invest in new innovative ideas related with production and proper utilization of renewable energies in the rural communities. The "Energy Farming" as a new style of living and production in the rural area will directly lead to more significant DIRRSDC.
- Increase the national level of awareness about the idea of "Energy Farming" around the country. Information about representative pilot projects and advisory packages (know-how) related with usage of energy practices need to be in the special focus of those awareness programs. This will be arranged on the national and local level. In addition, the successful stories all over the country (champions of SD) will be promoted and supported.
- Generate the process of diversification of the income in the rural areas on the principles of sustainable development and strongly push our economical, social and environmental quality of life for all citizens of the Republic of Macedonia.



### 5.2.3 Economic Prosperity and Job Creation

*The Key Challenge Economic Prosperity and Job Creation and its corresponding Key Objective is addressed and supported with the Objectives and Results formulated in various sectors and cross-cutting issues:*

*“ It is not how much knowledge employees have, but what they collectively manage to do with that knowledge, that drives value creation.....The main message....is that knowledge resources are enhanced through use; knowledge and skills must be activated and put into play in order to create future growth and social welfare. Work organisation plays a key role in this respect.....this approach is challenging, as it forces us to establish a closer connection between competence policy and other important areas such as industrial policy, innovation and labour market policy”<sup>20</sup>.*

The intellectual justification for gearing government budgetary and monetary policies toward fine-tuning the economy (and, in particular, toward generating more employment) was provided by John Maynard Keynes (1936) in *The General Theory of Employment, Interest, and Money*. This landmark book laid the cornerstone for the economic doctrine that dominated macroeconomic policies for several decades following World War II. Indeed, since the mid-1930s, the dominant view of economic policymakers has been that a competitive marketplace will fail to generate adequate employment opportunities. This view underlines the advocacy of government programs to "create jobs."

In the simplest terms, there can be only two reasons for divergent levels of economic prosperity: (1) different levels of resources or (2) differences in the allocation of resources, which may be either how the resources are employed or how many of the resources are employed. Moreover, these two sources of economic prosperity are interdependent: how a nation decides to allocate its resources will ultimately determine how many resources it has to allocate. Growth should be driven by the commitment to maintain an economically, environmentally and socially responsible company. However, business growth is not automatically related to job creation.

The government's role in the economy was laid out a decade ago in a wonderful essay, "The Poverty of Nations," by the late economist Karl Brunner (1985). A person in an economy can use resources in only one of four basic endeavors: he can produce, trade, influence the political process to redirect greater resources to his advantage, or protect himself against the wealth-redistributing efforts of others. Government institutions--laws, rules, regulations, and the judicial system--influence private decisions to allocate resources among these different uses.

In the economic landscape of Europe today, growth has become a strategic objective for companies seeking to secure their market shares. On a larger scale, growth is also important to maintain 'decent work [which] can only exist in competitive, productive and economically viable firms' as stated by the International Labour Organisation. However, companies do not just grow by themselves; they need a forward looking, pro-active

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<sup>20</sup> The conclusions of Norwegian Policy Makers in "Competence Report"- 2003, pg.24.



approach, and must constantly adapt their business strategies and structures to realise that objective. It seems that growth has to be profitable and the company's approach innovative to create new employment opportunities. This involves a thorough management of change, not only for companies, but also for social partner organisations and governments. Whatever the approach, **aspects such as an entrepreneurial spirit, good work practices linked to job satisfaction, flexibility within the company and labour markets are key factors in achieving profitable growth and job creation.**

The function of a company is to create profit out of which shareholders can be paid dividends and employees their salaries. Thus, growth, from a company perspective, must be profitable. While job creation may be a welcome by-product of profitable growth, it is not what drives companies to change and grow. The first priority of company CEOs and their Boards is to create and manage profitable growth which is sustainable.

'Profitable business growth is important because it is the basis of growth. Companies measure everything in terms of growth through measuring indicators that show how many more customers, branches, market segments, competitors there are this year in comparison with last year.' To achieve this companies frequently implement internationally recognised quality standards (e.g. ISO) as a guarantee for suppliers and customers. Such quality standards also represent a security for the company in the sense of reassuring itself that it is providing customers with a good quality product.

A company can take as its main framework the triangle of customer-employees-shareholders, or it can adopt a triple bottom line, expressed in the pillars of being economically viable, socially acceptable and environmentally responsible. **This reflects an integrated understanding of the company's performance, in which social, environmental and economic bottom lines are interdependent.**

Creating employment is not the sole responsibility of companies. It is through partnership with government, that job creation becomes not only possible, but also sustainable. While companies may provide the fertile ground for job creation, the labour market must supply the input. Government activation policies to create active and well-trained labour forces play an important role in job creation. By ensuring and guaranteeing a well-trained and flexible labour force, governments can encourage companies to create jobs.

Yet, planning is an essential element of growth and job creation.

Like legislators and politicians, businesses too need to make strategic plans and policies. Anticipating growth and the means to achieve it are an essential aspect of a strategic and operational business plan. Plans can be shared and are not just tools for management and leadership. Business plans also constitute a basis for discussions with the social partners, labour market and investment authorities, and financial and business support agencies.

Companies in profitable growth do not always create jobs. Some may use additional income from sales or investors to invest in technology, or to divest and diversify. But when a company creates new jobs, management have to know where and how to recruit. Skills shortages exist, though not being able to fill a vacancy is not always a sign



of lacking skills: it may signify that people are not willing to work for the pay and conditions offered.

The untapped potential of women workers remains an issue for governments and economic prosperity.

The fact that the number of young people available in the labour market will decrease in the next 30 years also needs to be considered. In short, **job creation will need to go hand-in-hand with strategies for recruiting and retaining female workers and an ageing workforce.**

A job is not for life anymore, but employment in one form or another can be. Understanding this is vital for employees and trade unions; recognising this reality is an important responsibility for employers and managers, as well as for workers and their representatives. Providing opportunities, within the business constraints, for employees to increase their employability and to develop skills in different parts of the business process and production becomes a pre-requisite for the flexibility which employers need, as well as for the security which employees seek.

A good company is able to re-organise in order to keep pace with change and growth. In this context, multi-skilled employees, who have been trained in this way, represent a considerable business asset. However, the employer does not have the sole responsibility. The individual employee also needs to take charge of his/her own development and lifelong learning plans. Thus, work becomes a process whereby workers learn how to enhance their personal development throughout their careers.

The old fashioned view that flexibility is purely a management obsession and security a union demand needs to be re-shaped. **All partners - employers, workers, policymakers and legislators - need to identify their own demands for flexibility and security, and must offer their own solutions for maximising these.** For the time being, this has to be done within the given legislation and regulation, providing companies with a minimum framework in which they can operate. Within this given framework, companies themselves create strategic and operational structures, usually in the form of shareholder agreements, corporate governance conventions, corporate visions and values, and business plans.

In terms of economic performance, higher levels of skills are a necessary but not sufficient condition for success. There are several drivers of economic success, of which skills is but one, such as:

- 1) High levels of R&D and innovation
- 2) High levels of capital investment in plant and equipment
- 3) A high quality public infrastructure, including communications and transport
- 4) Readily available sources of patient and knowledgeable capital
- 5) A domestic market for goods and services that demands high levels of product quality, specification and customisation



A domestic income distribution and public purchasing policy that can support point 5 above higher levels of skill supply may have very limited effects on economic outcomes. Skills can support a more productive economy, but on their own are fairly unlikely to create one. Creating more skills, using public money, is relatively easy:

You expand the education system

You subsidise employers' own training efforts

**Making sure that those higher skill levels get used productively is much harder, and rarely attempted. We assume that once more skills are created, they Will be used.**

We can argue that the Macedonian world of labour is far away from the so called Post-Fordist world and ending Taylorised work patterns, and despite the globalization effects evidence suggests that much work continues to have:

- A low skill content
- Highly routinised patterns
- Low discretion
- Low autonomy
- Short job cycle times
- Hierarchical organisation

Supplying more skills, of itself, may do little to change this. The solution is to supply more skills AND simultaneously seek to help firms to move up market, become more profitable, increase productivity, develop new markets, organise work differently, and use skills better.

**Since 1) skills are only one component in leveraging improvements in business performance, besides 2) business support to firms and 3) cluster, network and supply chain development, the key policy goal should be : engineering mutually supportive interaction between the three components.**

In order to create higher demand for, and better usage of, the skills being supplied, the governmental policy should be oriented toward a need to design interventions with an impact on:

- Product market strategies Goods and service quality and specification
- Investment strategies (plant, R&D, product development)
- Production/service delivery systems
- Employee relations
- Work organisation
- Job design





Is the current range of policies, programmes and interventions up to the task outlined above? Where, for example, are major programmes on employee relations systems and practices, work organisation or job design? In many Northern European countries, these are the focus of major action-learning R&D programmes by the government.

Similarly as Europe, Macedonia faces challenges from technological changes, globalisation and population ageing. Globalisation brings opportunities for adaptable economies but punishes rigid ones, while ageing populations will put welfare systems under pressure. There are several ways that these challenges can be met:

a) Market mechanisms should be used as much as possible to make sure that environmental goals (as one of the three sustainability pillars) are achieved with the lowest cost (such as for example, emissions trading scheme).

b) Cohesion policy aims to reduce regional disparities and encourage economic convergence. The budget is too small to make a real dent in income gaps, so the challenge is to get the maximum benefit from the available funds by making sure government focus on activities that will spark sustainable growth, such as education, research and important infrastructure projects.

In principle, national strategic plans should allocate most money to the Lisbon goals but in practice the list of eligible activities is long and provides little focus. Moreover, it may be helpful to re-assess whether state aid and social housing schemes should be eligible. The Government could achieve more with its budget for underdeveloped regions if it were more performance-based so that money could be shifted to projects with the highest payoffs. There are several ways this could be done, including sunset clauses or a mandatory performance reserve in which a portion of funding is tied to results.

Greater labour mobility would strengthen Macedonia. A mobile workforce can act as a safety valve for the economy— and can significantly contribute to establishment of new companies, while making the existing companies more productive and innovative, by bringing fresh perspectives and new skills and ideas.

This will be possible if the Government continues to improve the recognition of qualifications, eliminate barriers in the regulated professions, reduce transaction costs on house sales and ensure that measures that provide housing for the poor are implemented.

Although Macedonian Government has already started to create a business friendly environment, it should further enforce and enhance both monetary and fiscal policies and contribute to economic recovery and accelerated growth. The common thread in these measures is that each of these elements seeks to make it easier for people to do business:

- Tax relief package that includes immediate refunds to individuals and small businesses. This, as well as the stimulating effect of the tax cuts, puts money into circulation.



- Development of sound financial markets with provision of low interest rates are also important in stimulating investment and consumption, and if consumer confidence continues to be positive, we should have a sustained recovery.
- Creation of employer confidence through a package of measures that include a reform of the health care system to allow small businesses, which are the largest potential source of new jobs, to provide affordable health coverage for their workers.
- Guillotine - the plan to reduce the burden of frivolous lawsuits, improve the infrastructure, and simplify and streamline regulations and reporting requirements. The regulatory reform should be aimed at reducing costs and speeding up the decision-making process. This is especially important for start-up businesses, and for exporters that wish to remain competitive.
- To continue the efforts toward EU accession since an enlarged market will enforce trade and investment which are the keys to development, and development is the key to security and prosperity.
- The challenge of ever-increasing social payments, the current system of social payments will soon become unsustainable. A smaller working-age population will not be able to support a larger, elderly, retired population at current benefit levels.
- Raising awareness to balance the lessons of experience with a willingness to adapt to change. We must remember that advances in telecommunications and information technology have been crucial to advances in productivity and growth and a free market encourages innovation and entrepreneurship. At the same time, it takes money to implement innovative ideas. The Macedonian market should feature easy access to venture capital.

An efficient economy features a smaller government as a percentage of GDP and less government involvement in business – this should be the final effect of the macroeconomic policies for economic prosperity and job creation. The government must establish and enforce laws that govern safety and fairness. However, government meddling in business has never worked efficiently. It raises costs and reduces competitiveness as well as sapping energy and creativity from the private sector. Our increasingly globalised economy needs the collective effort of entrepreneurs and investors in order to thrive within the framework provided by the Government.



## Strategic Measures

### Key Challenge Economic Prosperity and Job Creation:

On the basis of the Lisbon Strategy and Oslo declaration in the perspective of the Agenda 21, and harmonized with the Integrated guidelines for growth and jobs (2005-2008) (Commission Recommendation COM(2005/141/0057) Macroeconomic policies for growth and jobs will be oriented toward:

- Securing economic stability to raise the employment and growth potential through adequate monetary and fiscal policies ;
- Safeguarding economic sustainability through strengthening public finances, reforming pension and health care systems to ensure that they are financially viable, socially adequate and accessible and taking measures to raise employment rates and labour supply;
- Promoting efficient allocation of resources and direct public expenditure towards growth-enhancing categories, adapting tax structures to strengthen growth potential;
- Ensuring that wage developments contribute to macroeconomic stability and complement structural reforms allowing for productivity, capacity and employment-enhancing investment.

Microeconomic policies to raise growth potential will be oriented toward:

- Ensuring an open and competitive market through removal of regulatory and other barriers, enforcing a competition policy, redeploying aid to support certain horizontal objectives such as research and innovation and optimising human capital;
- Creating a more attractive business environment through a systematic and rigorous assessment of the economic, social and environmental impacts;
- Creating a more entrepreneurial culture and a supportive environment for SMEs through improved access to finance, better adapted tax systems, strengthening the innovative potential of SMEs, and providing relevant information and support services in order to encourage the creation and growth of start-ups in line with the SMEs Charter, reinforcing entrepreneurship education and training;
- Developing adequate transport, energy and ICT infrastructures. In addition we will introduce appropriate infrastructure pricing systems, as a means to internalise environmental costs to ensure the efficient use of infrastructures and the development of a sustainable modal balance;
- Increasing and improving investment in R&D through development of the mix of measures to foster business R&D, strengthening centres of excellence, making better use of support mechanisms, such as fiscal measures to leverage private R&D, ensuring a sufficient supply of qualified researchers by attracting more students into scientific, technical and engineering disciplines and enhancing career development and the trans-national and inter-sectoral mobility of researchers;
- Facilitating innovation and the uptake of ICT through improvements in innovation support services, in particular technology transfer, creation of innovation poles and networks that bring together universities and enterprises, encouraging knowledge transfer through FDI, improved access to finance, and affordable and clearly defined intellectual property rights. Also we will facilitate the uptake of ICT and its related changes in the organisational aspect of the economy;
- Encouraging the sustainable use of resources and strengthening the synergies between environmental protection and growth through increased energy efficiency and development and application of environment-friendly technologies;

We will contribute to a stronger industrial base by focussing on the development of new technologies and markets, committing to setting up and implementing joint European technology initiatives (FP7) and public-private partnerships that help tackle genuine market failures, as well as creating and developing regional or local clusters.



#### **5.2.4 Sustainable Human Settlement**

*The Key Challenge Sustainable Human Settlement and its corresponding Key Objective is addressed and supported with the Objectives and Results formulated in various sectors and cross-cutting issues:*

According to the result from the 2002 census more than 65% of the population in Macedonia is living in cities. Urban settlements in Macedonia are showing many of the symptoms of the global environmental crisis. The sustainability of urban development is defined by many parameters relating to the availability of water supplies, air quality and the provision of the environmental infrastructure for sanitation and waste management. The overall objective of human settlements is to improve the social, economic and environmental quality of human settlements and the living and working environments of all people, in particular the urban and rural poor. An integrated approach to the provision of environmentally sound infrastructure in human settlements, in particular for the urban and rural poor, is an investment in sustainable development.

In order to relieve pressure on urban agglomerations, policies and strategies should be implemented towards the development of intermediate cities that create employment opportunities for unemployed labor in the rural areas and support rural-based economic activities, although sound urban management is essential to ensure that urban sprawl does not expand resource degradation over a wider land area and does not increase pressures to convert open space and agricultural/buffer lands for development purposes.

Macedonia should assess the environmental suitability of infrastructure in human settlements, develop national goals for sustainable management of waste, and implement environmentally sound technology to ensure that the environment, human health and quality of life are protected. In line with this, the government will strengthen the capacities of local self governmental bodies to deal more effectively with the broad range of developmental and environmental challenges. The local self governments will adopt and apply urban management guidelines in the areas of land management, urban environmental management, infrastructure management and municipal finance and administration. Establishing of the EU standardized monitoring system covering all environmental media and based on the principle of supervision by relevant EU institutions will monitor the human settlements' influence on the environment.

Management of human settlements must be strengthened, to be able to steer physical development in a way which reduces the demand for transport and prevents



damage to the environment. Properly located and timed investment in the transportation infrastructure might be a guiding force to induce development in defined directions. The government will develop or enhance, as appropriate, mechanisms to integrate transport planning strategies and urban and regional settlement planning strategies, with an aim of reducing the environmental impacts of transport. Development of an affordable, reliable and efficient public transport must be given top priority in urban transport plans and development programs. In line of improving existing urban public transportation and establishing urban public transportation in some of the biggest towns, local authorities will provide conditions to enlarge the involvement of private capital. The local authorities have to develop the urban public transport sector by giving priority to less polluting and less noisy transport means. In line with the improvement in public transport, restriction on car traffic should be imposed in congested and environmentally sensitive areas. In line with the Sustainable Human Settlements key challenge, local authorities should develop and implement urban transport plans and systems taking into account sustainable transport principles and considering closer co-operation between cities and surrounding regions. The local authorities will optimize urban transport flows reducing loads on urban centers and traffic jams. Urban transport infrastructure will contribute to the mobility of all production factors, outsourcing as well as inclusion in the global market - contributing to the wellbeing of settlements.

The local authorities in cooperation with non-governmental organizations and private sector will promote and implement projects for increasing the use of bio transport (bicycles, roller-skates) and they will provide safe bicycle lanes and sidewalks for pedestrians. Local authorities in cooperation with non-governmental organizations and other stakeholders will take measures to promote public awareness of the environmental impact from transportation and they will enhance the development of environmentally friendly traveling behavior.

The government will implement a new law for water and will establish integrated water management systems at all levels. The government will promote policies aimed at recovering the actual cost of infrastructure services, while at the same time recognizing the need to find suitable approaches (including subsidies) to extend basic services to all households. In order to secure that the population has adequate conditions for life and a healthy environment the local authorities will improve the level of infrastructure and service provision in poor urban areas.



The local authorities will build new sewage systems in rural areas and they will upgrade and expand existing sewage collection systems. The local authorities must construct new waste water treatment plants for all agglomerations with more than 2000 e.c.

With an aim of reducing water losses through water-supply distribution systems as well as reducing the consumption of water, the local self governments in cooperation with the government will renovate the existing water supply infrastructure. In order to secure that the urban and especially the rural population is supplied with potable drinking water, the government will work with local authorities to expand existing and construct new water-supply systems.

The local authorities will make an effort to close landfills that are not in compliance with EU requirements and on a regional level will establish modern regional municipal waste management systems.

Increased awareness and appropriate consideration of potential tourist products by competent authorities contribute to sustainable development of tourist destinations.

Promote the formulation of environmentally sound and culturally sensitive tourism programs as a strategy for sustainable development of urban and rural settlements and as a way of decentralizing urban development and reducing discrepancies among regions. Government and local authorities will improve water and waste management in tourist destinations.

The government on the state level and local authorities on the local level will enforce the high level of implementation of laws for different environmental media, by implementing the polluter-pays principle and establishing an efficient eco-police.



## **Strategic Measures**

### **Key Challenge Human Sustainable Settlements:**

- Adopt and apply urban management guidelines in the areas of land management, urban environmental management, infrastructure management and municipal finance and administration.
- Assess the environmental suitability of the infrastructure in human settlements, develop national goals for sustainable management of waste, and implement environmentally sound technology to ensure that the environment, human health and quality of life are protected.
- Strengthen management of human settlements.
- Develop an affordable, reliable and efficient urban public transportation.
- Promote and implement projects for increasing the use of bio-transportation (bicycles, roller-skates).
- Establish an integrated water management system.
- Promote policies aimed at recovering the actual cost of infrastructure services.
- Reduce water loss through water-supply distribution systems.
- Build new sewage systems in rural areas.
- Upgrade and expand existing sewage collection systems.
- Construct new waste-water treatment plants for all agglomerations with more than 2000 e.c.
- Close landfills that are not in compliance with EU requirements.
- Establish a modern regional municipal waste management system.
- Promote the formulation of environmentally sound and culturally sensitive tourism programmes as a strategy for sustainable development of urban and rural settlements.



### 5.2.5 Cross-Cutting Policies contributing to a Knowledge Society

*The Key Challenge Cross-Cutting Policies contributing to a Knowledge Society and its corresponding Key Objective is addressed and supported with the Objectives and Results formulated in various sectors and cross-cutting issues:*

In the 21st century, a new society is emerging where knowledge has become the most important factor determining wealth generation and sustainable development (SD). The core element of a knowledge society is an information economy, based on advanced information and communication technologies (ICT). Technological change imposes reconfiguration of the economic, social, cultural, political and organizational structures, as well adaptation of supporting legal and regulatory frameworks. Maximisation of possibilities that benefit from technological changes highly depends on a pro-active approach towards change. Only a proactive approach could ensure an optimal balance between knowledge and utilization of the available resources in a sustainable way, resulting in a comprehensive wealth for the country, combined with social cohesion and a healthy environment.

The strategic goal set for Europe for 2010 at the Lisbon European Council (March 2000) was "to become the most competitive and dynamic knowledge-based economy in the world, capable of sustainable economic growth with more and better jobs and greater social cohesion." The Republic of Macedonia, as a candidate country for EU membership, can not follow the time frame set for the more advanced EU countries, but needs to start its transformation towards a knowledge society without delay. Building of a knowledge society in the Republic of Macedonia is not just relevant for faster integration of the country into the EU, but it is primarily essential for provision of better standard of living of Macedonian citizens. In view of the current economic situation in the country, along with the changing economic environment on a global level, holding the status quo is not an option. The Republic of Macedonia needs to move forward and embrace the conditions necessary to underpin higher value added economic activities, better and more productive jobs, new social prosperity and sustainable use of the resources within the environmental limits. In that respect, the governance's vision and quality of the policy-making and strategies determine the country's success in transition towards a knowledge society.

A knowledge society encompasses a variety of aspects of the modern society – primary education, technology, research and development (R&D), employment, infrastructure, industry, services and agriculture. Therefore, ***the governance focused on building a knowledge society needs to provide optimal balance among the relevant policies.*** Policies related to science and technology, industry and education will need to emphasize the role and importance of innovation systems, as well as necessary infrastructure and incentives to boost investments in research and development. In parallel to the technological advancement that is crucial to build a competitive economy, societal transformation of the people should be also encouraged, aiming towards preservation of human values, cultural identities and historical heritage. In addition, a





strong sense about nature and the significance of environmental protection needs to be interwoven into all levels of policy-making for a knowledge society. These two components are important for preservation of the human dimension of a knowledge society, which could be seriously jeopardized by the technological dimension of the information economy. Therefore, knowledge as an essential asset of the new society should be managed through a governance system based on an integral policy-making to ensure interrelation of all policies regulating or contributing to some aspects of a knowledge society. Still, ***the main challenges to build a knowledge society in the Republic of Macedonia should be addressed within three core policy areas – education and training, research and development and industry***, along with the necessary interrelation with other policies.

Education is widely recognized as a fundamental key to wealth creation and competitiveness, as it creates knowledge, generates skills and serves as an enabling force for other industries. ***The policy on education and training should aim towards creating values and knowledge that correspond to the demands of the domestic economy, as well as the changing global society in all sectors***. In that respect, the policy on education and training needs to ensure that all citizens possess functional literacy, technological competence and real-life skills. Moreover, an educational policy has a broader role of developing ethics, moral and social behaviour aiming at reducing inequalities and exclusion. Accomplishment of these tasks imposes the responsibility of the policy-makers to:

- Develop a comprehensive policy and regulatory framework for education and training to support the information economy and a knowledge society;
- Establish a system for professional development of teachers, trainers, researchers and all workers in the education and training sector;
- Enable access to infrastructure of advanced information technology and telecommunications at an affordable price for all citizens, as well as education, training and research institutions and;
- Promote cooperation between industry and education in the development, promotion and delivery of services.

Reforms in education and training towards an information economy and a knowledge society should derive from a comprehensive and coherent policy framework, addressing specific problems in the sector. In that respect, policy-makers need to play a catalytic role to ensure that the educational and training sector will turn into an effective system for applying new technologies and methods that will enable delivery of proper skills for a knowledge society. The policy on education and training is a complex policy as it focuses at the same time on people, infrastructure, institutions and a regulatory framework and addresses variety of issues related to different segments of the society. Cross-cutting all of these segments is challenging, but an inevitable process as the current policy and regulatory framework on education and training in the Republic of Macedonia does not provide coherent vision for a knowledge society and a holistic approach to the needed reforms. Therefore, ***the comprehensive policy framework on***



**education and training for an information economy and a knowledge society needs to be developed promptly in the Republic of Macedonia, and supported with an adequate regulatory framework.** Lifelong learning must become a key policy focus, highlighting the mutually reinforcing importance of the economic and social strands to the development of a knowledge society. The policy framework should ensure sufficient public investment in education, but also needs to encourage effective partnership with the private sector that can provide access to a wider pool of expertise and technology, open up new market opportunities and create more favourable climate for innovation of efficient and effective methods of education and training adapted to the specifics of different economic sectors – industry, agriculture and services.

Professional development of the educational and training personnel is vital for the knowledge society. The industries of the future are knowledge-based industries and the ability of the workforce to respond promptly to the changing domestic and international environment is a critical source of competitive advantage in the information economy. The educational and training sector's ability to adjust quickly to the demands of the information economy will significantly determine the pace of adjustment of the workforce and community as a whole. Therefore, **the policy on education and training in the Republic of Macedonia needs to ensure that the personnel in this sector will acquire substantial ITC competences and will continuously upgrade their specific field knowledge in order to be able to supply the population with skills necessary to drive the information economy.** This includes development and management of a new philosophy on education and training, based above all on the recognition of substantial (output-acquired) knowledge. In this respect, professional development of personnel in this sector needs to impose very high standards in their own education and training processes, as well as demand for their continuous upgrading through lifelong learning. This is an essential precondition for the educational and training sector's capacity to diffuse substantial knowledge in the society and produce a workforce able to cope with the competitive pressures of the global information economy.

Creation of a knowledge society is not possible without an advanced ITC infrastructure in the country, available to all citizens under favourable terms. Better access to the current ITC infrastructure in the Republic of Macedonia has been partially enabled within the e-government project. Still, more efforts need to be done as the country is seriously lagging behind other countries of similar size and performances. Furthermore, establishment of reliable, sustainable, affordable and mutually compatible infrastructure support systems and high-capacity networking within and between education, training and research providers is necessary for this sector to conduct its' activities efficiently and effectively. Modern trends in education and training encourage wider use of e-learning as a key mode of education. Use of e-learning systems in the Republic of Macedonia is rather limited, due to the insufficient infrastructure in the education and training institutions, as well to the limited equipment that end-users need to access and use for online services. **The policy on education and training should promote effective methods of teaching and learning through providing access to advanced ITC**



**infrastructure at an affordable price for all citizens, as well as educational, training and research institutions.**

The policy on education and training should also enhance cooperation between industry and education, as the emergence of a knowledge society implies an increasing demand for a well-educated and skilled workforce. Therefore, **the education and training sector needs to produce knowledge and skills necessary to underpin development of competitive and technologically advanced industries that could create better jobs and higher standards of living.** Rapid technological changes in the world impose a need for prompt adaptation of the national economy that should be based on carefully selected industries for development, with highest potential for technological advancement and innovation. In this respect, **the policy on the education and training sector should be focused on establishment of educational clusters of excellence in the selected areas for development.** Also, the policy needs to promote Vocational Education and Training (VET) in order to enable the workforce to acquire specific skills that could provide jobs more easily and could contribute to economic growth. Without establishing a strong link between education and industry, the possibilities for producing proper knowledge and skills for a knowledge society are greatly reduced. A non-existing or a weak link will also reflect on the low effectiveness of the personnel engaged in the education and training sector, due to the design of curriculums and production of knowledge and skills with limited practical value.

**Promoting more and better jobs involves an improved link between education and the labour market.** Better cooperation between education and job providers, supported with enhanced flow of information, would facilitate school-to-job transition of the students. In this respect, introduction of a unified system of student's testing about the level of knowledge acquired during the educational or training process will provide more accurate signals to the potential employers about the quality of the work force. This would reduce information asymmetry, cut the companies' costs for recruiting staff and eventually, increase the demand for workers. In addition, the quality of the matching process of education and jobs could increase to the extent when the job match is of high quality. On the other hand, firms should plan and announce their demand for certain skills and knowledge in advance, and should also participate in the formulation of the education policy to ensure it reflects the needs of the private sector.

Another core policy area contributing to the knowledge society is research and development (R&D). The importance of R&D has been recognized as a priority in the EU Lisbon Strategy aiming at boosting employment and growth in Europe. The rapid pace of technological change on the global level imposes a need for immediate actions for research and development on the local level, especially in the countries that are economically and technologically lagging, such as Republic of Macedonia. The current situation in the country reflects the lack of real support for this sector, represented through low technological level in the industry, very low funds for research and innovations, negligible investment in talents and narrow embedding of research in policy and practice. **Better R&D policy in the Republic of Macedonia, geared to a more**



**effective use of knowledge, is essential to accelerate the achievement of the knowledge society goals.** The focus of the research policy should not be only on individual research institutions and researchers, but on the interaction between research and various businesses and social actors that are crucial for applying knowledge and delivery of better jobs and a higher standard of living.

R&D determines competitiveness in a knowledge society at great extent, as an information economy is based on knowledge-based industries. Despite low competitiveness of the Macedonian industry, the country does not have an integral industrial policy or a policy on technology and innovations to strengthen the technological capacity of the industry that consist mostly of SMEs. Therefore, **the policy-makers in the Republic of Macedonia need to formulate and implement a coherent industrial policy focused on technological advancement, higher growth and prosperity for a country.** The industrial policy needs to ensure higher technological base that will underpin higher value added economic activities, optimal utilisation of human and other resources, increased employment, growth in productivity and higher international competitiveness. Accomplishment of these tasks requires not only a strong science and technology base, but also strong capacities in industry to convert fundamental and applied research into new products, services or processes, as well to bring these innovations quickly to the market. In this respect, industrial policy should be closely linked with the policies on education and training and R&D to provide input for formulation and implementation of other interrelated policies like employment, SMEs, telecommunication infrastructure, services, tourism, agriculture and environment, as well the SD policy.

Considering the variety of specific challenges for development of a knowledge-based society in the Republic of Macedonia, **the policy-makers should promptly develop better key policies and build a coherent policy framework that will encompass all policy aspects relevant for a knowledge society.** Sustainable future of the country could be ensured if citizens are embodied with the key competencies and functional literacy that determines global competitiveness, social cohesion and a healthy environment. As Charles Darwin said: "it is not the strongest of the species that survive, nor the most intelligent, but the ones most responsive to change".<sup>21</sup> In a knowledge society's terminology, only nations acquiring and effectively using knowledge could be the winners in the modern world.

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<sup>21</sup> <http://www.worldofquotes.com/author/Charles-Darwin/1/index.html>



### **Strategic Measures**

#### **Key Challenge Cross-Cutting Policies contributing to a Knowledge Society:**

1. Develop better key policies and build a coherent policy framework that will encompass all policy aspects relevant for a knowledge society;
2. Create a policy on education and training aiming to create values and knowledge that correspond to the demands of the changing global society in all sectors;
3. Create an adequate regulatory framework on education and training for an information economy and a knowledge society;
4. Ensure that teachers, professors and instructors acquire substantial ITC competences and upgrade their specific field knowledge in order to be able to supply the population with skills necessary to drive the information economy;
5. Promote lifelong learning and effective methods of teaching and learning through providing access to advanced information technology and telecommunications infrastructure at an affordable price for all citizens and education, training and research institutions;
6. Ensure that the education and training sector will produce knowledge and skills necessary to underpin development of competitive and technologically advanced industries that could create better jobs and higher standards of living;
7. Establish the educational clusters of excellence in the selected areas for development;
8. Improve the link between the education system and the labor market to improve job matching in terms of speed, quality and persistence;
9. Create better research and development policy and regulation in the Republic of Macedonia, geared to a more effective use of knowledge, as essential to accelerate the achievement of the knowledge society goals; and
10. Formulate and implement a coherent industrial policy and regulation focused on technological advancement, higher growth and prosperity for a country.

### **5.2.6 Climate Change and Clean Energy**

*The Key Challenge Climate Change and Clean Energy contributing to a Knowledge Society and its corresponding Key Objective is addressed and supported with the Objectives and Results formulated in various sectors and cross-cutting issues:*

Climate Change is a worldwide threat to the way we live today. Or is it rather vice-versa? Now we can say “yes, it is rather vice-versa”, as the Intergovernmental Panel on Climate Change has recently confirmed that the evidence for global warming is unequivocal; no doubt that anthropogenic climate change is real or that steps must be taken to deal with it. Indeed, an effort is under way to develop a successor to the Kyoto Protocol that will provide a roadmap towards the low-carbon world of the future.



Climate change engages the energy sector particularly close because energy is central both to the problem and to its resolution. Energy-related emissions account for over two thirds of anthropogenic greenhouse gas (GHG) emissions. On the other hand, all sustainable energy projects/interventions/practices result in corresponding reductions of GHG emissions, contributing effectively to climate change mitigation. For that reason, both Energy and Climate Change are top priority in the European agenda for achieving sustainability.

No matter how small the territory of Macedonia might be, as citizens of this Planet Earth we have the duty to shoulder the parcel that we are able to carry, in order to reduce human induced climate change and limit its costs. This duty coincides with the third of our **“3A” overall objectives in the energy sector**, which are: to reduce our dependence on energy import (economic - **A**ffordability), to ensure reliable energy supply for all our citizens (social - **A**ccessibility) and to reduce energy-related environmental pollution, both global and local (environmental - **A**ceptability). To achieve these objectives, the Macedonian government must foster the adoption and realization of a **comprehensive long-term Energy strategy (Strategic Measure 1)**. Recognizing the fact that Macedonia should actively promote its interests in future energy projects in the frame of the common South European Energy market and in the wider European energy market, there is an urgent need for Macedonia to define the nationally prioritized energy projects and to include them in the new Energy Strategy. The prioritization must always favour projects based on lower carbon intensive fuels, technologies, and practices (**diffusion of Climate Change Mitigation into Energy Policy and Energy Strategic Planning – Good Governance and Better Policy Making**).

Providing a legal framework for exploitation of renewable energy sources (RES) and energy efficiency (EE) improving the **new Energy Law** (May 2006) is the most important achievement along this line. This law governs the objectives of the energy policy and the manner of its realization, energy activities and the manner of regulating the energy activities, construction of energy facilities, functioning of the Energy Regulatory Commission, introduction of a market for electricity, market for natural gas, market for oil and oil derivatives, market for thermal or geothermal energy, and contains a **special chapter on EE and RES**. On the other side, the implementing legislation on energy efficiency and renewable energy (rulebooks, regulations, procedures, standards) is not in place or in an early stage of development. Considerable efforts for **adoption of secondary legislation (Strategic Measure 2)** are yet to be undertaken, including harmonization of the laws and regulations from different sectors (construction/building, transport, environment, etc) which address sustainable energy issues.

As to the national Climate Change policy, Macedonia ratified the UN Framework Convention on Climate Change in 1997 as a non-Annex I Party to the Convention, and ratified the Kyoto Protocol in July 2004. The National Climate Change Committee was established as an advisory body for policy-making related to climate change issues. Climate change is incorporated in the Law on Environment, including details on preparation of inventories of GHG emissions and removals by sinks, as well as an action plan on measures and activities to abate the increase of GHG emissions. In the amended Law on Environment (2007), an Article on Clean Development Mechanism



(CDM) was introduced assigning responsibility to the Ministry of Environment and Physical Planning (MoEPP) to act as the country's Designated National Authority (DNA) and to evaluate the CDM projects against the sustainable development criteria.

One of the most important issues to be addressed in the relevant policies is **the way we produce and consume energy (Sustainable Production and Consumption)**. On the energy supply side we will **progressively change the energy mix (Strategic Measure 3)** by intensified utilization of natural gas and renewable energy sources. The energy system should be expanded in terms of production capacities and infrastructure, but always promoting cleaner and more efficient energy technologies (Combined Heat and Power (CHP), Clean Coal , etc.).

On the energy demand side we will promote energy saving and efficient use. This primarily involves stimulating **structural changes in the industry (Strategic Measure 4)**, favouring less energy intensive industries and small and medium-sized Enterprises (SMEs). As for the households and the public sector, we need a highly publicised **Action Plan for Efficient Use of Energy - Energy Efficiency at the demand side (Strategic Measure 5)** including thermal retrofit of buildings, with public sector playing an exemplary role; assessment of heating alternatives; developing incentives for switching to alternative heat sources, supporting low-income and vulnerable groups of the population to switch from electricity to other types of heating and to implement retrofit measures. Very simple, basic measures for energy saving in our homes include: improving the house envelope (outer walls, ceiling, windows and floors) – sealing air leaks and adding insulation; buying energy-efficient appliances; efficient lighting. As far as the transport is concerned, efficient use of energy implies more intensive use of **public transport** with promotion of environmentally friendly vehicles, improvement of **fuel quality**, as well as breakthrough of **bio-fuels (Sustainable Transport)**. The implementation of these technical measures should be supported by launching targeted public awareness raising programmes as well as by developing appropriate curricula for each educational level. Also properly accredited training on EE and RES for experts and local energy managers should be organized ensuring that trainees can practice in governmental programmes.

In order to make these energy demand side measures more effective, the long term trend of treating the energy price as a social category should be abandoned, and instead a **market price for energy (Strategic Measure 6)** should be introduced which will improve the operational condition of the energy producers and also provide significant motivation for energy saving.

Moreover, the market prices of energy will increase the competitiveness of **renewable energy sources**. Although the RES potential in the country is high, its realization is almost negligible. With so many sunny days and even having the sun in our national flag, we permit not to use solar energy for producing hot water and electricity for our homes!!! Our farmers neither use it for crop and grain drying, greenhouse heating nor for remote electricity supply or water pumping.

□ The worldwide public debate on Climate Change and at the same time the promotion of RES based technologies as Clean Energy Technologies offer new opportunities for



our businesses and for the creation of new jobs (**Economic Prosperity and Job Creation**). The rural regions of Macedonia provide a great variety of possibilities for traditional farmers to have at least a second main pillar of income as energy farmers. This objective considerably contributes to the **Diversification of Income in Rural Regions**. In the future, we will focus our efforts to attract foreign and domestic investors in order to support RES, including hydropower, geothermal energy, solar energy, biomass (wood, biogas, bio-fuels, agricultural and forest residues) and wind energy. The RES will be utilized through the following practices: Biomass based practices - □ Combustion systems for burning biomass; Combined heat and power (CHP) systems; □ Anaerobic digestion of animal waste; Growing energy crops; □ Pelleting; Geothermal energy based practices - Space and water heating; Greenhouse heating; Wind energy based practices - Stand alone systems for electricity generation. In addition to agricultural application, geothermal energy is the fundament for wellness tourism, which requires a palette of supporting services and products that attract foreign tourists. The utilization of geothermal energy in tourism is regarded to be a great multiplier for economic prosperity and job creation, again in particular in the rural regions.

An important step forward are the appropriately created **incentives (Strategic Measure 7)**, first of all - the adoption of **feed-in (preferential) tariffs** for electricity generated from small hydro, wind and biomass power plants. This was accompanied with two tenders for small hydro power plants – the first for 40 locations, and the second for 28 locations. In order to stimulate the usage of solar energy in the country the Government established a **subsidizing scheme**, according to which the Ministry of Economy provided repayment in amount of 30 % (not more than 300 EUR) of costs for the first 500 buyers of solar thermal collector systems, who have properly installed it in their homes. Next to this is the adoption of the Law on amending the Law on VAT, which anticipates **reduction of VAT** from 18 % to 5 % for the thermal solar systems and components.

A **Sustainable Energy Project** in Macedonia has been approved by the Global Environment Facility (GEF) in December 2006. Under this project a grant of USD 5.5 million will be received, through the World Bank as the implementation agency. The project started implementation in March 2007 and will be completed in September 2010. The development objective of the project is to develop a sustainable market for EE and RES by supporting the development of an enabling framework, institutional capacity, and necessary financing mechanisms. One of the components will be a **Sustainable Energy Financing Facility (SEFF)** consisting of a loan guarantee facility and a loan facility (a revolving fund), on a co-financing basis with commercial institutions and the Macedonian Bank for Development Promotion. Another component supports the development and start-up of a utility-based **Energy Service Company (ESCO)**. The ESCO will help to stimulate the market for energy services by providing turnkey and performance-based contracting for EE and by demonstrating the financial performance of such projects using third-party financing for publicly-owned buildings. The direct impact of the GEF project is expected to be the implementation of 10 MW of RES among small hydro, biomass and geothermal, with 1,130 GWh of life-cycle generation, and 730 GWh of electricity saved through EE investments (**Strategic Measure 8**).





As a country that does not have a binding GHG emissions commitment under the Kyoto Protocol (Non-Annex I country), Macedonia can undertake GHG mitigation activities and create carbon credits through the CDM. By generating additional revenues related to the reduced GHG emissions, the CDM is an opportunity to improve the economic feasibility of the sustainable energy projects, thus enhancing their potential to attract foreign investment.

In February 2007, a National Strategy for CDM for the first commitment period of the Kyoto Protocol 2008 – 2012, was adopted by the Government. The goal of National CDM Strategy is to facilitate transfer of investment and technologies through CDM for implementation of projects that reduce GHG emissions and contribute to Macedonia's national sustainable development priorities. Within this strategy the following priority areas were identified in the energy sector: Rehabilitation of large power plants; Fuel Switching to Natural Gas; CHP for District Heating; Industrial Efficiency Improvements; Hydro Power and Geothermal Energy. In addition some projects were identified within the waste sector (municipal and industrial waste, waste in agricultural and forestry sector).

Having the required national institutional setting established and the potential projects identified, the key challenges regarding the carbon financing are of legal and operational nature as the Government should establish rules and procedures concerning the ownership of the generated certified emission reductions (CERs) and taxation policy with regards to the income gathered by selling the CERs. Another key challenge is to invest in technical capacities for identification of projects and preparation of necessary documentation.

Finally, in line with the significant role of the local authorities in the realization of RES and EE projects, definitely the concept of Programmatic CDM projects is a key issue providing possibility for carbon financing of initiatives/programs such as "X roofs with solar collectors", or "EE interventions in buildings of the city Y (or some part of the city Y", or "Efficient street lighting in the cities X, Y, Z". The start-up along this line should involve estimation of the country's potential and development of a pipeline of Programmatic CDM projects. **(Strategic Measure 9).**

Alternatively to the RES and EE projects which reduce the amount of GHG in the atmosphere following the less- (or in the best cases zero-) emissions approach, forests act as GHG sinks (absorb the emitted GHGs). In the fight to mitigate climate change, this makes us focus on Macedonia's forest resources, which means that we need to invest more efforts in the **Conservation and Management of our Natural Resources.**

No matter to which extent our fight with the GHGs is successful, we can not escape from the impacts of the climate change as it can not be stopped but only mitigated. For this reason an Environmental Monitoring System based on the National Program for Environmental Monitoring and meeting international standards shall be established for professional operation. We want to define appropriate adaptation measures, be they anticipatory or responsive, and to monitor whether our efforts to minimize the effects of climate change are appropriate. We also want to observe and forecast any kind of threat to **Public Health** and inform the public **(Strategic Measure 10).**



A decisive factor in all these efforts to limit climate change and its costs and negative effects to society and the environment is **Research and Development (R&D)**, seen in a wider sense that includes research, development, demonstration, technology choice and deployment and technology transfer. All these aspects of the technology issue are accountable for synergies among various sectors, so that the best and most balanced technology solutions emerge from cross-cuttings (**Cross-Cutting Policies contributing to the Knowledge Society**).

Our energy-and-climate-change-related R&D will be built upon the following two elements: translational research (establishing/strengthening the partnerships of type academia-businesses, academia-policy-making or even academia-businesses-policy-making) and international cooperation (in particular, participation in EU Framework Program 7, where energy and climate change are among the top priorities for cooperation).

Finally, it goes without saying that the sooner we act against climate change, the better. Action is needed now and we firmly believe that with the proposed Strategic Measures the energy sector can make a positive contribution to solving the problem.

### Strategic Measures

#### Key Challenge Climate Change and Clean Energy:

1. Develop and adopt a comprehensive long term Energy Strategy which will also incorporate Climate Change Mitigation.
2. Adopt a secondary legislation to support the implementation of RES and EE projects.
3. Progressively change the energy mix (utilization of natural gas and renewable energy sources for energy production).
4. Stimulate structural changes in the industry, favouring less energy intensive industries and SMEs.
5. Improve the EE at the demand side through targeted programs, education, training and raising awareness.
6. Introduce a market price for energy (rationalization of energy prices) which will improve the operational condition of the energy producers and will provide significant motivation for energy savings.
7. Enhance the existing and introduce more incentives for EE and RES projects.
8. Promote a sustainable energy financing facility and encourage RES and EE projects to make use of it.
9. Host as many as possible CDM projects and identify and promote as many as possible Programmatic CDM projects.
10. Monitor and assess the climate change vulnerability (particularly health impacts) and undertake appropriate adaptation measures.



### 5.2.7 Sustainable Transport

*The Key Challenge Sustainable Transport and its corresponding Key Objective is addressed and supported with the Objectives and Results formulated in various sectors and cross-cutting issues:*

Transport plays a vital role in the development of Macedonia. Transportation is fundamental to economic prosperity and the quality of life. To increase our competitiveness, we must ensure our transportation system is efficient and responsive to new challenges. To improve our quality of life, we also need to ensure that our transport system is safe, secure, and environmentally responsible. The government of Macedonia recognizes that development of a sustainable transport system is one of the key challenges for Macedonia.

The transport sector involves many stakeholders and the government should take a leading role in establishing sustainable transport and acting as a facilitator in bringing key players together. The government will use policy, programs and innovative approaches to support the productivity and efficiency of the transport sector and its contribution to the national economy and thus allocate resources, and apply tools to create an integrated sustainable transport system. The government will establish an efficient system for data collection and the standardization of data formats, and ensure that data is shared and made readily accessible. The government should annually measure and report its progress in achieving its sustainable transport objectives and targets.

The transport sector has a considerable need of new investments and rehabilitation. The government should support partnerships between public and private sectors to promote investment in the transport sector that will facilitate the introduction of appropriate technologies and infrastructure consistent with sustainable development goals based on national priorities. This will include initiatives addressing urban transportation needs, such as public transit and trade and passenger corridors, while remaining sensitive to the needs of rural and remote areas. Having adequate infrastructure is basic for developing tourism. The government should focus on developing freight and passenger railway transport, including the appropriate development of railway infrastructure of the Trans-European Corridors (8 and 10). In line of improving existing airports, the government will continue to modernize international airports.

Construction of adequate infrastructure and vehicle equipment to provide access to appropriate transport for all, including the disabled and the elderly, is one of the key measures which will increase the accessibility of our transport system.

Improving traffic flow is recognized as a basic condition for successful implementation of a sustainable transport policy. All authorities on different levels have to work closely to improve urban traffic flow operations and circulation and provide facilities and an urban transport infrastructure, which will reduce green house gas emissions.



We have to ensure that transportation needs are met in a way that avoids or minimizes the creation of pollutants and waste, and that reduces the overall risk to human health and the environment. With this aim, establishing an Environmental Management System (EMS) is one of the key steps for monitoring negative environmental impacts from transport. Developing and promoting the use of new and innovative technologies that reduce the environmental impacts of transportation while meeting the transport needs is an important challenge for sustainable transportation. Government with import tariffs, taxation, vehicles registration policies and fuel pricing policies will prevent, in particular, growth in the number of energy-inefficient, highly polluting types of vehicles. In partnership with other levels of governments, the private sector, and all other transport stakeholders, the government will be forced to apply sound environmental protection and conservation practices and support transportation systems that make efficient use of the land, preserve natural resources, protect vital habitats, and maintain biodiversity.

The government will take measures to improve the economic and environmental performance of all modes of transport and, where appropriate, measures to establish a shift from road to rail, public passenger transport including lower transport intensity through production and logistic process reengineering and behavioral change combined with a better connection of the different transport modes.

Improvement of public transport is one of the key points within a well-planned and integrated transportation system adapted to local needs for sustainable development. Public transport routes need to be located as close as possible to the origin and destination of people's travel. Convenience and easy use is a very important factor in making public transport a viable alternative to the private car. The government alongside the Ministry of Finance will work on a taxation policy that would promote and support all modes of public transport. The government will promote the use of Public Transport and support the Public Transport System to offer efficient, affordable services, and consider price regulation measures and subsidies in the case of public interest. In order to replace old vehicles, especially in public transport, with a fleet that uses improved technologies and has clean engines, the government should prepare and implement a plan for replacing old vehicles. The government and local governments should focus on possible alternatives to road-urban public transport for passengers.

The government should be committed to facilitating the development of a competitive transport sector, in which modal efficiency is optimized. The government will place a high priority on investing in multi-modal freight transportation, Intelligent Transportation Systems, and planning and feasibility studies in support of these investments. In aid of this effort, the Ministry of Transport and Communication will conduct a series of regional consultations with stakeholders, in order to identify barriers to multi-modal freight, and opportunities for their advancement, as well as opportunities for partnerships.

In promoting sustainable transportation, the Government will work on increasing awareness for SD transport, in cooperation with other levels of government, academia, non-governmental organizations, and others.

In line with the best international practices the government should implement transport safety standards covering each mode of transportation. The government will continue



with harmonization of signs and road-markings in line with EU best practices. With an aim to reduce road transportation deaths as well as to reduce the number of injured in road traffic and increase road safety, the government in cooperation with local self-governments will improve local road infrastructure.

In order to cater to the demand for improved access to tourist destinations and recreational attractions, the government will promote and support projects for construction, modernization, and maintenance of the transport infrastructure with improved and facilitated access to tourist destinations.

### **Strategic Measures**

#### **Key Challenge Sustainable Transport:**

- Use policy, programs and innovative approaches to support the productivity and efficiency of the transport sector and its contribution to the national economy and allocate resources, and apply tools to create an integrated sustainable transport system.
- Support partnerships between public and private sectors to promote investment in the transport sector that will facilitate the introduction of appropriate technologies and infrastructure consistent with sustainable development goals based on national priorities.
- Improve urban traffic flow operations and circulation and provide facilities and urban transport infrastructure, which will reduce emission of green house gasses.
- Enforce the application of sound environmental protection and conservation practices and support transportation systems that make efficient use of land and natural resources preserve vital habitats and maintain biodiversity.
- Take measures to improve the economic and environmental performance of all modes of transport and, where appropriate, measures to establish a shift from road to rail, public passenger transport including lower transport intensity through production and logistic process reengineering and behavioural change combined with a better connection of the different transport modes.
- Promote the use of Public Transport and support the Public Transport System to offer efficient, affordable services and consider price regulation measures and subsidies in the case of public interest.
- Place a high priority on investing in multi-modal freight transportation, Intelligent Transportation Systems, and planning and feasibility studies in support of these investments.
- Implement transport safety standards covering each mode of transportation.

### **5.2.8 Sustainable Consumption and Production**

*The Key Challenge Sustainable Consumption and Production and its corresponding Key Objective is addressed and supported with the Objectives and Results formulated in various sectors and cross-cutting issues:*



*“If we look 25 to 30 years ahead, we would like to continue to have a good quality of life in the 2030s – a human well-being based on secure access to clean water and healthy food, to mobility and decent housing, with equity in access to education and social security. To be on the pathway to this vision, we will have to substantially improve the efficiency of our energy, material and land use and reduce emissions of both climate change gases and pollutants. We should be looking more carefully at the delivery of products and services from cradle to cradle rather than from cradle to grave, at entire supply chains and at eco-design and enhanced environmental performance using such ideas as zero emissions and low carbon projected by leading businesses in a number of major industries.”<sup>22</sup>*

We promote sustainable consumption and production patterns. Let us make our footprint on our part of planet Earth a bit smaller.

**In a market-system based economy, the close links between consumers and producers play a vital role in achieving sustainable consumption and production.**

The recent emergence in many countries around the world of a more environmentally and socially conscious consumer public, combined with increased interest on the part of some industries and SMEs in providing environmentally and socially sound consumer products, is a significant development that needs to be further encouraged (Agenda 21, 4.20). We, the citizens of the Republic of Macedonia, whether we are consumers or producers, join this worldwide movement, and by doing so we considerably contribute to shaping Sustainable Development Macedonia. The Agenda 21 document of the UN Conference on Environment and Development at Rio de Janeiro 1992 serves as a compass to find our way ahead.

It is the obligation of Government institutions at all levels to encourage an **informed consumer public** and assist individuals and households to make environmentally and socially informed choices by:

- (a) Providing information on the consequences of consumption choices and behaviour so as to encourage demand for environmentally and socially sound products and use of products;
- (b) Making consumers aware of the health and environmental impact of products, through such means as consumer legislation and environmental labelling;
- (c) Encouraging specific consumer-oriented programmes, such as recycling and deposit/refund systems.

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<sup>22</sup> Professor Jacqueline McGlade’s speech at Conference “Time for Action: Towards Sustainable Consumption and Production in Europe”, Ljubljana. Slovenia, 27-29 September 2007



**There can be no doubt that by 2030 we need to move step by step towards environmentally sound pricing.** Without the stimulus of prices and market signals that make clear to producers and consumers the environmental costs of the consumption of energy, materials and natural resources and the generation of wastes, significant changes in consumption and production patterns seem unlikely to occur (Agenda 21, 4.24 and Chapters 12 and 15). In other European countries some progress has begun in the use of appropriate economic instruments to influence consumer behaviour. These instruments include environmental charges and taxes, deposit/refund systems, etc. This process should be encouraged also in Macedonia in the light of our country-specific conditions (Agenda 21, 4.25).

**Reducing the amount of energy and materials used** per unit in the production of goods and services can contribute both to the alleviation of environmental stress and to greater economic and industrial productivity and competitiveness (Agenda 12, 4.18). The Government, in cooperation with industry and SMEs, will therefore intensify efforts to use energy and resources in an economically efficient and environmentally sound manner (Chapter 12). Citizens of Sustainable Development Macedonia have dramatically increased utilization of renewable energy sources (RES) and very much appreciate environmentally friendly vehicles for public transport!

**Sustainable production in the public perception is closely connected to reduced pollution.** Having in mind the *Precautionary Principle and Make Polluters Pay Principle* (Chapter 7), it is only fair that citizens do not want to be polluted for the sake of private companies' profit and additionally also pay all the expenses for their own health rehabilitation. In terms of sustainable development providing contemporary equipment for pollution abatement shall in any case be more feasible. However, in some way citizens are also *producers*, and this immediately refers to waste. It is in our own hands how much package material we tolerate and we can also choose products in this respect. With our own responsibility we can contribute by not throwing any kind of waste on our streets. Additionally, we can demand recycling of solid waste from our neighbourhood local authorities and at the same time personally contribute to implementation of solid waste management.

**Sustainable consumption and production patterns also have an immanent spatial planning dimension.** 21<sup>st</sup> century spatial planning using GIS (Geographic Information System) technologies take in consideration and assist in solving utilization conflicts. A basic metals production industry in the centre of a wine region is only one of the classical utilization conflicts identified in our country. It is simply a fact that experienced wine lovers who have seen other wine regions around the world won't enjoy the wine route and gourmet tourism if at the same time they are surrounded by pollution and smelly air. We need to make our choice locally and regionally of *what* we want to produce *where* and how we anticipate creating economic prosperity and new jobs!



**The common challenge for all countries is to break the link between economic growth and environmental impacts from production and consumption, resource use and waste generation.** However, changes in production have to be accompanied by a shift in our consumer model. One proposal is to gradually move from a society of assets and ownership of goods to one where access to services is the driver. Long-life products and urban settings where most trips can be made by bike, foot or public transport could help enable this part of the vision.

Levels of consumption in Macedonia, while growing slowly, remain significantly lower than in Western Europe. However, energy intensities (i.e. energy consumption per unit output) of industry, transport, community services and buildings are generally much higher. The country also experiences more localized environmental problems such as inappropriate management and regulation of waste, industry, urban transport and agricultural development. Looking to the future, environmental pressures may grow with increasing wealth. Rapid changes in lifestyle, particularly in urban areas, are already noticeable. This can be seen in increasing ownership of private cars, the growing quantity and variety of available imported goods, and in the increasing quantities of waste generated. At the same time public services, including public transport, district heating and waste and recycling systems established under a central planning system, have significantly deteriorated and declined.

**Promote clean technologies.** Today many of the most successful and competitive industries in the world come from countries with the strictest environmental standards. In the process of joining the European Union, the economy will have to become competitive in the global market and generate the economic growth needed to secure an improved living standard. In the process, the industry that includes several heavy polluters today will have to upgrade its technology and improve its environmental performance i.e. reduce pollution. The high cost of investing in cleaner technologies could put at risk many workplaces, but on the other hand these investments in cleaner technologies may even increase the profitability and viability of the industry due to lower consumption of energy and raw materials, less waste and better motivation of the staff.

**Develop an environmental market.** More and more environmental services are provided on the market by companies, NGOs, and scientific institutions. Ministries and agencies contract out legal drafting, policy development, public relations and management of dialogue with the public, studies regarding specific environmental problems, monitoring, laboratory services, etc. Municipalities contract out provision of public utilities such as waste collection, water supply, waste water collection and treatment, provision of natural gas, development of urban plans and LEAPs, etc. According to the “polluter pays principle” the burden of self-monitoring, EIA studies, reporting, as well as services needed for pollution control should be taken by the polluters, i.e. industrial companies themselves. In the developed countries the environmental services are one of the sectors generating the highest number of new jobs. Other benefits of the market of services are that it is more flexible, that the costs





can be more easily allocated to the polluters and that the importance of environmental policy for the private sector increases.

With household expenditure accounting for more than half of the GDP, individual consumers are potentially a powerful economic player in the Macedonian economy, but they tend not to be very active in applying pressure for more sustainable products and services. Public awareness and the level of public pressure for more sustainable consumption policies (SCP) policies are rather low, and this situation will need to be addressed in the future.

**The Government itself is a major player in consumption and can exercise leadership** through government purchasing, thus considerably influencing both corporate decisions and public perceptions. Our Government institutions therefore will review the purchasing policies of their agencies and departments so that they may improve, where possible, the environmental and social content of government procurement policies, without prejudice to international trade principles.

**The Government and private-sector organizations will reinforce values that support sustainable consumption** through education, public awareness programmes and other means, such as positive advertising of products and services that utilize environmentally sound technologies or encourage sustainable production and consumption patterns (Agenda 21, 4.26). We will promote more positive attitudes towards sustainable consumption by individually assessing environmental impacts and resource requirements throughout full life cycle of products and processes.

There is a need for policies to give consumers an incentive to move towards more sustainable patterns of consumption. National SCP initiatives should focus on economic growth and social change which improve the quality of life, and not only concentrate on the increasing level of individual consumption, with the related negative environmental impacts. Simultaneously, much of the SCP policy and action in Macedonia will need to target the production side with an aim of reducing impact intensities and improving efficiency of production and resource use. On a positive note, the on-going economic and social restructuring offers a unique opportunity to establish more resource-efficient, safe and sustainable production patterns.

**A strong and independent Macedonian Consumer Organization** shall play a prominent role in the promotion of sustainable consumption and production patterns. Progress can be made by strengthening positive trends and directions that are emerging, as part of a process aimed at achieving significant changes in the consumption patterns of Government institutions, households and individuals as well as the production patterns of SMEs and industries.

Even though economic and environmental benefits from improved eco-efficiency in industry are substantial, such initiatives have not been undertaken consistently. There are emerging signs that decoupling between industrial output and pollution and resource



use has taken place in some areas, but the efficiency of resources and energy use is still low. While services are the most rapidly growing economic sector across most of the region, industrial output is also increasing in almost all countries, with growth exceeding that of services. Moreover, this growth is largely based on pollution-intensive, resource-extracting and processing industries.

Current car ownership levels remain relatively low but are increasing rapidly, particularly in urban areas. Traffic congestion is on the rise in urban areas, leading to health, environmental and social problems. At the same time, public transport, which is potentially more sustainable, is in decline, partly due to dilapidated infrastructure and partly due to the withdrawal of subsidies. Integration of social, health and environmental considerations into spatial planning, and re-investment in existing collective transport infrastructure, are urgently required if Macedonia is to avoid the large-scale transport problems plaguing Western European countries.

**The dramatic changes in agricultural management and ownership**, and increased exposure to global competition, caused a sharp reduction in food production during the early to mid 1990s. Economic recovery has seen this partially reversed, although food production remains lower now than pre-transition. Access to food and efforts to reduce malnutrition have improved in recent years, but these issues are still significant problems. Economic transition brought with it much reduced inputs of artificial fertilisers, energy and pesticides with corresponding reductions in environmental pressures. Nevertheless, the environmental legacy of centrally-planned, high-input agriculture remains and the lack of appropriate management of irrigation, soils and manure from livestock continue to create localised environmental problems. Opening of the markets and globalisation of trade may lead to a return to more intensive agriculture in the future with negative environmental consequences. Imports and exports of food are also increasing rapidly, and that leads to growing pressures from the transport of food.

**On a regional scale and beyond, Macedonia is well-known for its tasty and fresh agriculture and forest products.** In particular, we promote the production of certified organic foods. In terms of the conventional farm production, the good reputation of our agricultural sector will be secured, and this refers in particular to any abuse arriving from over-utilization of fertilizers, pesticides and hormones, which threaten our ground water resources as well as the health of those who work in the agriculture sector.

**By its nature, Sustainable Development promotes local products and local added-value cycles.** Therefore, we will improve the promotion of typical rural products and traditional cuisine in particular addressing foreign tourists. Foreign tourists from EU countries already have internalized the new way of consumption patterns thinking and it is only wise to provide adequate offers for the benefit of our tourism. This starts from offering home made jam from the next village, rather than placing a mountain of unsustainably packed metal jars of jam on the breakfast buffet.



**Macedonian tourism in general needs to respect a more environmentally and socially conscious consumer public.** Therefore, we want to cooperate more closely with those specialist foreign and domestic travel agencies that follow this world-wide trend. We might not be aware of their values and therefore do not appreciate our traditional stone houses. However, tourists from other European countries are aware, do appreciate, and want to spend their holidays in renovated, homey, traditional stone houses, and during the evening they enjoy high quality Macedonian wine in front of a warm open fireplace! Therefore, we need to re-orientate *our* perception and (re)construct tourism facilities according to the actual high consumer demands of foreign tourists and the expected increasing consumer demands of domestic tourists alike.

**Buildings are responsible for a third of total energy consumption across the country,** particularly in the North regions. Residential energy consumption is particularly high all over the country. This is partly explained by our continental climate, but other important causes include widespread but inefficient district heating, inefficient distribution systems, and the low thermal efficiency of buildings. Low energy prices and the absence of economic incentives and apartment level controls do not encourage householders to reduce heat consumption. Water consumption in buildings is high, whether in cities where distribution losses are high or in the rural areas where drinking water is used for farming.

Proper treatment of waste remains a problem, especially for municipal and hazardous wastes. Furthermore, given the current construction boom in some areas and regions, quantities of construction and demolition waste will increase. End-of-life (obsolete) vehicles, waste electronics, household appliances and packaging waste are also set to increase. Some of the challenges that Macedonia faces include improving waste management systems, introducing proper waste treatment and disposal techniques, making use of more waste resources, and reducing and preventing waste at source. There are many promising opportunities to 'leapfrog' and avoid some of the consumption-related problems common in Western Europe. **Taking advantage of those opportunities will require a political commitment to develop appropriate policies and establish regulatory frameworks, economic incentives, and implementation mechanisms.** On a positive note, some elements of the legacy of the past have a major potential to support a society with more sustainable production and consumption patterns. These include:

- The widespread development of district heating systems, railway infrastructure, or reusing and recycling systems. All these systems need significant investment and upgrading to realize their sustainability potential. For example, heating systems require modernisation to eliminate losses and inefficiencies and could be fed by combined heat and power or waste heat from industry;



- There is a well established tradition of using public transport. Even though the rates of car ownership are increasing, opportunities remain for satisfying the public's demand for mobility through extensive collective transport networks;
- Various business opportunities exist for more SCP-oriented practices. Current low use of synthetic fertilisers and pesticides in agriculture, along with the availability of agricultural workers, creates good opportunities for organic farming and the export of organic food products to Western Europe. There is a high potential for economic and environmental benefits through recycling and re-using industrial and municipal waste.
- Significant potential exists for increasing energy efficiency in industry, household, and public sectors, again with both economic and environmental benefits. In the building sector the current construction boom offers a huge chance to improve the thermal efficiency of new building stock. This, and the task of retrofitting the dominant existing stock of low-efficiency multi-apartment buildings, would significantly reduce environmental pressures and bring considerable social benefits.

**Finally, policy efforts should not focus only on the technical 'fix'.** Experience from Western countries shows that technological improvements and efficiency gains are not sufficient on their own and need to be supported by measures, both economic and information-based, aimed at influencing consumer behaviour. Without this, technological and efficiency gains risk being undermined by increased consumption resulting from reduced prices (known as the rebound effect). The environmental and social benefits that can be gained by increasing the public's awareness of SCP issues and empowering them to act should not be underestimated. With respect to housing and community services, significant reductions in heat and water consumption can be gained by installing apartment-level controls and metering, starting payments by use, and providing householders with information on how they can reduce costs.

Similarly, consumers in a number of countries have expressed preferences for local high quality food grown with reduced inputs of pesticides. This potential market for local organic food can be harnessed by developing national certification systems, supporting organic farmers and spreading awareness of organic labels and the advantages of this agricultural system.

The following challenges seem to be the first that need to be resolved:

- **Lack of reliable data on pollution and resources use**, industrial emissions, or environmental impacts of consumption are major obstacles to the development of targeted and effective policies and goals. Even in those sporadic cases where data exist on a local level, no efforts have been made for the systematic collection of data and the use of the information for more effective policy-making.
- **Existing institutional settings do not favour planning and implementation of SCP.** Better coordination is needed among the various institutions responsible for environmental protection and sector's policies. It is also essential to improve the institutional capacity to achieve more sustainable production and consumption.



- **There is room for dramatic improvement in environmental management in enterprises.** It is an imperative that if environmental legislation is tightened and enforcement start getting stricter, improvements in industry will occur. However, more effort is needed to improve compliance with environmental legislation.
- **Integrating sector's policies and environmental concerns is still a distant goal.** For example, spatial planning and municipal management are still not well coordinated with environmental and SCP considerations, although they could be used to have an effect in energy supply, building, transport and waste management. This is also the case for agriculture. While the government is beginning to develop agricultural strategies, hence integrating environmental, social and economic interests, they have not yet been properly included. There is also a lack of agro-environmental advice for farmers.
- **Some policy tools for SCP are in place but in a piecemeal fashion.** Various relevant strategies and programs (e.g. energy efficiency programs, waste strategies, etc.) have been established, but their implementation has still to follow. Policy action should build SCP considerations into these strategies and programmes.
- In the light of the variety of situations in all countries, **it is necessary to develop - in partnership with a wide range of stakeholders — national SCP strategies** or plans reflecting a country's specific priorities, and with concrete actions to carry them out.
- Despite their effectiveness, **limited economic incentives and technical tools** are in place to stimulate government, businesses and private consumers to reduce the environmental pressures they exert. Policy tools already exist in many sectors to promote energy efficiency, public transport, or waste recycling. More effort will be needed to support implementation.
- Consumer behaviour is one of the crucial factors for SCP, and more efforts must be made **to raise public awareness of environmental issues and of the potential economic gains from more SCP.** Information should be provided (e.g. labelling) which will enable consumers to make informed choices and to influence governmental policies.

A key opportunity for addressing these challenges in Macedonia also lies in regional cooperation. This is in some cases facilitated by common languages, but first and foremost, by the fact that countries in the Western Balkan Region often face similar problems.

Market-based instruments and environmental tax reform need to achieve sustainable consumption and production. Sustainable consumption and production both requires and stimulates competitiveness and employment. Franklin D. Roosevelt illustrated this when introducing a US income tax for the first time in the 1940s, declaring that: 'Taxes are the price of a civilised society'. **Maybe environmental tax reform is the price of a sustainable society? Government, business and consumers alike have responsibility to take action in order to provide Sustainable Consumption and Production.**



### **Strategic Measures**

#### **Key Challenge Sustainable Consumption and Production:**

- Combine legal instruments with market-based instruments (taxes, charges, subsidies, tradable permits). Thus providing that the market based instruments take into account the "hidden costs" to society of production and consumption in a cost-effective way;
- According to the previous goal, we will undertake a green tax reform, one that gradually shifts away taxes from labor and investments towards taxes on pollution and the inefficient use of materials and energy. From taxing the "goods" (employment) to taxing the "negatives" (resource use and environmental damage). Because, increasing efficiency of resource and energy use can improve competitiveness;
- Enact such policies that will enhance eco-efficiency and give economic incentives for steering consumption and production in a more sustainable direction. For example measures that will enforce greener products and better consumer information.
- Actively contribute to awareness raising amongst the population and providing clearer signals of why action is necessary. According to our convenience it is not appropriate to think only of regulating people, but rather motivating people by ensuring that changes in their behaviors will result in a particular set of eco-efficient outcomes.
- Have environment-related employment approach. Employment effects of market-based instruments. Integration of environment and employment at national and local level as well.
- Improve the pollution management: e.g. waste and waste water management, air pollution control, noise abatement, R&D. In order to provide cleaner technologies and products: technologies and processes, products;
- Improve the resource management: water supply, recycling, renewable energy plants, forestry, fisheries, eco-tourism;
- Enable friendly environment so that the principle of local approaches can be widely accepted. Various types of local approaches (private sector, public sector, NGOs, multi-sector partnerships) will be allowed within the eco-friendly legal environment framework.

#### **5.2.9 Conservation and Management of Natural Resources**

*The Key Challenge Conservation and Management of Natural Resources and its corresponding Key Objective is addressed and supported with the Objectives and Results formulated in various sectors and cross-cutting issues:*

#### **Conservation and Management of Natural Resources**

We might think that to improve management and avoid overexploitation of natural resources, recognising the value of ecosystem services is something for so-called developed countries that don't know what else to do. Well, this perception can be the very last serious mistake! The atmosphere does not care about who is living on the ground, anthropogenic climate change is real (Chapter 12), as is climate change



throughout human history and the geological record. The only thing that we realistically can do is take actions to reduce our production of green house gases (GHG) and deal with the situation as it is by **minimizing the landscape-ecological impacts of climate change**, which are already a reality in terms of increased frequency and magnitude of flooding events as well as draught periods in parts of Europe.

**All this makes us primarily focus on our forest resources.** Forests cover approximately 37% of the Macedonian state territory, which is more than in many other European countries, and it is this forest cover that naturally regulates the water cycle and is a sink for green house gases (GHG). In the past, forestry in Macedonia has done many positive things, for example: afforested about 150 000 ha (Vodno, Gazi Baba, etc.), well organized forest fire protection network, breeding of wild animals during the cold winters etc. At the same time there is very little publicity for those activities and a lot of publicity for the negative aspects of the forestry and forest, i.e. illegal logging, even though they are not caused by foresters. Forestry by its nature is a sector where the physical results of its work and financial benefits are visible only after a long period of time, sometimes even after 30 years. This is one of the reasons why "nobody" wants to invest in forestry, although "everybody" – without thinking about it – enjoys the public forest functions, such as production of oxygen, protection of soils, positive influence on the local climate, carbon sequestration and many more. Just imagine Vodno and Galicica Mountain today without forests – as can be seen from pictures from the 30ies of the last century: mud flows after intensive or long lasting rainfalls might reach and damage houses in Skopje and Ohrid. Who will pay for these damages which are realistic scenarios in a climate change world?

**Awareness of the public in large for forestry issues should be increased** and it is the government that needs to be informed more precisely upon the role and values of forestry in ecology, economy and rural development. At the end of the day, decisions need to be taken and implemented on new financing mechanisms of forestry, such as e.g. a valorisation of the public forest functions. On the other hand forestry needs to do its own homework, which includes establishing an appropriately organized and managed sector, implementing a strong and efficient administrative institutional capacity, ensuring application of effective technologies and methodologies, and last but not least enforcing laws and implementing General Management Plans.

Let's broaden our view to the environment at large. **The rich natural resources of our country, especially fresh water, biological and landscape diversity represent an important opportunity for the development and quality of life of the present and future generations in Macedonia.** By integrating the environment, nature and physical space in the concept of sustainable development, Macedonia will secure a place and a competitive position for its people, companies and the country itself in Europe of tomorrow by: reducing pollution and threats to human health; improving the quality of the environment; preserving natural wealth enabling its sustainable use; coordinating spatial development; innovative technologies and solutions, which all together provide a sound base for future economic and social development.



According to the Macedonian Constitution, everyone has the **right to a healthy environment** as well as **responsibility** to protect and improve it. This means that environmental protection is a task and a responsibility of every citizen, company and institution, within their capacity and freedom to act. According to the "**polluter pays principle**", the polluters are responsible for solving environmental problems resulting from their activities, including covering the costs of pollution control, monitoring, reporting, assessments, remediation, compensation for damage etc. Only in cases where the responsibility cannot be assigned directly (diffuse pollution sources, disappeared legal entities) or in case of urgency, the responsibility to act relies on the Government.

**By recognizing the importance of conservation and sustainable management of natural resources, the Government of Macedonia is in charge of:**

- ✓ Achieving the EU standards for environmental quality by developing and implementing the framework of the physical planning law and the laws related to water, air, nature, noise and waste management as well as related programs and strategies;
- ✓ Developing the capacity of the environmental sector in Macedonia - including local self government, industry, environmental service providers, government institutions and non-governmental organizations - to fulfil its responsibilities;
- ✓ Reducing the risks to human health and natural ecosystems by focusing on environmental solutions with the highest impact;
- ✓ Develop open dialogue and partnership with all the stakeholders in the environmental field;
- ✓ Mobilizing domestic and international funding needed for the environmental investments in the country and applying the polluter pays principle;
- ✓ Securing environmental information and access of the public to it;
- ✓ Raising awareness and educating the public about their environmental rights and responsibilities;
- ✓ Maintaining an active role of Macedonia in environmental cooperation with the EU, the neighbouring countries and in multilateral mechanisms.

Being the third pillar of sustainable development and fully integrated in economical and social issues, the Government of the Republic of Macedonia **in the future will recognize the environment as a priority in its politics** as outlined in the RENEWED EU SUSTAINABLE DEVELOPMENT STRATEGY June 9, 2006 – 10117/06 (NSSD TBR Chapter 4.2). Consequently all Governmental institutions from central to local levels will highly support and enforce the following:

**Framework of environmental responsibilities.** Different from the traditional view of protecting individual environmental media separately, Macedonia will achieve integrated environmental protection through general – sometimes also called “horizontal” – framework law on environmental protection, which addresses all environmental aspects in a general way and provides a framework of responsibilities for the entire field. It





introduces common terminology, common procedures for environmental assessment and gives the framework for environmental monitoring. It introduces the concepts of environmental impact assessment, integrated environmental permitting, public access to environmental information and the possibility for the government to efficiently transpose the growing body of the European legislation. The framework law is followed by sectoral laws on nature conservation, water, air and waste. The Law on physical and urban planning provides the framework for achieving sustainability in a preventive mode through carefully planning the use of space at the national and local level. This law also introduces the process of public participation in the process of developing and deciding upon the spatial plans.

**Decentralization.** Many services that are today performed by the national administration can (and many times should) be delegated to the local or regional authorities. Activities such as municipal services, urban planning, local monitoring and local regulations are in most countries performed by municipalities or some kind of regions. The benefits of decentralization are that the environmental problems are solved closer to their origin and to the citizens.

**Promote clean technologies.** Today many of the most successful and competitive industries in the world come from countries with the strictest environmental standards. In the process of joining the European Union, the economy will have to become competitive in the global market and generate the economic growth needed to secure an increasing living standard. In the process, the industry that includes several heavy polluters today will have to upgrade its technology and improve its environmental performance i.e. reduce pollution. The high cost of investing in cleaner technologies could put at risk many workplaces, but on the other hand these investments in cleaner technologies may even increase the profitability and viability of the industry due to lower consumption of energy and raw materials, less waste and better motivation of the staff.

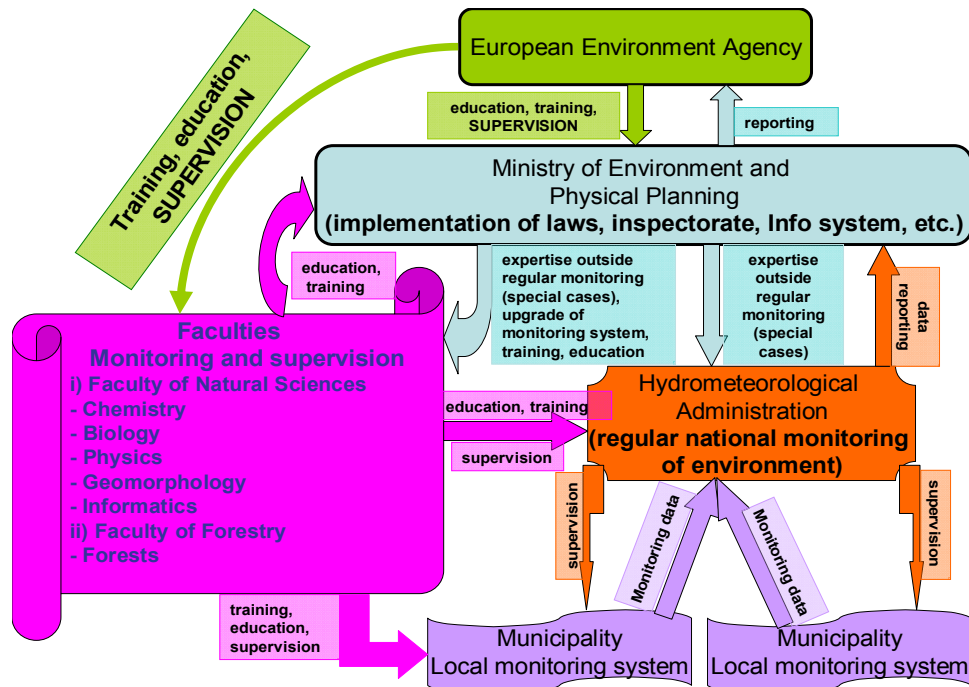
**Develop an environmental market.** More and more environmental services are provided on the market by companies, NGOs, and scientific institutions. Ministries and agencies contract out legal drafting, policy development, public relations and management of dialogue with the public, studies regarding specific environmental problems, monitoring, laboratory services, etc. Municipalities contract out provision of public utilities such as waste collection, water supply, waste water collection and treatment, provision of natural gas, development of urban plans and LEAPs, etc. According to the “polluter pays principle” the burden of self-monitoring, EIA studies, reporting, as well as services needed for pollution control should be taken by the polluters, i.e. industrial companies themselves. In the developed countries the environmental services are one of the sectors generating the highest number of new jobs. Other benefits of the market of services are that it is more flexible, that the costs can be more easily allocated to the polluters and that the importance of environmental policy for the private sector increases.



**Mobilize financial resources for the environment.** In the next decade, substantial investments are necessary in order to meet EU standards. These investments will generate even higher benefits in terms of improved health, preserved natural resources and improved competitiveness of the country. Therefore, the Macedonian Government needs to increase the public funds dedicated for environmental protection. In the strife to protect the environment, everybody has a responsibility: the polluters – to reduce the pollution; the government - to mobilize the financial resources required for environmental investments. Investments in public infrastructure need to be financed first and later repaid through service charges.

**Increase environmental awareness and education.** Raising the public awareness about the environment, as well as education in this area, are important steps towards achieving sustainable development. The environmental situation can only be improved if citizens recognize their power, their responsibilities and their capability to contribute towards improvement of the environment. Each of us should be involved in the process of planning and making decisions about which activities need to be undertaken in order to provide for protection and improvement of the environment. Healthier environment can not be achieved by adopting a new legislation, it can only be achieved if the citizens understand and support this legislation and at the same time accept the individual responsibilities for protection and preservation of the environment.

**Reorganize the monitoring system and fully develop the environmental and spatial plan information systems.** The proper monitoring system of the environment is a prerequisite for any step in the decision making process for preserving and improving the environment. Environmental information is the starting point of any environmental activity. This can be information about the level of pollution, about its impact on human health or nature, about who is responsible for pollution, about funding sources for environmental purposes, or activities of environmental organizations. Proper standardization and digitalization of spatial information in Macedonia is very important for users such as municipalities, urban planners, natural resource managers, developers of environmental impact assessments, NGOs, scientists and others to easily obtain and use information from databases related to physical space.



**Finalize the organizational set up within the Ministry of Environment and Physical Planning**, which includes introducing a human resource management system in the MoEPP and preventing partisan politics in the cadre. The objectives of securing a healthy environment and meeting EU requirements can only be achieved with a professional and motivated staff. In this sense, it is necessary to increase the capacities of the Ministry for human resources management, thereby providing direct and personal accountability of every civil servant for the work he/she does, and at the same time giving them the opportunity to express their creativity and capability. Career at the MEPP will be supported with a modern human resource management system that will provide for transparency of individual and group responsibilities and performance. The system will be underpinned with numerous domestic and international capacity building opportunities in form of specific trainings and participation in international projects and processes. With its capacity building function, the Ministry will not just secure staff for its own functions, but serve as a career experience for people who may later work on environmental issues in the private sector, local government, NGOs and elsewhere in the country and abroad. This is another way how the Ministry strengthens the environmental sector in the country as a whole.

**If the environment is indeed a priority of our politics**, then – step by step – we need to reach the following objectives which are of crucial importance and support each other in order to secure a healthy environment, including rational and sustainable use of physical space, clean air and waters, adequate waste management, preserved ecosystems and living species as well as sustainable use of other natural resources:



- **Achieve high level of implementation of environmental laws.** Via creation and revision of sound sector's policies with SD dimension, environmental policy and strategic documents should be formulated with focus on natural resources. Harmonization of sectoral legislation with EU *acquis* with respect to SD shall be done via amended environmental legislation with focus on natural resources and strengthening of the institutional capacities for harmonization of the environmental legislation. **The public participation in decision making processes** on environmental protection should be strongly supported, while **citizens' responsibility and penalties for damages** to the environment should significantly increase with establishing a functional eco-police force. Adequate split of competences among the governmental sectors regarding environment should also be highly enforced.
- **Ensure nature protection.** It is widely recognized that Macedonia is of outstanding natural beauty. Our natural heritage must be protected, while our protected areas also contribute to the European ecological networks by protecting the species which are under threat of extinction. The new law on nature protection reflects the EU standards and incorporates international agreements into our national legislation. It will protect species and their habitats through mechanisms such as strict natural reserves, national parks, natural monuments, nature parks, biosphere reserves and protection of landscape. **It emphasizes the need to protect biological diversity.** The law makes provisions for establishing an environmental network, compatible with the "Natura 2000" (European environmental coherent network), which gives new opportunities for increasing and enhancing Macedonian biodiversity. Many important ecosystems such as the Ohrid, Prespa and Dojran lakes as well as several mountain chains are located on borders with our neighbours. The new law provides for international cooperation in protection of our natural heritage and especially cross-border cooperation and we will continue to cooperate with neighbours, the EU and other international organizations. By implementing the **BSAP (Biodiversity Strategy and Action Plan)** we will strongly increase the biodiversity protection in Macedonia.
- **Ensure air quality control.** Clean air is needed for survival of every individual. **Poor air quality is probably the main environmental threat to human health in Macedonia.** Air pollution from industries such as in Veles and the growing air pollution from traffic in all the cities require urgent attention. The new comprehensive air quality law addresses all sources of air pollution, pollution from new and old installations and from cars. In the past decades, the EU countries have demonstrated that it is possible to significantly improve air quality. The phasing out of lead from petrol already demonstrates that some improvement can be achieved with very little cost. In relation to industrial pollution, it is clear that industry and the business sectors are responsible for their pollution and its reduction.
- **Implement water resource management.** Macedonia is rich in water resources. These resources call for careful management and protection against pollution. We should achieve both: reasonable use of water and protection of its quality. The EU Water Framework Directive (EU WFD, 2000), harmonized in the new Law on water, provides for modern policies as well as legal and institutional mechanisms. Through an **improved water supply infrastructure** we will increase the number of water supply systems in rural areas, increase coverage of agricultural land irrigation systems and minimize water



losses. All these activities will **establish an integrated water management** with the full implementation of the relevant legislation as a basis for developing comprehensive **river basement management plans**. The implementation and effective support of **eco-remediation systems** will prevent and improve the deterioration of the environment.

- **Implement waste management.** Following the guidance of the EU waste management legislation we are developing a comprehensive legal framework dealing with all types of wastes and all aspects of the waste management cycle. The most important objectives we want to achieve are **waste prevention, recycling, as well as reducing the amount of wastes generated**. By doing so, we reduce environmental risks and we save resources. The new law reflects these priorities and together with its secondary legislation will improve the current situation in the waste management sector by introducing European standards in waste management.

- **Support sustainable forestry, agriculture and rural development.** Appropriate agricultural policy must include all aspects of **Conservation and Management of Natural Resources!** This means that our policy should encompass the priorities of agro-biodiversity (genetic resources of rare domestic plants and animals) as part of the total biodiversity. Conservation and Management of Natural Resources regarding agricultural practices will be directly threatened if **GAP (Good Agricultural Practice)** is not implemented, from generating pollution in the environment media to physical destruction of natural resources. Good management in relation to the gene pool protection, regarding the exclusion of GMO plants and animals, will protect the endemic species and environment in whole. If the **proper diversity of income in rural areas** is generated, many benefits may be created via the synergism with Conservation and Management of Natural Resources. Creation of new businesses in rural areas that enforce the combination of rare and endemic domestic plants and animals, traditional agricultural products and services, which have the focus on Conservation and Management of Natural Resources, will enable an SD milieu on local level and will reduce the government's influence on rural development. Enforcing **healthy food production** will highly increase environmental protection and preserve the natural resources at the same time.

- **Support eco-tourism development.** The new concept of eco-tourism, embracing different aspects of natural and cultural promotion of the **Macedonian potentials**, will be achieved through proper definition of the carrying capacities, improved infrastructure in the tourist destinations and respect of environmental protection and cultural heritage in local urban plans. We will overcome the conflicts of interests in the physical plans and increase the awareness of sustainable tourism among the stakeholders, **principally orientated towards protection of the natural and cultural heritage in Macedonia**. We see **Macedonia as a prosperous eco-tourist, healthy food production destination**, prominent with its qualities within the process of globalization.



### **Strategic Measures**

#### **Key Challenge for Conservation and Management of Natural Resources**

- Significantly increase the implementation of passed environmental laws, support the central and local (municipalities) capacity for implementation of the laws and increase administrative efficiency;
- Ensure the nature protection in Macedonia based on "Natura 2000" network principles and via forced implementation of the Biodiversity Strategy and Action Plan;
- Promote the new Environmental Monitoring Network;
- Ensure air quality control and reduce the threats to human health and ecosystems' functioning;
- Implement the Water Resource Management to mitigate water loss and pollution impacts as a basis for developing comprehensive River Basement Management Plans;
- Strongly support, promote and implement alternative systems, like eco-remediation, for preventing and improving environmental deterioration;
- Implement Waste Management that includes reduction of waste amounts, recycling and pollution control;
- Support Sustainable Forestry, Agriculture and Rural Development as basic economic activities synergistic with the Conservation and Management of Natural Resources;
- Support eco-tourism development and healthy food production as prominent attributes of Macedonia in the process of globalization;
- Rapidly and intensively support the increase of public awareness on SD in general, the role of the environment in future economic and social benefits of the society in RM and the responsibilities of every citizen towards damages forced on the environment in RM.

#### **5.2.10 Public Health**

*The Key Challenge for Public Health and its corresponding Key Objective is addressed and supported with the Objectives and Results formulated in various sectors and cross-cutting issues:*

The concept of sustainable development is inevitably related to public health. Sustainable development calls for a development pattern that meets the needs of the present generation without compromising the ability of future generations to meet their own needs. As such, we understand that health is both an input and an outcome of sustainable development. Healthy population means larger, more productive and better skilled labour force that will increase economic growth. At the same time, the health of the population critically depends on the strength of the economy and its ability to meet the needs of the population.



We understand the importance of health issues and sustainable development. While this is the first Sustainable Development Strategy of the Government of Macedonia and this concept is yet to be fully introduced in policy making, we share the EU's vision of sustainable development and are committed to promoting "a dynamic economy with full employment and a high level of education, health protection, social and territorial cohesion and environmental protection in a peaceful and secure world, respecting cultural diversity".

We also made a commitment towards sustainable development by signing the Millennium Declaration in 2000 and adopting the Millennium Development Goals (MDGs) and have included health as a strategic priority of our Government.

Our vision for the health system is articulated in our Health Strategy. The strategy builds on Article 39 of the Constitution, which guarantees the right to health protection for every citizen of the country and gives citizens the right and duty to maintain and upgrade their own health and the health of others. The basic principles of the strategy are:

- Equity, meaning that all citizens are entitled to basic health services.
- All citizens, the Government, all health care institutions providing health services, public and private enterprises, as well as non-governmental organizations, are responsible for health.
- Health insurance provided on the basis of solidarity.

The strategy aims to improve the health of the population by improving health protection. It calls for greater preventive measures, improvements in the effectiveness and efficiency of the health system mostly by strengthening primary health care, building up the human capital in the health sector and ensuring quality provision of services and sound and sustainable financing of the health sector based on the solidarity (health insurance) principle. Implementation of the strategy should also ensure that eventually the national health system will become compatible with the EU system. Specific health aspects are being dealt through individual strategic documents (HIV protection, Dental Disease prevention among children, Promoting health living and work environment, Development of Integrated Health Information System etc.).

A key challenge in achieving sustainable development will be the creation of an **integrated and coordinated public health system**. It will require setting up a system with clear distribution of duties and responsibilities between various, adequately staffed and equipped institutions. Such a system will ensure that all citizens have access to appropriate medical care at affordable costs and that threats to public health are easily identified and tackled.

Such a system can function properly only if the **institutional framework that governs the public and consumer health system is appropriate**. While we have made substantial progress in improving our legislation and aligning it to the standards of the EU, there are still a number of gaps, especially in the area of consumer protection. We will work intensively in the upcoming period to **complete the legal framework** in all



areas of public and consumer health. However, the legal framework will not yield the expected results if not implemented properly. Unfortunately, the current institutional setup is not completely adequate – capacity to design, implement and monitor policies is relatively modest and a number of institutions have not yet been established. As a result, we will invest significant efforts in order to **establish the necessary institutions and reform and increase the capacity of existing institutions** to enable these to effectively promote public health and provide services to the population.

The contribution of the health sector to sustainable development will critically depend on the services it provides. We need to **reform the provision of health services** in order to be able to better answer to the key objectives of this strategy. More attention needs to be given to **streamlining and increasing preventive health care** and promoting healthy lifestyles in order to raise the awareness of people about the importance of public health, improve health outcomes and reduce costs to the society. We need to work on **improving the quality and quantity of services provided in primary health care**, so that the health needs of the Macedonian citizens are fully satisfied. Finally, we will need to considerably **reform the provision of services in the secondary and tertiary health care** in order to ensure that all citizens have access to the necessary medical treatment.

Public resources are scarce and need to be safeguarded against wasteful spending and invested equitably and in high-priority areas. Due to this, we will work on “rightsizing” the health sector and ensuring that the **demand for services is adequately matched by the supply of services**. Currently, health sector inputs (human resources, spending, health facilities etc) do not entirely reflect the demand for health services, resulting in poor service delivery and both unsatisfied patients as well as health specialists. We will revise our health and education policies to ensure that the system gets the human resources that it needs and in the amounts that it needs it. Equally important, we will work toward **implementing an HR policy** in the health sector that will ensure that health specialists are motivated and well-paid. Our health system has been deprived from larger investments for a long period which has resulted in depletion of the capital stock, poor health facilities and depreciated and outdated equipment. In order to overcome this situation, we intend to increase spending on capital expenditures and equipment in the health sector. We are confident that **better health facilities and more modern equipment** will considerably improve the health of the Macedonian population.

The financial sustainability of the health sector is essential for the ability of the health sector to fulfil its functions adequately. Such concerns gain in importance given the aging structure of the Macedonian population, the extended life expectancy and the rising costs of health care services. We are committed to implementing the reforms needed to safeguard the sustainability of the system which will result in **increased productivity and efficiency** in the health sector. Old equipment means frequent failures, large running costs and low volume of services provided to Macedonian citizens. The **increased capital investments** will bring in new equipment and better facilities which will increase productivity and efficiency in the sector. We have also made





significant progress in reforming the financing of health services, by introducing capitation for primary health care, introducing budgets in the secondary and tertiary health care as well as reforms in the supply of pharmaceuticals on the market. Still a lot remains to be done to ensure that **financing is linked to providing services**. In order to fully implement this principle we will **strengthen the accountability mechanisms** in the health sector. Finally, we plan to **use monitoring and performance indicators** to assess our progress in this area as well as in our success in fulfilling our objective of promoting public and consumer health.

As mentioned above, the health sector can not be viewed in isolation from the other sectors in the Macedonian society. Achieving the objectives in the health sector will depend on the success in promoting the objectives in other sectors. The linkages with the education, environment, economic growth and employment, infrastructure and agriculture, forestry and rural development sector are critical. The **quality and quantity of human capital** will increase only if health outcomes improve. On the other hand, progress in **better infrastructure** and **cleaner environment** will promote public health. **Stronger agriculture and rural development** will improve health outcomes of the rural population but also ensure more appropriate public and consumer health protection.

#### Strategic Measures

##### Key Challenge Promote Health:

- Complete the legal framework necessary for an integrated and coordinated public and consumer health systems;
- Establish all necessary institutions and reforms and increase the capacity of existing institutions;
- Streamline and promote preventive health care;
- Improve the quality and quantity of services provided in primary health care;
- Reform the provision of services in secondary and tertiary health care;
- Implement a HR policy that results in motivated and well-paid health specialists;
- Invest in better health facilities and more modern equipment;
- Ensure that resources are not wasted and financing is linked to services provided.

#### 5.2.11 Social Inclusion, Demography and Migration

The Key Challenge of *Social Inclusion, Demography and Migration* and its corresponding Key Objective is addressed and supported with the Objectives and Results formulated in various sectors and cross-cutting issues:

Firmly based on their historical experiences and formulated as one of the policy priorities



(NSSD TBR Chapter 4.2), European Union countries promote a democratic, socially inclusive, cohesive, healthy, safe and just society with respect to the fundamental rights and cultural diversity that creates equal opportunities and combats discrimination in all its forms. So far, the European social policy has been mainly subject to soft regulations. The assessments of the current model of a "social Europe" turn out to be highly diverse. Although there are demands to strengthen social components alongside the development of market freedoms by means of social policy provisions, the heterogeneity of welfare states and production regimes is viewed as the major obstacle to a stronger EU social policy.

Social inclusion policy in the Republic of Macedonia does not have a long tradition, although there are many social problems, such as great poverty, emphasized inequality and low living standard of the population. Current programs for tackling the problems of the socially excluded persons focuses only on several target groups and should be widened to include other vulnerable categories. However, in a country with a high unemployment rate, low salaries and their irregular payment, it is very difficult to assess the proportion of the socially excluded population.

Under the given unfavorable circumstances in the economic and social development, as well as the demographic situation, the government should focus its efforts on a few policy fields that are most important in terms of social inclusion and population development. Promotion of a greater social inclusion in an aging society and identification of the essential priorities in respected domains should serve as guidelines for building a more inclusive welfare state in the Republic of Macedonia. Therefore, one of the key challenges is to create a socially inclusive society by taking into account solidarity between and within generations and securing and increasing the quality of life of citizens as a precondition for lasting individual well-being, especially of those who can not help themselves.

Considering the current social and demographic situation, the main challenges for sustainable development of the Republic of Macedonia in respect to social inclusion and population aging processes are the following:

- To increase the employment in the formal sector and employability;
- To decrease poverty of the population;
- To ensure equal access to education and equal possibilities for education with certain quality standards;
- To ensure a health system based on the principles of solidarity, equity and proper efficiency;
- To improve the current functioning and supply of social services and benefits;
- To formulate and apply a sound long-term population policy;
- To formulate and apply a consistent long-term migration policy.



The first and most important area of social inclusion in the Republic of Macedonia is related to maximization of the labor market capacity to provide new jobs i.e. **to increase the employment in the formal sector**, as it addresses the origin of social exclusion. In a country with a high unemployment rate over the long period of time, the state has a crucial role in provision of a favorable business climate for creation of new jobs. In addition, the state could enhance the employment growth by setting up labor-intensive public work schemes and supporting non-conventional types of employment. Furthermore, an effective strategy towards formalization of the informal labor market can contribute to the decrease of the unemployment rate. The supply of formal jobs could be increased by enhancing employment flexibility, reducing taxes on work, introducing different social security schemes, etc.

Given the very unfavorable characteristics of the labor force (age, educational and professional structure) in the Republic of Macedonia, **employability** is an extremely important issue. Public policy can facilitate formal and decently paid employment by ensuring good education, adjusting the school curriculum to the labor market demands, setting up appropriate schemes for professional education, as well as life-long learning, etc.

Along with the high unemployment rate, there is extremely high poverty in the Republic of Macedonia (about 30% of the population is below the poverty threshold) that is spread between unemployed, as well as employed persons. There are several instruments that the state could use **to decrease poverty i.e. make up of insufficient income of the population**: legal stipulation of a minimum wage; guaranteed minimum income for the unemployed persons and other disadvantaged categories of the population; subsidized housing and food for the needy persons and cash assistance for a deprived population living in extremely difficult conditions.

Population and labor force in the Republic of Macedonia is characterized by low level of **education** that serves as a main threat for the sustainable development and national prosperity of the country. Therefore, the policy makers should enable all children, young people and adults, regardless of their social and economic status, place of residence and ability, sex, ethnic and religious affiliation to have **equal access to education and equal possibilities for education with certain quality standards**. With respect to the current situation, the educational inclusion policy should be built upon the following priorities: improving the physical access to schools providing education up to a high school degree; ensuring high quality of teaching and educational services; ensuring compulsory educational attainment; increasing children enrolment in pre-school education; university access for all qualified persons regardless of their financial status; ensuring high standards in both universities - public and private ones.



The current **health system** in the Republic of Macedonia is designed as a publicly financed system that formally provides access to all health services, but the practice reflects many deficiencies in the availability, quality, timing and efficiency of services' delivery. In this respect, along with the expected trends of population aging, the vulnerable groups in terms of the access and benefits from the health care system should be identified (long term care patients; elderly persons; the population from rural areas, the Roma population; non-insured and redundant workers). Concerning the problem of social exclusion in the Republic of Macedonia, the **health system should be based on the principles of solidarity, equity and proper efficiency**. This model should include: securing adequate health care for all; policy controlled private delivery in Primary Health Care with exception of some preventive and emergency services; rationalized and well managed public hospitals accessible to all citizens; reforms in the health insurance policy, etc.

**The improvement of the supply of the social services and benefits** is a particularly important determinant of the sustainable development of the Republic of Macedonia with respect to social inclusion. So far, social services and benefits were available to the narrow categories of disadvantaged persons and did not provide for inclusion of all vulnerable groups. In this respect, along with the current ineffective coordination among agencies and organizations working in the social welfare field, the improvement of the supply of social services and benefits in the country should be based on: increased emphasis on needs-based assessment; improvement of the capacities for delivering social services; decentralization of the social services; ex-ante systematic assessment before introduction of more rigid criteria regarding access to social services.

Population and labor force aging in the Republic of Macedonia becomes a serious obstacle to the process of sustainable development. The implications of the demographic ageing are manifested in the changes of the demographic development, the labor force supply and human capital formation, economic development, the system of transfers (particularly the pension and health system) etc. The current and the expected changes in population development and the process of demographic ageing in the Republic of Macedonia undoubtedly stress out the need of **a sound long-term population policy**. It should be an **implicit population policy** with set of indirect measures in other related policies (employment policy, fiscal policy, credit policy, policy of housing, policy of prices for goods and services for children, etc.). The measures should route the particular components of the total population movement (natality/fertility and migrations) in a socially sustainable direction.

The lack of a migratory policy in the Republic of Macedonia has resulted in negative effects on internal and international migration. Considering the biodynamic and ageing of the population, further abrupt migrations can have enormous negative implications on the population processes. Therefore, it is necessary **to adopt a consistent long-term migratory policy**, as a part of the total population policy of the country. Its measures



should be directed toward decreasing the emigration from smaller municipalities and rural areas, and especially migration to Skopje. In this respect, formulation of an appropriate development policy directed towards more balanced regional development is needed, especially with regards to the development of the rural areas and smaller municipalities. Furthermore, the migration policy should aim at decreasing large permanent emigrations abroad, especially intellectual emigration. The measures should be primarily directed toward stimulating the temporary employment abroad, i.e. promoting mobility of highly educated persons with the purpose of their professional upgrading that would be beneficial for the SD of the Republic of Macedonia.

#### **Strategic Measures (SM) - Social Inclusion, Demography and Migration:**

- Improve the business climate for creating new jobs.
- Set up labor-intensive public work schemes and support non-conventional types of employment.
- Develop and adopt an effective strategy for formalization of the informal labor market.
- Improve the employability of the labor force.
- Introduce instruments which will decrease poverty i.e. that will provide make up of insufficient income of the population.
- Build up educational inclusion policy which will provide equal access to education and equal possibilities for education with certain quality standards.
- Develop a model of health based on the principles of solidarity, equity and proper efficiency, along with the expected trends of the population aging.
- Improve the supply of the social services and benefits particularly in respect of the needs-based assessment, capacities for their delivering and decentralization of the social services.
- Formulate and apply sound long-term population policy which will incorporate set of indirect measures for the particular components of the total population movement.
- Adopt a consistent long-term migratory policy which will incorporate a set of measures for internal and international migration.



## 6. Macedonian Sustainable Development Objectives and Measures for their Implementation

The following Objectives Templates provide a comprehensive description of the Macedonian Sustainable Development Objectives and Strategic Measures derived from the Target Orientated Project Planning in the various Sectors and Cross-Cutting Issues Working Groups. In terms of the Objective Hierarchy these templates shall be reviewed alongside with the relevant Objective Trees in Annex No. 2.

### Policy and Legal Issues

<b>Cross-Cutting-Issue: National Policy and Legal Issues</b>
<b>Specific RM Key Challenges / Key Objectives</b>
<b>RM 1. Good Governance and Better Policy-Making</b> <u>Key Objective:</u> To set out an approach for Good Governance and Better Policy-Making based on better regulation and on the principle that sustainable development has to be integrated into policy-making at all levels. This requires all levels of government to support, and to cooperate with, each other, taking into account the different institutional settings, cultures and specific circumstances in the different regions of the Republic of Macedonia.
<b>RM 2. Diversification of Income in Rural Regions and Sustainable Development Challenges</b> <u>Key Objective:</u> To actively promote sustainable development in order to diversify the income in the rural regions of the Republic of Macedonia (RM), to generate regional added value-cycles, to facilitate regional and urban sustainable development spatial planning, and to ensure that the Government of the RM's internal and external policies are consistent with global sustainable development and its international commitments.
<b>RM 3. Economic Prosperity and Job Creation</b> <u>Key Objective:</u> To contribute to increasing competitiveness, economic prosperity and enhancing job creation by performing necessary structural changes which enable the economy at various levels to cope with the challenges of globalisation by creating a playing field in which dynamism, innovation and creative entrepreneurship can flourish whilst ensuring social equity and a healthy environment.
<b>RM 4. Sustainable Human Settlements</b> <u>Key Objective:</u> To improve the social, economic, and environmental quality of human settlements and the living and working environments of all people.



<p><b>RM 5. Cross-Cutting Policies contributing to the Knowledge Society</b></p> <p><u>Key Objective:</u> To stimulate development of a Knowledge-based Society in the Republic of Macedonia which will embody citizens with the key competencies and functional literacy that determines global competitiveness, and will develop citizens' attitude towards sustainable development.</p>
<p><b>Key Challenges / Key Objectives as in Renewed EU SDS (June 2006)</b></p>
<p><b>EU 1. Climate Change and Clean Energy</b></p> <p><u>Key Objective:</u> To limit climate change and its costs and negative effects to society and the environment.</p> <p><b>EU 2. Sustainable Transport</b></p> <p><u>Key Objective:</u> To ensure that our transport systems meet society's economic, social and environmental needs whilst minimising their undesirable impacts on the economy, society and the environment.</p> <p><b>EU 3. Sustainable Consumption and Production</b></p> <p><u>Key Objective:</u> To promote sustainable consumption and production patterns.</p> <p><b>EU 4. Conservation and Management of Natural Resources</b></p> <p><u>Key Objective:</u> To improve management and avoid overexploitation of natural resources, recognising the value of ecosystem services.</p> <p><b>EU 5. Public Health</b></p> <p><u>Key Objective:</u> To promote good public health on equal conditions and improve protection against health threats.</p> <p><b>EU 6. Social Inclusion, Demography and Migration</b></p> <p><u>Key Objective:</u> To create a socially inclusive society by taking into account solidarity between and within generations and to secure and increase the quality of life of citizens as a precondition for lasting individual well-being.</p>
<p><b>Overall Objective</b></p> <p>To develop sound institutional and legal system for SD, supported by an integrated policy approach towards SD and harmonised legislation with EU acquis.</p>
<p><b>Objective</b></p> <p><b>Developed policy and institutional system for SD</b></p>



<b>Result 1</b>	
1. Sound SD policy, with respect to the three SD pillars (economy, environment, society) created	
	Results 1x:
	<p><b>1.1 Strategic documents for SD elaborated</b></p> <p>1.1.1 Cross-cutting of the sectors' strategies (and policies) completed</p> <p>1.1.2 <i>Principles for SD formulated</i><sup>23</sup></p> <p>1.1.3 <i>Participatory approach in SD policy-making developed</i></p> <p>1.1.4 <i>Inter-ministerial cooperation among policy-makers strengthened</i></p> <p>1.1.5 <i>SD synergies among sectors identified</i></p> <p><b>1.2 Set institutional structure for SD policy making and implementation</b></p> <p>1.2.1 New or adjusted existing institutions for SD policy created</p> <p>1.2.2 <i>Responsibilities among the SD policy makers clarified</i></p> <p>1.2.3 <i>Institutions for SD policy making and implementation identified</i></p> <p>1.2.4 <i>SD dimension from sectors' perspective identified</i></p>
<b>Result 2</b>	
2. Sound sector's policies with SD dimension created/revised	
	Results 2x:
	<p><b>2.1 Sectors' policies with SD dimension formulated/revised</b></p> <p>2.1.1 Sectors' policies with SD dimension related to SD pillars drafted</p> <p>2.1.2 Cross-cutting of sectors' policies, from SD perspective completed</p> <p>2.1.3 <i>Inter-ministerial cooperation in formulating sectors' policies strengthened</i></p> <p>2.1.4 <i>Need for introduction/revision of SD dimension in sectors' policies identified</i></p> <p><b>2.2 Sectors' strategic documents, with respect to SD dimension elaborated/revised</b></p> <p>2.2.1 Sectors' strategic documents, with respect to SD dimension drafted</p> <p>2.2.2 Revision of the existing sectors' strategic documents, from perspective of SD completed</p> <p>2.2.3 <i>Inter-ministerial cooperation in drafting sectors' strategic documents strengthened</i></p> <p>2.2.4 <i>Need for elaboration of sectors' strategic documents identified</i></p>
<b>Result 3</b>	
3. Sectors' legislation with EU acquis harmonised, with respect to SD	
	Results 3x:
	<p><b>3.1 Sectors' legislation with respect to SD adopted/amended</b></p> <p>3.1.1 Sectors' legislation drafted/revised</p> <p>3.1.2 <i>Inter-ministerial cooperation in drafting SD cross-cutting aspects of legislation strengthened</i></p> <p>3.1.3 <i>Harmonization of the sectors' legislation, with respect to SD scheduled</i></p> <p>3.1.4 <i>Responsibilities of institutions in drafting SD cross-cutting aspects of legislation clarified</i></p> <p>3.1.5 <i>Level of SD harmonization needed in sectors legislation identified</i></p> <p><b>3.2 Institutional capacity for harmonization of SD aspects of sectors'</b></p>

<sup>23</sup> *Short-term results* (in the next 5 years) are indicated in *italics*.





	<p><b>legislation strengthened</b>  <i>3.2.1 Assistance for drafting of SD aspects of sectors' legislation (from EU and other donors) provided</i>  <i>3.2.2 Means for institutional capacity building (technical assistance, etc.) identified</i>  <i>3.2.3 Needs for institutional capacity building for harmonization of SD aspects of sectors' legislation identified</i></p>
<b>Result 4</b>	
4. Mechanisms for implementation of SD policy and legislation created	
	Results 4x:
	<p><b>4.1 Mechanisms for implementation of SD policy created</b>  <i>4.1.1 Cross-cutting of the sectors' instruments for implementation of SD policy completed</i>  <i>4.1.2 Sectors' instruments for implementation of SD policy identified</i>  <i>4.1.3 Inter-ministerial cooperation for creation of instruments for implementation of SD policy strengthened</i>  <i>4.1.4 Responsibilities of policy-makers in implementation of SD policy clarified</i>  <i>4.1.5 Institutional set-up needed for implementation of SD policy identified</i>  <b>4.2 Mechanisms for implementation of SD aspects of legislation created</b>  <i>4.2.1 Cross-cutting of the sectors' instruments for implementation of SD aspects of legislation making and implementation completed</i>  <i>4.2.2 Sectors' instruments for implementation of SD legislation identified</i>  <i>4.2.3 Inter-ministerial cooperation for creation of instruments for SD strengthened</i>  <i>4.2.4 Responsibilities of sectors' institutions in implementation of SD legislation clarified</i>  <i>4.2.5 Institutional set-up needed for implementation of SD legislation identified</i></p>

## Environment

### Cross-Cutting-Issue: Environment

#### Specific RM Key Challenges / Key Objectives

##### RM 1. Good Governance and Better Policy-Making

Key Objective: To set out an approach for Good Governance and Better Policy-Making based on better regulation and on the principle that sustainable development has to be integrated into policy-making at all levels. This requires all levels of government to support, and to cooperate with, each other, taking into account the different institutional settings, cultures and specific circumstances in the different regions of the Republic of Macedonia.



## **RM 2. Diversification of Income in Rural Regions and Sustainable Development Challenges**

Key Objective: To actively promote sustainable development in order to diversify the income in the rural regions of the Republic of Macedonia (RM), to generate regional added value-cycles, to facilitate regional and urban sustainable development spatial planning, and to ensure that the Government of the RM's internal and external policies are consistent with global sustainable development and its international commitments.

## **RM 3. Economic Prosperity and Job Creation**

Key Objective: To contribute to increasing competitiveness, economic prosperity and enhancing job creation by performing necessary structural changes which enable the economy at various levels to cope with the challenges of globalisation by creating a playing field in which dynamism, innovation and creative entrepreneurship can flourish whilst ensuring social equity and a healthy environment.

## **RM 4. Sustainable Human Settlement**

Key Objective: To improve the social, economic, and environmental quality of human settlements and the living and working environments of all people.

## **RM 5. Cross-Cutting Policies contributing to the Knowledge Society**

Key Objective: To stimulate development of a Knowledge Society in the Republic of Macedonia which will embody citizens with the key competencies and functional literacy that determines global competitiveness, and will develop citizens' attitude towards sustainable development.

### **Key Challenges / Key Objectives as in Renewed EU SDS (June 2006)**

#### **EU 1. Climate Change and Clean Energy**

Key Objective: To limit climate change and its costs and negative effects to society and the environment.

#### **EU 2. Sustainable Transport**

Key Objective: To ensure that our transport systems meet society's economic, social and environmental needs whilst minimising their undesirable impacts on the economy, society and the environment.

#### **EU 3. Sustainable Consumption and Production**

Key Objective: To promote sustainable consumption and production patterns.

#### **EU 4. Conservation and Management of Natural Resources**

Key Objective: To improve management and avoid overexploitation of natural resources, recognising the value of ecosystem services.

#### **EU 5. Public Health**

Key Objective: To promote good public health on equal conditions and improve protection against health threats.



### Overall Objective 1

1. To establish healthy ecosystems with rich biodiversity potential and preserved natural resources for future generations.

### Overall Objective 2

2. To facilitate economic progress through new job opportunities devoted to environmental protection and improvement.

### Overall Objective 3

3. To support social prosperity of rural municipalities via recognizing and utilizing the potentials of healthy ecosystems' values.

### Objective

**Preserved environment and sustainably managed natural resources in Macedonia.**

### Result 1

1. **EU standardized** monitoring system of the environment and national program for environmental monitoring established.

Results 1x:

*1.1 National Systems completed:*

- *Environmental Info System*
- *Spatial Plan Info System*

*1.2 Obtained Reliable Monitoring Data for Environment in RM made available*

*1.3 Regular Monitoring in all Environmental Media prepared and implemented*

*1.4 National Set of Indicators for Environment prepared*

*1.5 Reconstructed the Environmental monitoring system by including relevant research institutions and established supervision by EU EPA and other agencies <sup>24</sup>*

### Result 2

2. Environment as a priority in the Government of RM officially recognized.

Results 2x:

*2.1 Eco-tourism development forced*

*2.2 Citizens' responsibility for environmental damage increased*

<sup>24</sup> *Short-term results* (in the next 5 years) are indicated in *italics*



- 2.3 Healthy food production forced*
- 2.4 Implementation of eco-remediation systems introduced and highly supported*
- 2.5 Public awareness on Environmental Protection and Sustainable Development concept increased*
- 2.6 Alternative financial sources for environment enabled*
- 2.7 Budget allocation to environmental projects and applications increased*
  
- 2.8 Adequate split of competences among the governmental sectors regarding environment forced*
  - 2.8.1 Cooperation with MoEPP increased*
  - 2.8.2 Inter-sectoral coordination and cooperation in the Government regarding Environment increased*

### **Result 3**

3. High level of implementation of Laws on Environment achieved.

Results 3x:

- 3.1 Penalties for damages to environment significantly increased*
- 3.2 High Administration efficiency on Environment and Functional eco-police force established*
  
- 3.3 Central and Local Capacities for implementation of passed Laws increased*
  - 3.3.1 Administration capacity on Environment at municipality level increased*
    - 3.3.1.1 Institutional framework of Ministry of Environment and Physical Planning finished*
  
- 3.4 EU acquis incorporation into the National legislation finished*
  - 3.4.1 Preparation and adoption of needed by-laws, plans and programs finished*
    - 3.4.1.1 Adoption of pending laws regarding Environment done*

### **Result 4**

4. Full Efficiency of the Ministry of Environment and Physical Planning achieved.

Results 4x:

- 4.1 Public participation in decision making process in environmental protection strongly increased*
- 4.2 Information flow on Environment highly increased*
- 4.3 Law on Environment efficiently implemented*
  
- 4.4 Necessary changes for achieving the appropriate human and financial resource organizational set-up within the MoEPP done*
  - 4.4.1 Corruption in MoEPP prevented*
    - 4.4.1.1 Partisan Politics in MoEPP prevented*
    - 4.4.1.2 Responsibility of the Minister and Head of sectors in MoEPP for inefficient Ministry and the errors or not taking actions for preventing the deterioration of the environment in RM enforced*
  - 4.4.2 Independence of foreign investments achieved*
    - 4.4.2.1 Alternative sources of funding developed*
    - 4.4.2.2 Appropriate budget allocation for Environment established*
  - 4.4.3 Properly educated cadre produced*



4.4.3.1 *Environmental curricula at universities included*

4.4.3.2 *Public awareness on SD increased*

4.5 *Priority in Environmental protection in the RM Government recognized*

## Energy

### Sector: Energy

#### Specific RM Key Challenges / Key Objectives

##### **RM 1. Good Governance and Better Policy-Making**

Key Objective: To set out an approach for Good Governance and Better Policy-Making based on better regulation and on the principle that sustainable development has to be integrated into policy-making at all levels. This requires all levels of government to support, and to cooperate with, each other, taking into account the different institutional settings, cultures and specific circumstances in the different regions of the Republic of Macedonia

##### **RM 2. Diversification of Income in Rural Regions and Sustainable Development Challenges**

Key Objective: To actively promote sustainable development in order to diversify the income in the rural regions of the Republic of Macedonia (RM), to generate regional added value-cycles, to facilitate regional and urban sustainable development spatial planning, and to ensure that the Government of the RM's internal and external policies are consistent with global sustainable development and its international commitments.

##### **RM 3. Economic Prosperity and Job Creation**

Key Objective: To contribute to increasing competitiveness, economic growth and enhancing job creation by performing necessary structural changes which enable the economy at various levels to cope with the challenges of globalisation by creating a playing field in which dynamism, innovation and creative entrepreneurship can flourish whilst ensuring social equity and a healthy environment

#### Key Challenges / Key Objectives as in Renewed EU SDS (June 2006)

##### **EU 1. Climate Change and Clean Energy**

Key Objective: To limit climate change and its costs and negative effects to society and the environment.

##### **EU 2. Sustainable Transport**

Key Objective: To ensure that our transport systems meet society's economic, social and environmental needs whilst minimising their undesirable impacts on the economy, society and the environment.

##### **EU 3. Sustainable Consumption and Production**



Key Objective: To promote sustainable consumption and production patterns.

### Overall Objective 1

1. To reduce the dependence on energy import

### Overall Objective 2

2. To ensure reliable energy supply for all citizens

### Overall Objective 3

3. To reduce energy-related environmental pollution (global and local)

## Objective 1

### 1. Improved efficiency in energy production

#### Result 1.1

1.1 Fuel mix improved

##### Results 1.1.x

1.1.1 Share of other fuels (gas and renewable) in the fuel mix increased

#### Result 1.2

1.2 Advanced energy production technologies applied

##### Results 1.2.x

1.2.1 *Investments for rehabilitation and maintenance provided*<sup>25</sup>

1.2.2 Combined heat and power and clean coal technologies used

#### Result 1.3

1.3 Energy system expanded

##### Results 1.3.x

1.3.1 *Investments in new production facilities provided*

1.3.2 *Wise and transparent privatization of energy production plants conducted*

1.3.3 *Capacities for strategic planning improved*

1.3.4 *Investments for supportive infrastructure provided*

1.3.4.1 *Interconnections newly built/improved*

1.3.4.2 *Gas pipeline utilization improved*

## Objective 2

### 2. Improved efficiency of energy use

#### Objective 2.1

<sup>25</sup> *Short-term results* (in the next 5 years) are indicated in *italics*.



## **2.1 Improved energy efficiency in industry**

### **Result 2.1.1**

#### *2.1.1 Planning and decision-making improved*

##### Results 2.1.1.x

- 2.1.1.1 Decision makers/planners with knowledge and vision involved*
- 2.1.1.2 The political impact on decision-making reduced/removed*
- 2.1.1.3 Environmental concerns enhanced*
- 2.1.1.4 Environmental aspects taken into consideration in further privatization of industrial plants*

### **Result 2.1.2**

#### *2.1.2 Best Available Technologies/practices applied*

##### Results 2.1.2.x

- 2.1.2.1 Electricity-heat conversion reduced*
  - 2.1.2.1.1 Electricity price rationalized*
  - 2.1.2.1.2 Gas distribution network built*
- 2.1.2.2 Energy efficiency intervention undertaken*
  - 2.1.2.2.1 Social and environmental interest respected*
- 2.1.2.3 Investments in new technologies provided*
  - 2.1.2.3.1 Implementation of legislation improved*
    - 2.1.2.3.1.1 Efficiency of judiciary improved*
    - 2.1.2.3.1.2 Adequate penalties introduced*
    - 2.1.2.3.1.3 Monitoring system fully established*
    - 2.1.2.3.1.4 External costs internalized (tax for polluters introduced)*

## **Objective 2.2**

### **2.2 Improved energy efficiency in households and public sector**

#### **Result 2.2.1**

##### *2.2.1 Reduced electricity used for heating*

##### Results 2.2.1.x

- 2.2.1.1 Electricity price rationalized*
- 2.2.1.2 Gas distribution networks built*

#### **Result 2.2.2**

##### *2.2.2 Secondary legislation completed*

##### Results 2.2.2.x

- 2.2.2.1 Legislation/regulation for building codes adopted*
- 2.2.2.2 Legislation/regulation for labelling adopted*

#### **Result 2.2.3**

##### *2.2.3 Awareness improved*

##### Results 2.2.3.x



- 2.2.3.1 *Energy saving habits established*
  - 2.2.3.1.1 *Electricity price rationalized*
  - 2.2.3.1.2 *Campaigns organized*
  - 2.2.3.1.3 *Basic educational programs developed*
- 2.2.3.2 *Decision-making improved*
  - 2.2.3.2.1 *Social and environmental interest respected*

### **Objective 2.3**

#### **2.3 Improved energy efficiency in transport**

##### **Result 2.3.1**

###### *2.3.1 Quality of fuels improved*

###### Results 2.3.1.x

- 2.3.1.1 *New standards adopted*

##### **Result 2.3.2**

###### *2.3.2 Vehicle fleet renewed*

##### **Result 2.3.3**

###### *2.3.3 Adequate economic instruments provided*

##### **Result 2.3.4**

###### *2.3.4 Public transport improved*

###### Results 2.3.4.x

- See the relevant results from the sector Transport and Infrastructure

### **Objective 3**

#### **3. Increased utilization of RES**

##### **Result 3.1**

###### *3.1 Investments provided*

###### Results 3.1.x

- 3.1.1 *National funding provided*
  - 3.1.1.1 *Institutional capacity built*
  - 3.1.1.2 *Legislation/regulation developed and adopted*
  - 3.1.1.3 *Administration reduced and made efficient*
- 3.1.2 *Potential for attracting foreign investments increased*
  - 3.1.2.1 *Institutional capacity built*
  - 3.1.2.2 *Legislation/regulation developed and adopted*
  - 3.1.2.3 *Administration reduced and made efficient*

##### **Result 3.2**

###### *3.2 Decision-making improved*

###### Results 3.2.x





- 3.2.1 Awareness for RES application increased
- 3.2.2 Social and environmental criteria respected
- 3.2.3 Information disseminated
- 3.2.4 Pilot projects undertaken

## Agriculture and Rural Development

### Sector: Agriculture and Rural Development

#### Specific RM Key Challenges / Key Objectives

##### RM 1. Good Governance and Better Policy-Making

Key Objective: To set out an approach for Good Governance and Better Policy-Making based on better regulation and on the principle that sustainable development has to be integrated into policy-making at all levels. This requires all levels of government to support, and to cooperate with, each other, taking into account the different institutional settings, cultures and specific circumstances in the different regions of the Republic of Macedonia.

##### RM 2. Diversification of Income in Rural Regions and Sustainable Development Challenges

Key Objective: To actively promote sustainable development in order to diversify the income in the rural regions of the Republic of Macedonia (RM), to generate regional added value-cycles, to facilitate regional and urban sustainable development spatial planning, and to ensure that the Government of the RM's internal and external policies are consistent with global sustainable development and its international commitments.

##### RM 3. Economic Prosperity and Job Creation

Key Objective: To contribute to increasing competitiveness, economic prosperity and enhancing job creation by performing necessary structural changes which enable the economy at various levels to cope with the challenges of globalisation by creating a playing field in which dynamism, innovation and creative entrepreneurship can flourish whilst ensuring social equity and a healthy environment.

##### RM 4. Sustainable Human Settlements

Key Objective: To improve the social, economic, and environmental quality of human settlements and the living and working environments of all people.

##### RM 5. Cross-Cutting Policies contributing to the Knowledge Society

Key Objective: To stimulate development of a Knowledge Society in the Republic of Macedonia which will embody citizens with the key competencies and functional literacy that determines global competitiveness, and will develop citizens' attitude towards sustainable development.

#### Key Challenges / Key Objectives as in Renewed EU SDS (June 2006)

##### EU 1. Climate Change and Clean Energy

Key Objective: To limit climate change and its costs and negative effects to society and the



environment.

## **EU 2. Sustainable Transport**

Key Objective: To ensure that our transport systems meet society's economic, social and environmental needs whilst minimising their undesirable impacts on the economy, society and the environment.

## **EU 3. Sustainable Consumption and Production**

Key Objective: To promote sustainable consumption and production patterns.

## **EU 4. Conservation and Management of Natural Resources**

Key Objective: To improve management and avoid overexploitation of natural resources, recognising the value of ecosystem services.

## **EU 5. Public Health**

Key Objective: To promote good public health on equal conditions and improve protection against health threats.

## **EU 6. Social Inclusion, Demography and Migration**

Key Objective: To create a socially inclusive society by taking into account solidarity between and within generations and to secure and increase the quality of life of citizens as a precondition for lasting individual well-being.

### **Overall Objective 1**

1. To improve agriculture and rural economy in the Republic of Macedonia.

### **Overall Objective 2**

2. To improve agriculture and to develop socially balanced rural regions in the Republic of Macedonia.

### **Overall Objective 3**

3. To improve agriculture and to develop environmentally balanced rural regions in the Republic of Macedonia.

### **Objective**

**Achieve sustainable agriculture and integrate regional rural development of the Republic of Macedonia**

### **Result 1.**

1. Good organization in the sector implemented

#### **Result 1.x:**

- 1.1. The level of organization and planning of production improved.
- 1.1.1. *Existing and strong Export Promotion Agency supported.*<sup>26</sup>
- 1.1.2. Supportive insurance policy for agricultural holdings provided.

<sup>26</sup> *Short-term results* (in the next 5 years) are indicated in *italics*.



- 1.1.3. *Existing and strong Market Information System (MIS) support.*
- 1.1.4. The optimal number of PPP (private-public-partnership) introduced.
- 1.2. Vertical integration of the supply chain completed.
- 1.3. *Strong self-organization of the Macedonian farmers supported.*
- 1.3.1. *Proper optimization of agricultural input conducted.*
- 1.4. Proper and effective communication among stakeholders and strong interconnection in the sector initiated.
- 1.5. *Proper and effective farm register system completed.*

## Result 2.

### 2. Proper agriculture and rural development policy ensured

#### Result 2.x:

- 2.1. High level of strategy implementation provided
  - 2.1.1. *The reforms in the agriculture and food sector according EU&CAP supported*
  - 2.1.2. *Well formulation and high implementation of national politic for the agriculture provided*
  - 2.1.3. *Consist politic of prices - Internal market regulations according EU introduced*
- 2.2. Clear division of competences among Ministries identified and completed.
  - 2.2.1. *The legal framework completed*
  - 2.2.2. The consistency of administration (no changes with each Government) guaranteed
  - 2.2.3. *Strong capacity of the Extension Agency as a public service provided.*
- 2.3. Precise strategies and run existing one provided
  - 2.3.1. *The strategy for agricultural and rural development adopted*
  - 2.3.2. *High level of mainstreaming of environment issues in the agriculture Introduced*
  - 2.3.3. *High level of awareness in the MoEPP and other stakeholder about agriculture and rural development Introduced*
- 2.4. *Proper data management started*
- 2.5. *Available and accurate statistical data provided*

## Result 3.

### 3. Strong institutional capacity of the sector implemented

#### Results 3.x

- 3.1. Strong institutional and organization support of the sector provided
  - 3.1.1. *Institutional framework for sustainable development of the society / sector established*
  - 3.1.2. *Proper financial instruments for sustainable development implementation introduced*
  - 3.1.3. *The implementing agencies / PPP, LABS, TEST supported and regularly controlled*
  - 3.1.4. *The clear competences among MAFWE and Ministry of Economy and Ministry of Environment, Ministry of Health, Ministry of Finance and other Ministries identified*
- 3.2. *The strong institutional capacities of MAFWE completed*
- 3.3. *Fast and proper decision making in the Ministry of Agriculture conducted*
  - 3.3.1. high level of Strategy document implementation provided
  - 3.3.2. *The Council/ board for Agriculture as a interdisciplinary body established*
  - 3.3.3. high transparency of information provided
  - 3.3.4. Strong inter-institutional coordination/cooperation supported
  - 3.3.5. Optimal institutional management ensued
  - 3.3.5.1. Strong capacity of administrative personnel ensued



- 3.3.5.1.1. Proper institutional set up ensued
- 3.3.5.1.2. Proper payment of the administrative staff ensued
- 3.3.5.1.3. Abuse of the administrative system prevented
- 3.3.5.1.4. *Employment of professionals and trained young people ensued*
- 3.3.5.1.5. Optimal utilization of present institutional capacities ensued
- 3.3.5.2. Consistency in institutional memory provided
  - 3.3.5.2.1. The risk that the long term jobs in administration are not jeopardized by political changes prevented
  - 3.3.5.2.2. Interference of politics into institutional activities avoided
- 3.3.6. *Proper communication and procedures in the institutions insured*
- 3.3.7. *Web-oriented presentation of public domain institutions provided*

#### Result 4.

#### 4. Human resources in line with Sustainable Development improved

##### Results 4.x

- 4.1. The agriculture sector as instrument to keep the young people in the agriculture and in the rural areas treated
  - 4.1.1. *Optimal number of back yard production and part time farmers identified and supported*
  - 4.1.2. The agricultural sector attractiveness for possible employment increased
  - 4.1.3. Favourable age and gender structure in rural areas and the rest of the sector provided
  - 4.1.4. Optimal utilization of educated labour force offered
  - 4.1.5. Optimal number of professional commercial farmers identified and supported
- 4.2. sufficient motivation for changes and improvements in the sector introduced and supported
- 4.3. *high education of direct producers offered*
  - 4.3.1. *strong management skills of producers and processors provided and supported*
  - 4.3.2. *sufficient human resources for EU integration at local level provided and supported*
  - 4.3.3. *sufficient human resources for EU integration on the state level provided and supported*
- 4.4. *higher level of investments in education and research related to agriculture provided and supported*
  - 4.4.1. *High capacities of consultancy skills and knowledge supported*
  - 4.4.2. *The formal education (reformed education) improved*
  - 4.4.3. *Corresponding curricula in the formal education adopted and supported*
  - 4.4.4. *vocational training in the sector provided*
  - 4.4.5. *life long learning and adult learning methodologies provided*
  - 4.4.6. *certification schemes for training and consultancy introduced*
- 4.5. *target groups for education and training defined*
- 4.6. good reputation of the agricultural sector provided and supported
- 4.7. historical neglect of the rural and agricultural areas reduced / avoided

#### Result 5.

#### 5. Business environment for sustainable agricultural development encouraged

##### Results 5.x:

- 5.1. Optimal number of adequate brand promotion and sales completed
  - 5.1.1. strong inflow of direct domestic and foreign investments supported
  - 5.1.2. *The proper and existing guarantee funds organised*
  - 5.1.3. *The banks' offers - the credit lines for start up businesses in agriculture encouraged*



- 5.1.4. *Encouraged investments in agriculture by companies*
- 5.2. *High flow of market information provided*
- 5.3. *Strong support and development of the sector provided*
- 5.3.1. *Good business environment (no administrative barriers) provided*
- 5.3.2. *Sufficient number of PPP started*
- 5.3.3. *Coordinated inspection services at border terminals and internal markets conducted*
- 5.3.4. *Proper customs documentation required for import-export introduced and provided*
- 5.3.5. *Short and easy administrative procedures introduced and provided*
- 5.3.6. *grey economy decreased*
- 5.3.7. *Good condition of existing legal system offered*
- 5.4. *The high absorption capacity for grants and investment funds offered*
- 5.5. *proper diversity of income in rural areas generated*
- 5.5.1. *Optimal number of consulting companies provided*
- 5.5.2. *Good coordination between science and practice introduced and supported*
- 5.5.3. *Good practice of corporate governance introduced and supported*
- 5.6. *adequately trained managers in the Agriculture entrepreneurs supported*
- 5.7. *Various assortment of agriculture products introduced and promoted*
- 5.8. *The awareness process for forthcoming EU requirements of the sector supported*

## Result 6.

### 6. Implementation of appropriate agriculture practices ensured<sup>27</sup>

#### Results 6.x:

- 6.1. The optimal number of agro-environmental practices conducted
- 6.1.1. The optimal number of environmentally friendly practices created and carried
- 6.1.2. The optimal number of sustainable production practices created and carried
- 6.1.3. The optimal number of brand-oriented production practices (regional/local...) created and carried
- 6.1.3.1. The optimal number of origin-oriented production practices created and carried
- 6.1.3.2. *The adequate implementation of "code of conduct" in GAP supported*
- 6.1.4. *The minimal standards for healthily production fulfilled*
- 6.1.5. *Proper use of fertilizers, pesticides and water irrigation guaranteed*
- 6.1.5.1. *The presents of comprehensive waste management in agriculture and livestock production offered*
- 6.1.5.2. *The functional machinery rings (for GAs, cooperatives, producer organizations) Provided or/and supported*
- 6.1.6. The optimal number of good agriculture practice for protection of water, air, land created and carried
- 6.1.6.1. Spatial land management improved
- 6.1.6.2. *The presents of carbon sequestration practice provided*
- 6.2. *The optimal number of developing technologies for use of alternative energy sources from agriculture provided and promoted*
- 6.2.1. *The high level of EU standard "Energy Farming" provided*
- 6.2.2. *The "Energy Farming" on the national level awareness increased*
- 6.2.3. *The "Energy Farming" on the local level awareness increased*
- 6.2.4. *The pilot projects for "Energy Farming" on the national level introduced and supported*
- 6.2.5. *The pilot projects for "Energy Farming" on the local level introduced and*

<sup>27</sup> The underlined results are considered to be reached only in the **long-term time horizon after 10 years**. This takes into consideration the special situation in agriculture practise and departs from the scheme usually used in this NSSD when results are defined as to be short-term and medium-term.



*supported*

- 6.2.6. *The investigations and development of new technologies for use of alternative energy and material sources from agriculture strongly supported*
- 6.3. The optimal number of food safety practices conducted
- 6.3.1. Traceability of animal and crop products established
- 6.3.2. The normal relation food safety- final product (quality) supported and controlled
- 6.3.3. The high implementation of system of production practices provided
- 6.3.4. The rules of GAP followed
- 6.3.4.1. The proper use of water, fertilizers and pesticides established
- 6.3.4.2. The high application of standards during production established
- 6.3.4.3. The expertise and application of post harvesting technologies established
- 6.3.4.4. The proper use of veterinary medicine & additives established
- 6.3.5. *The National legislation in order with EU (GAP protocols) completed*
- 6.3.5.1. *The Government support in implementation of advisory packages provided*
- 6.3.5.2. *The optimal number of advisors (HASSP, EUREPGAP) provided*
- 6.3.5.3. *Implementations certification system (HASSP, EUREPGAP) established*
- 6.4. *The available information for market demand (quality requirements) provided*
- 6.5. *Proper knowledge/basic capacities for advisory services (improve advisory services) provided*
- 6.6. *Strong support of media, NGOs, associations, consulting companies of the sector provided*
- 6.7. *The new equipment and mechanization (appropriate machinery) introduced and supported*
- 6.8. *The higher education of direct producers offered and supported*



## Forestry and Rural Development

### Sector: Forestry and Rural Development

#### Specific RM Key Challenges / Key Objectives

##### RM 1. Good Governance and Better Policy-Making

Key Objective: To set out an approach for Good Governance and Better Policy-Making based on better regulation and on the principle that sustainable development has to be integrated into policy-making at all levels. This requires all levels of government to support, and to cooperate with, each other, taking into account the different institutional settings, cultures and specific circumstances in the different regions of the Republic of Macedonia.

##### RM 2. Diversification of Income in Rural Regions and Sustainable Development Challenges

Key Objective: To actively promote sustainable development in order to diversify the income in the rural regions of the Republic of Macedonia (RM), to generate regional added value-cycles, to facilitate regional and urban sustainable development spatial planning, and to ensure that the Government of the RM's internal and external policies are consistent with global sustainable development and its international commitments.

##### RM 3. Economic Prosperity and Job Creation

Key Objective: To contribute to increasing competitiveness, economic prosperity and enhancing job creation by performing necessary structural changes which enables the economy at various levels to cope with the challenges of globalisation by creating a playing field in which dynamism, innovation and creative entrepreneurship can flourish whilst ensuring social equity and a healthy environment.

##### RM 4. Sustainable Human Settlements

Key Objective: To improve the social, economic, and environmental quality of human settlements and the living and working environments of all people.

#### Key Challenges / Key Objectives as in Renewed EU SDS (June 2006)

##### EU 1. Climate Change and Clean Energy

Key Objective: To limit climate change and its costs and negative effects to society and the environment.

##### EU 2. Sustainable Transport

Key Objective: To ensure that our transport systems meet society's economic, social and environmental needs whilst minimising their undesirable impacts on the economy, society and the environment.

##### EU 3. Sustainable Consumption and Production

Key Objective: To promote sustainable consumption and production patterns.



#### **EU 4. Conservation and Management of Natural Resources**

Key Objective: To improve management and avoid overexploitation of natural resources, recognising the value of ecosystem services.

#### **EU 5. Public Health**

Key Objective: To promote good public health on equal conditions and improve protection against health threats.

#### **EU 6. Social Inclusion, Demography and Migration**

Key Objective: To create a socially inclusive society by taking into account solidarity between and within generations and to secure and increase the quality of life of citizens as a precondition for lasting individual well-being.

#### **Overall Objective 1**

1. To improve forestry and rural economy of the Republic of Macedonia.

#### **Overall Objective 2**

2. To improve forestry and to develop rural regions in the Republic of Macedonia socially balanced.

#### **Overall Objective 3**

3. To improve forestry and to develop rural regions in the Republic of Macedonia environmentally balanced.

#### **Objective**

**Achieved sustainable forestry and integrated regional rural development of the Republic of Macedonia**

#### **Result 1**

1. Proper organized and managed forestry

Result 1.x:

*1.1 The organization of the sector improved*<sup>28</sup>

*1.2 The conflict of interests (on individual level) among the responsible personnel in PE "Makedonski Sumi" avoided*

*1.3 Adequate bodies for management set up*

*1.3.1 Proper organization of Public Enterprise "Makedonski Sumi" set up*

*1.3.2 Finishing of the cadastre supported*

*1.4 Professional working of the forestry (without influence of the politic) secured*

*1.5 Government informed for the role of the forestry in the economy, rural development and ecology*

<sup>28</sup> *Short-term results* (in the next 5 years) are indicated in *italics*.





## Result 2

### 2. Implemented strong/efficient administrative institutional capacity of the sector

#### Result 2.x:

- 2.1. *The activities for strengthening of the institutional capacity of the Ministry of Agriculture, Forestry and Water Supply supported*
- 2.2. *The activities for strengthening of the Institutional capacity of Public Enterprise "Makedonski Sumi" supported*
  - 2.2.1 *Employment of professionals and trained young people secured*
  - 2.2.2 *Environment where the administrative staff will not be abused secured*
- 2.3 *The interference of the politic on the Institutional activities avoided*
- 2.4 *Proper setup of the institutions supported*
- 2.5 *System for permanent professional improvement of the personnel established*
- 2.6 *Optimal utilization of the institutional capacities secured*
- 2.7 *Optimal payment of the administrative staff secured*
- 2.8 *Transparency in the process of employment secured*
- 2.9 *Proper and efficient control (by the Government) of the work of institutions for over passing negative factors secured*
- 2.10 *The public awareness for the forestry increased*
- 2.11 *Government informed for the role of the forestry in the economy, rural development and ecology*

## Result 3

### 3. Ensured application of effective technologies and methodology

#### Result 3.x:

- 3.1. *Application of proper methodologies for planning of the forestry secured*
- 3.2. *The application of modern technologic solutions in the forestry supported*
- 3.3. *The application of appropriate methodologies for determination of capacities for non-woods forestry products secured*
  - 3.3.1. *Proper methodology for guiding and maintain data base for endangered species introduced*
- 3.4. *The public awareness for the forestry increased*
  - 3.4.1. *Government informed for the role of the forestry in the economy, rural development and ecology*

## Result 4

### 4. Implemented Law regulations

#### Results 4.x:

- 4.1. *The organized crime avoided*
  - 4.1.1. *The illegal logging avoided*
  - 4.1.2. *The adherence of the low regulations supported*
- 4.2. *National Strategy for forest fire protection prepared*
  - 4.2.1. *General Management Plan prepared*
  - 4.2.2. *Forest inventory conducted*
- 4.3. *The overlapping of responsibilities in relation to integral spatial management and*



*natural resources tackled a way*

*4.4. The establishment of market management supported*

*4.4.1 The law regulations that witch allows regular and sufficient financial assets  
secured*

*4.5. Government informed for the role of the forestry in the economy, rural development  
and ecology*

## Tourism

### Sector: Tourism

#### Specific RM Key Challenges / Key Objectives

##### **RM 1. Good Governance and Better Policy-Making**

Key Objective: To set out an approach for Good Governance and Better Policy-Making based on better regulation and on the principle that sustainable development has to be integrated into policy-making at all levels. This requires all levels of government to support, and to cooperate with, each other, taking into account the different institutional settings, cultures and specific circumstances in the different regions of the Republic of Macedonia.

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Key Objective: To stimulate development of a Knowledge-based Society in the Republic of Macedonia which will embody citizens with the key competencies and functional literacy that determines global competitiveness, and will develop citizens' attitude towards sustainable development.



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Key Objective: To improve management and avoid overexploitation of natural resources, recognising the value of ecosystem services.

### EU 5. Public Health

Key Objective: To promote good public health on equal conditions and improve protection against health threats.

### EU 6. Social Inclusion, Demography and Migration

Key Objective: To create a socially inclusive society by taking into account solidarity between and within generations and to secure and increase the quality of life of citizens as a precondition for lasting individual well-being.

## Overall Objective 1

1. To plan and manage tourism towards sustainability by giving the priority of the quality of the environment, its protection and rational use of natural resources.

## Overall Objective 2

2. To contribute to economic prosperity and enhancing job creation by tourism.

## Overall Objective 3

3. To increase the quality of life by respecting the culture and tradition of local communities, their environment and economy.

## Objective

**Republic of Macedonia is a recognized and utilized destination for sustainable tourism**

## Result 1

1. Competitive tourist offer properly defined



### Results 1x:

#### 1.1. Created competitive tourist products

##### 1.1.1. Increased average of tourists' stay

###### 1.1.1.1. *Competitive prices of tourist products*<sup>29</sup>

##### 1.1.2. Increased innovation and variety in tourist offer

###### 1.1.2.1. *Increased/improved entertainment management, facilities, programs and professionals*

###### 1.1.2.2. Higher development of cultural, congress, rural, spa and other competitive types of tourism

###### 1.1.2.3. *Improved promotion of typical rural products and traditional cuisine*

##### 1.1.3. Higher orientation towards incoming and domestic tourism

##### 1.1.4. Increased specialized incoming agencies

##### 1.1.5. Created and established tourist branded products

##### 1.1.6. Attracted hotel brand names

#### 1.2. Improved promotion of current and potential types of tourism

#### 1.3. Appropriate consideration of potential tourist products by the competent authorities

##### 1.3.1. *Increased awareness for tourism potentials at local and central level*

##### 1.3.2. *Proper investments in the potential*

##### 1.3.3. *Increased number of studies & research for potentials and carrying capacities*

##### 1.3.4. *Conflicts of interests in the physical planning overcome*

## Result 2

### 2. Organizational structure in tourism sector established and function properly

#### Results 2x:

#### 2.1. Improved cooperation between SME's, local self-governance, national & foreign institutions, agencies & companies

##### 2.1.1. Strengthened coordination among tourism stakeholders

###### 2.1.1. *Properly coordinated programs & donations*

###### 2.1.2. *Properly channelled financial assets*

#### 2.2. Properly organized and planned tourism

##### 2.2.1. *Improved inventory and categorization of accommodation*

##### 2.2.2. *Coordinated and correct data*

##### 2.2.3. *Developed database/IS for accommodation capacities*

##### 2.2.4. *Appropriate human resources*

##### 2.2.5. *Increased awareness for sustainable tourism development among stakeholders*

#### 2.3. Defined directions for tourism development

##### 2.3.1. *Adopted tourism strategy*

##### 2.3.2. *Compliance of tourism development with the Physical Plans*

##### 2.3.3. *Laws for cultural heritage & environmental protection in local urban plans respected*

## Result 3

### 3. Human Resources for tourism improved

#### Results 3x:

<sup>29</sup> *Short-term results* (in the next 5 years) are indicated in *italics*.



- 3.1. Appropriately educated and trained tourism professionals
  - 3.1.1. *Established programs (high & higher education) in compliance with EU programs*
  - 3.1.2. *Increased number of students with internship*
  - 3.1.3. *Strengthened interdisciplinary correlations between faculties*
  - 3.1.4. *Strengthened correlations between education and business sector*
  - 3.1.5. *Established/developed lifelong learning programs*
  - 3.1.6. *Increased number of professional tourist guides*
  - 3.1.7. *Established/developed professional craft programs (woodcarving, knitting, traditional cooking)*
  - 3.1.8. *Established/developed professional programs for entertainment*
- 3.2. Increased number of properly educated managers
  - 3.2.1. *Educated and trained managers for their job positions*

## Result 4

### 4. Infrastructure and capacities for tourism improved

#### Results 4x:

- 4.1. Improved and developed infrastructure
  - 4.1.1. Improved quality of road and rail network
    - 4.1.1.1. *Increased number of well equipped rest areas*
    - 4.1.1.2. *Developed new rail lines towards tourist destinations*
  - 4.1.2. Improved air transport connection
    - 4.1.2.1. *Competitive air prices in the region*
  - 4.1.3. Improved water, electricity and waste management in tourist destinations
- 4.2. *Accessibility problems to tourist destinations overcame*
  - 4.2.1. *Increased and improved signalization*
  - 4.2.2. *Established info centres & tourist bureaus*
    - 4.2.2.1. *Increased number of info points*
  - 4.2.3. *Improved organized public transport*
- 4.3. Increased number of modern accommodation capacities
  - 4.3.1. Improved quality of accommodation capacities
  - 4.3.2. *Increased number of accommodation capacities for certain types of tourism (rural, mountain, monastery, etc.)*
  - 4.3.3. *Defined carrying capacities*



## Employment

<b>Cross-Cutting-Issue: Employment</b>
<b>Specific RM Key Challenges / Key Objectives</b>
<p><b>RM 1. Good Governance and Better Policy-Making</b></p> <p><u>Key Objective:</u> To set out an approach for Good Governance and Better Policy-Making based on better regulation and on the principle that sustainable development has to be integrated into policy-making at all levels. This requires all levels of government to support, and to cooperate with, each other, taking into account the different institutional settings, cultures and specific circumstances in the different regions of the Republic of Macedonia.</p> <p><b>RM 2. Diversification of Income in Rural Regions and Sustainable Development Challenges</b></p> <p><u>Key Objective:</u> To actively promote sustainable development in order to diversify the income in the rural regions of the Republic of Macedonia (RM), to generate regional added value-cycles, to facilitate regional and urban sustainable development spatial planning, and to ensure that the Government of the RM's internal and external policies are consistent with global sustainable development and its international commitments.</p> <p><b>RM 3. Economic Prosperity and Job Creation</b></p> <p><u>Key Objective:</u> To contribute to increasing competitiveness, economic prosperity and enhancing job creation by performing necessary structural changes which enables the economy at various levels to cope with the challenges of globalisation by creating a playing field in which dynamism, innovation and creative entrepreneurship can flourish whilst ensuring social equity and a healthy environment.</p> <p><b>RM 4. Sustainable Human Settlement</b></p> <p><u>Key Objective:</u> To improve the social, economic, and environmental quality of human settlements and the living and working environments of all people.</p> <p><b>RM 5. Cross-Cutting Policies contributing to the Knowledge Society</b></p> <p><u>Key Objective:</u> To stimulate development of a Knowledge-based Society in the Republic of Macedonia which will embody citizens with the key competencies and functional literacy that determines global competitiveness, and will develop citizens' attitude towards sustainable development.</p>
<b>Key Challenges / Key Objectives as in Renewed EU SDS (June 2006)</b>
<p><b>EU 2. Sustainable Transport</b></p> <p><u>Key Objective:</u> To ensure that our transport systems meet society's economic, social and environmental needs whilst minimising their undesirable impacts on the economy, society and the environment.</p> <p><b>EU 5. Public Health</b></p> <p><u>Key Objective:</u> To promote good public health on equal conditions and improve protection against health threats.</p>



## **EU 6. Social Inclusion, Demography and Migration**

**Key Objective:** To create a socially inclusive society by taking into account solidarity between and within generations and to secure and increase the quality of life of citizens as a precondition for lasting individual well-being.

### **Overall Objective 1**

1. To increase employment and standard of living, and reduce dependency

### **Overall Objective 2**

2. To intensify economic growth and efficiently use human resources

### **Overall Objective 3**

3. To improve social security and working conditions

### **Objective**

#### **Functioning labour market**

#### **Result 1**

1. Social dialogue is effective

##### Results 1x:

- 1.1. Best students are attracted in the public sector
- 1.2. Public sector employees are motivated properly and best ones are retained in the public administration
- 1.3. Capacity of labour market institutions for the design and implementation of employment policy is improved
- 1.4. Social partners are well-established and equipped with knowledge on labour market functioning and policies

#### **Result 2**

2. Effective and efficient employment policies are designed and implemented

##### Results 2x:

- 2.1. Coordination between employment and overall economic and educational policies is achieved
- 2.2. Policy complementarities and synergies are respected
- 2.3. PIs and targets are introduced and employment policies are regularly evaluated to answer the “what works in Macedonia” question

#### **Result 3**

3. Quality and quantity of human capital is increased

##### Results 3x:

- 3.1. Innovative curriculum and teaching methods are introduced
- 3.2. Efficiency of public expenditures on education is increased
- 3.3. Certain decision-making power is delegated to schools
- 3.4. School league tables are published and students’ choice is extended
- 3.5. Labour market participation and employment are increased



<b>Result 4</b>
4. Job creation is increased
<p>Results 4x:</p> <p>4.1. GDP growth is greater, as well as the level of investments, including FDIs</p> <p>4.2. Tax wedge is further reduced and business-cracy is introduced</p> <p>4.3. Quality of signalling between higher education institutions and firms is improved</p> <p>4.4. A propulsive SMEs sector is created and supported</p> <p>4.5. Returns to education in terms of employment (and wage) are greater</p>

## Social Issues / Primary & Secondary Education

<b>Cross-Cutting-Issue: Social Issues / Primary &amp; Secondary Education</b>
<b>Specific RM Key Challenges / Key Objectives</b>
<p><b>RM 1. Good Governance and Better Policy-Making</b></p> <p><u>Key Objective:</u> To set out an approach for Good Governance and Better Policy-Making based on better regulation and on the principle that sustainable development has to be integrated into policy-making at all levels. This requires all levels of government to support, and to cooperate with, each other, taking into account the different institutional settings, cultures and specific circumstances in the different regions of the Republic of Macedonia.</p> <p><b>RM 2. Diversification of Income in Rural Regions and Sustainable Development Challenges</b></p> <p><u>Key Objective:</u> To actively promote sustainable development in order to diversify the income in the rural regions of the Republic of Macedonia (RM), to generate regional added value-cycles, to facilitate regional and urban sustainable development spatial planning, and to ensure that the Government of the RM's internal and external policies are consistent with global sustainable development and its international commitments.</p> <p><b>RM 3. Economic Prosperity and Job Creation</b></p> <p><u>Key Objective:</u> To contribute to increasing competitiveness, economic prosperity and enhancing job creation by performing necessary structural changes which enables the economy at various levels to cope with the challenges of globalisation by creating a playing field in which dynamism, innovation and creative entrepreneurship can flourish whilst ensuring social equity and a healthy environment.</p> <p><b>RM 4. Sustainable Human Settlement</b></p> <p><u>Key Objective:</u> To improve the social, economic, and environmental quality of human settlements and the living and working environments of all people.</p>





<p><b>RM 5. Cross-Cutting Policies contributing to the Knowledge Society</b></p> <p><u>Key Objective:</u> To stimulate development of a Knowledge-based Society in the Republic of Macedonia which will embody citizens with the key competencies and functional literacy that determines global competitiveness, and will develop citizens' attitude towards sustainable development.</p>
<p><b>Key Challenges / Key Objectives as in Renewed EU SDS (June 2006)</b></p>
<p><b>EU 1. Climate Change and Clean Energy</b></p> <p><u>Key Objective:</u> To limit climate change and its costs and negative effects to society and the environment.</p>
<p><b>EU 2. Sustainable Transport</b></p> <p><u>Key Objective:</u> To ensure that our transport systems meet society's economic, social and environmental needs whilst minimising their undesirable impacts on the economy, society and the environment.</p>
<p><b>EU 3. Sustainable Consumption and Production</b></p> <p><u>Key Objective:</u> To promote sustainable consumption and production patterns.</p>
<p><b>EU 4. Conservation and Management of Natural Resources</b></p> <p><u>Key Objective:</u> To improve management and avoid overexploitation of natural resources, recognising the value of ecosystem services.</p>
<p><b>EU 5. Public Health</b></p> <p><u>Key Objective:</u> To promote good public health on equal conditions and improve protection against health threats.</p>
<p><b>EU 6. Social Inclusion, Demography and Migration</b></p> <p><u>Key Objective:</u> To create a socially inclusive society by taking into account solidarity between and within generations and to secure and increase the quality of life of citizens as a precondition for lasting individual well-being.</p>
<p><b>Overall Objective 1</b></p> <p>1. To achieve higher and sustainable economic growth</p>
<p><b>Overall Objective 2</b></p> <p>2. To fasten the shift towards a knowledge-based society</p>
<p><b>Overall Objective 3</b></p> <p>3. To increase participation rates among all groups of society</p>
<p><b>Overall Objective 4</b></p> <p>4. To improve the skill match between market supply and demand</p>



<b>Objective</b>	
<b>Sufficiently possessed skills and competencies as well as practical knowledge of labour market entrants</b>	
<b>Result 1</b>	
1. Larger autonomy and decision-making powers of schools enforced	
	Result 1x
	1.1 Funding and administrative capacity of municipalities increased 1.2 More resources for maintenance and capital projects allocated 1.3 IPA funds for projects in primary and secondary education used 1.4 Investments in education increased
<b>Result 2</b>	
2. Competition and hence the efficiency of schools increased	
	Result 2x
	2.1 School-league tables published 2.2 Curricula and teaching methods that develop functional literacy modernized 2.3 Mechanisms for professional advancement of teachers developed
<b>Result 3</b>	
3. <i>Full implementation of the law on VET enforced</i> <sup>30</sup>	
	Result 3x
	3.1 <i>National framework of qualifications developed</i> 3.2 <i>Capacity of the VET Centre and the MES in general improved</i>

<sup>30</sup> *Short-term results* (in the next 5 years) are indicated in *italics*.



## Social Issues / Tertiary Education

<b>Cross-Cutting-Issue: Social Issues Tertiary Education</b>
<b>Specific RM Key Challenges / Key Objectives</b>
<b>RM 1. Good Governance and Better Policy-Making</b> <u>Key Objective:</u> To set out an approach for Good Governance and Better Policy-Making based on better regulation and on the principle that sustainable development has to be integrated into policy-making at all levels. This requires all levels of government to support, and to cooperate with, each other, taking into account the different institutional settings, cultures and specific circumstances in the different regions of the Republic of Macedonia.
<b>RM 2. Diversification of Income in Rural Regions and Sustainable Development Challenges</b> <u>Key Objective:</u> To actively promote sustainable development in order to diversify the income in the rural regions of the Republic of Macedonia (RM), to generate regional added value-cycles, to facilitate regional and urban sustainable development spatial planning, and to ensure that the Government of the RM's internal and external policies are consistent with global sustainable development and its international commitments.
<b>RM 3. Economic Prosperity and Job Creation</b> <u>Key Objective:</u> To contribute to increasing competitiveness, economic prosperity and enhancing job creation by performing necessary structural changes which enables the economy at various levels to cope with the challenges of globalisation by creating a playing field in which dynamism, innovation and creative entrepreneurship can flourish whilst ensuring social equity and a healthy environment.
<b>RM 4. Sustainable Human Settlement</b> <u>Key Objective:</u> To improve the social, economic, and environmental quality of human settlements and the living and working environments of all people.
<b>RM 5. Cross-Cutting Policies contributing to the Knowledge Society</b> <u>Key Objective:</u> To stimulate development of a Knowledge-based Society in the Republic of Macedonia which will embody citizens with the key competencies and functional literacy that determines global competitiveness, and will develop citizens' attitude towards sustainable development.
<b>Key Challenges / Key Objectives as in Renewed EU SDS (June 2006)</b>
<b>EU 1. Climate Change and Clean Energy</b> <u>Key Objective:</u> To limit climate change and its costs and negative effects to society and the environment.
<b>EU 2. Sustainable Transport</b> <u>Key Objective:</u> To ensure that our transport systems meet society's economic, social and environmental needs whilst minimising their undesirable impacts on the economy, society and the environment.



<p><b>EU 3. Sustainable Consumption and Production</b></p> <p><u>Key Objective:</u> To promote sustainable consumption and production patterns.</p>				
<p><b>EU 4. Conservation and Management of Natural Resources</b></p> <p><u>Key Objective:</u> To improve management and avoid overexploitation of natural resources, recognising the value of ecosystem services.</p>				
<p><b>EU 5. Public Health</b></p> <p><u>Key Objective:</u> To promote good public health on equal conditions and improve protection against health threats.</p>				
<p><b>EU 6. Social Inclusion, Demography and Migration</b></p> <p><u>Key Objective:</u> To create a socially inclusive society by taking into account solidarity between and within generations and to secure and increase the quality of life of citizens as a precondition for lasting individual well-being.</p>				
<p><b>Overall Objective 1</b></p> <p>1. To achieve higher and sustainable economic growth</p>				
<p><b>Overall Objective 2</b></p> <p>2. To fasten the shift towards a knowledge-based society</p>				
<p><b>Overall Objective 3</b></p> <p>3. To increase participation rates among all groups of society</p>				
<p><b>Overall Objective 4</b></p> <p>4. To improve the skill match between market supply and demand</p>				
<p><b>Objective</b></p> <p><b>Sufficiently possessed knowledge and skills of labour market entrants and promoted higher education R&amp;D</b></p>				
<p><b>Result 1</b></p> <p>1. Links between university research institutes and businesses strengthened</p>				
<table border="1"> <tr> <td></td> <td>Result 1x</td> </tr> <tr> <td></td> <td>1.1 More resources for public R&amp;D provided 1.2 Budget for maintenance and capital projects increased 1.3 Investments in tertiary education increased</td> </tr> </table>		Result 1x		1.1 More resources for public R&D provided 1.2 Budget for maintenance and capital projects increased 1.3 Investments in tertiary education increased
	Result 1x			
	1.1 More resources for public R&D provided 1.2 Budget for maintenance and capital projects increased 1.3 Investments in tertiary education increased			
<p><b>Result 2</b></p> <p>2. Better knowledge of graduates obtained</p>				



	Result 2x
	2.1 Curricula and teaching methods modernized 2.2 Focus on practical and applied knowledge increased
<b>Result 3</b>	
3. Implementation of the legislation improved	
	Result 3x
	3.1 National framework of qualifications developed 3.2 Capacity of the MES, universities and other relevant bodies improved 3.3 Good progress in implementation of the Bologna process reforms reported

## Social Issues / Health

### Cross-Cutting-Issue: Social Issues / Health

#### Specific RM Key Challenges / Key Objectives

##### RM 1. Good Governance and Better Policy-Making

Key Objective: To set out an approach for Good Governance and Better Policy-Making based on better regulation and on the principle that sustainable development has to be integrated into policy-making at all levels. This requires all levels of government to support, and to cooperate with, each other, taking into account the different institutional settings, cultures and specific circumstances in the different regions of the Republic of Macedonia.

##### RM 2. Diversification of Income in Rural Regions and Sustainable Development Challenges

Key Objective: To actively promote sustainable development in order to diversify the income in the rural regions of the Republic of Macedonia (RM), to generate regional added value-cycles, to facilitate regional and urban sustainable development spatial planning, and to ensure that the Government of the RM's internal and external policies are consistent with global sustainable development and its international commitments.

##### RM 3. Economic Prosperity and Job Creation

Key Objective: To contribute to increasing competitiveness, economic prosperity and enhancing job creation by performing necessary structural changes which enables the economy at various levels to cope with the challenges of globalisation by creating a playing field in which dynamism, innovation and creative entrepreneurship can flourish whilst ensuring social equity and a healthy environment.



## **RM 5. Cross-Cutting Policies contributing to the Knowledge Society**

Key Objective: To stimulate development of a Knowledge-based Society in the Republic of Macedonia which will embody citizens with the key competencies and functional literacy that determines global competitiveness, and will develop citizens' attitude towards sustainable development.

### **Key Challenges / Key Objectives as in Renewed EU SDS (June 2006)**

#### **EU 3. Sustainable Consumption and Production**

Key Objective: To promote sustainable consumption and production patterns.

#### **EU 5. Public Health**

Key Objective: To promote good public health on equal conditions and improve protection against health threats.

#### **EU 6. Social Inclusion, Demography and Migration**

Key Objective: To create a socially inclusive society by taking into account solidarity between and within generations and to secure and increase the quality of life of citizens as a precondition for lasting individual well-being.

### **Overall Objective 1**

1. To improve public and consumer health outcomes

### **Overall Objective 2**

2. To re-gain trust in health care system institutions

### **Objective**

#### **Health system providing high-quality services**

#### **Result 1**

1. Health system is integrated and coordinated

##### Results 1x:

- 1.1 Capacity in health institutions is adequate
  - 1.1.1. Institutions are reformed
  - 1.1.2 Legal framework is complete
- 1.2 Health care provision is adequate
  - 1.2.1 Quality of primary health care is sound
  - 1.2.2 Secondary / tertiary care is well-organized
  - 1.2.3 Preventive care is streamlined

#### **Result 2**

2. Demand for and supply of services is appropriate



**Results 2x:**

- 2.1 Health sector staffing is appropriate
- 2.1.1 HR policy is implemented
- 2.2 Investments in priority areas are implemented

**Result 3**

**3. Productivity and efficiency is sound**

**Results 3x:**

- 3.1 Substantial investments in health sector infrastructures are undertaken
- 3.2 Financing is linked to services provided
  - 3.2.1 Accountability mechanisms are established
  - 3.2.2 Monitoring and performance indicators are derived
- 3.3 Health sector staff are appropriately paid

**Result 4**

**4. Health sector financing is sustainable**<sup>31</sup>

**Results 4x:**

- 4.1 *Health insurance is reformed not to encourage informality*
  - 4.1.1 *Tax wedge from health insurance contributions is reduced*
  - 4.1.2 *Free health insurance is provided only to most needy*
- 4.2 *Universal health insurance coverage is achieved*
- 4.3 *Benefits package is sustainable*

## Transport and Infrastructure

### Sector: Transport and Transport Infrastructure

#### Specific RM Key Challenge / Key Objective

##### RM 4. Sustainable Human Settlement

Key Objective: To improve the social, economic, and environmental quality of human settlements and the living and working environments of all people.

#### Key Challenges / Key Objectives as in Renewed EU SDS (June 2006)

##### EU 1. Climate Change and Clean Energy

<sup>31</sup> *Short-term results* (in the next 5 years) are indicated in *italics*.



Key Objective: To limit climate change and its costs and negative effects to society and the environment.

## **EU 2. Sustainable Transport**

Key Objective: To ensure that our transport systems meet society's economic, social and environmental needs whilst minimising their undesirable impacts on the economy, society and the environment.

## **EU 3. Sustainable Consumption and Production**

Key Objective: To promote sustainable consumption and production patterns.

## **EU 4. Conservation and Management of Natural Resources**

Key Objective: To improve management and avoid overexploitation of natural resources, recognising the value of ecosystem services.

## **EU 5. Public Health**

Key Objective: To promote good public health on equal conditions and improve protection against health threats.

### **Overall Objective**

To provide more efficient, less polluting and safer transport system

### **Objective**

**Improved transport system in Macedonia (urban, road, railway and air transport).**<sup>32</sup>

### **Result 1**

**1. Condition in transport infrastructure improved.**<sup>33</sup>

Results 1x:

1.1. Maintenance of transport infrastructure improved.

1.1.1 Infrastructure safety management provided.

1.1.2 *Maintenance market liberated.*<sup>34</sup>

1.1.3 *Strategy for transport infrastructure maintenance prepared and implemented.*

1.2. Local and regional road transport infrastructure is developed.

1.2.1 Existing roads are reconstructed and/or upgraded.

1.3. Corridors 8 and 10 constructed.

<sup>32</sup> The underlined objective is considered to be reached only in the **long-term time horizon after 10 years**. This takes into consideration the special situation in transport and transport infrastructure, and departs from the scheme usually used in this NSSD when objectives are defined as to be medium-term.

<sup>33</sup> The underlined results are considered to be reached only in the **long-term time horizon after 10 years**. This takes into consideration the special situation in transport and infrastructure, and departs from the scheme usually used in this NSSD when results are defined as to be short-term and medium-term.





1.3.1 Existing railway infrastructure and equipment rehabilitated.

**Result 2**

**2. Traffic condition improved.**

Results 2x:

- 2.1. Traffic signalization and equipment are according to EU standards.
  - 2.1.1 *New legislation prepared and implemented.*
- 2.2 The quality of existing public transport improved.
  - 2.2.1 Different modes of public transport promoted.
  - 2.2.2 *Efficiency of public transport entities increased.*
  - 2.2.3 *Environmentally friendly vehicles for public transport promoted.*
- 2.3 Urban transport improved.
  - 2.3.1 Points of “bottlenecks” reduced.
  - 2.3.2 Traffic jams reduced.
  - 2.3.3 *Equipment for traffic flow and control installed*
  - 2.3.4 *Proper and efficient management of traffic flows established.*

**Result 3**

**3. Behaviour of all participants in transport improved.**

Results 3x:

- 3.1 *Awareness of stakeholders for SD transport increased.*
- 3.2. *Respect of traffic rules improved.*
  - 3.2.1 *Intensive education of traffic participants performed.*
  - 3.2.2 Traffic control increased.
  - 3.2.3 Realization of traffic fines improved.
    - 3.2.3.1 *Efficiency of judiciary increased.*

**Assumptions:**

- 1. Adequate policy for investments in transport sector
- 2. Prepared strategic documents on local level

**Sector: Infrastructure**

**Specific RM Key Challenge / Key Objective**

**RM 4: Sustainable Human Settlement**

Key Objective: To improve the social, economic, and environmental quality of human settlements and the living and working environments of all people.

**Key Challenges / Key Objectives as in Renewed EU SDS (June 2006)**

**EU 1. Climate Change and Clean Energy**

Key Objective: To limit climate change and its costs and negative effects to society and the

<sup>34</sup> *Short-term results* (in the next 5 years) are indicated in *italics*.



environment.

## EU 2. Sustainable Transport

Key Objective: To ensure that our transport systems meet society's economic, social and environmental needs whilst minimising their undesirable impacts on the economy, society and the environment.

## EU 3. Sustainable Consumption and Production

Key Objective: To promote sustainable consumption and production patterns.

## EU 4. Conservation and Management of Natural Resources

Key Objective: To improve management and avoid overexploitation of natural resources, recognising the value of ecosystem services.

## EU 5. Public Health

Key Objective: To promote good public health on equal conditions and improve protection against health threats.

### Overall Objective

To ensure the provision of adequate infrastructure facilities (water supply, drainage, waste water treatment, waste disposal and irrigation)

### Objective

Improved communal infrastructure.<sup>35</sup>

### Result 4

4. Infrastructure for collection and treatment of wastewater improved.<sup>36</sup>

Results 4x:

4.1 Waste water treatment improved.

*4.1.1 Environmental standards of wastewater treatment in existing plants met.*<sup>37</sup>

4.1.2 Wastewater treatment plants for all agglomeration above 2000 c.e. constructed.

4.2. Collectors constructed and sewages finished.

4.2.1 Number of sewages systems in rural areas and in non-urbanized and not legal parts of towns increased.

4.2.2 Number of households is connected to sewerage systems increased.

### Result 5

<sup>35</sup> The underlined objective is considered to be reached only in the **long-term time horizon after 10 years**. This takes into consideration the special situation in the infrastructure sector, and departs from the scheme usually used in this NSSD when objectives are defined as to be medium-term.

<sup>36</sup> The underlined results are considered to be reached only in the **long-term time horizon after 10 years**. This takes into consideration the special situation in the infrastructure sector, and departs from the scheme usually used in this NSSD when results are defined as to be short-term and medium-term.

<sup>37</sup> *Short-term results* (in the next 5 years) are indicated in *italics*.



### 5. Water supply infrastructure improved.

Results 5x:

5.1 Number of water supply systems in rural areas increased.

*5.1.1 Capital investments increased.*

*5.1.2 Economic condition of local public entities improved.*

5.2 Water wastages (leakage) minimized.

*5.2.1 Old water supply systems rehabilitated.*

*5.2.2 Good investment maintenance provided.*

*5.2.3 Unauthorized connection to network reduced.*

### **Result 6**

### 6. Infrastructure for irrigation and drainage improved.

Results 6x:

6.1 Coverage of agricultural land with systems for irrigation increased.

*6.1.1 Capital investments increased.*

*6.1.2 Economic condition of regional water supply enterprises improved.*

6.2. Losses of water decreased.

*6.2.1 Maintenance improved.*

*6.2.2 Responsible handling of infrastructure and equipment ensured.*

*6.2.3 Control of irrigation systems improved.*

### **Result 7**

### 7. Integrated water management established.

Results 7x:

*7.1. New law for water implemented.*

*7.2. Political influence eliminated.*

*7.3. New regulation for waste water discharge prepared and implemented*

### **Result 8**

### 8. Waste disposal infrastructure improved.

Results 8x:

*8.1 Integrated solid waste management implemented.*

*8.2 Implementation of legislation improved.*

*8.3 Investments in solid waste infrastructure increased.*

### **Assumptions**

1. Adequate policy for investments in communal infrastructure sector

2. Prepared strategic documents on central and local level



## SMiLEs (SMEs and Industry)

### Sector: SMiLEs (SMEs and Industry)

#### Specific RM Key Challenges / Key Objectives

##### RM 1. Good Governance and Better Policy-Making

Key Objective: To set out an approach for Good Governance and Better Policy-Making based on better regulation and on the principle that sustainable development has to be integrated into policy-making at all levels. This requires all levels of government to support, and to cooperate with, each other, taking into account the different institutional settings, cultures and specific circumstances in the different regions of the Republic of Macedonia.

##### RM 2. Diversification of Income in Rural Regions and Sustainable Development Challenges

Key Objective: To actively promote sustainable development in order to diversify the income in the rural regions of the Republic of Macedonia (RM), to generate regional added value-cycles, to facilitate regional and urban sustainable development spatial planning, and to ensure that the Government of the RM's internal and external policies are consistent with global sustainable development and its international commitments.

##### RM 3. Economic Prosperity and Job Creation

Key Objective: To contribute to increasing competitiveness, economic prosperity and enhancing job creation by performing necessary structural changes which enables the economy at various levels to cope with the challenges of globalisation by creating a playing field in which dynamism, innovation and creative entrepreneurship can flourish whilst ensuring social equity and a healthy environment.

##### RM 4. Sustainable Human Settlements

Key Objective: To improve the social, economic, and environmental quality of human settlements and the living and working environments of all people.

##### RM 5. Cross-Cutting Policies contributing to the Knowledge Society

Key Objective: To stimulate development of a Knowledge-based Society in the Republic of Macedonia which will embody citizens with the key competencies and functional literacy that determines global competitiveness, and will develop citizens' attitude towards sustainable development.

#### Key Challenges / Key Objectives as in Renewed EU SDS (June 2006)

##### EU 1. Climate Change and Clean Energy

Key Objective: To limit climate change and its costs and negative effects to society and the environment.

##### EU 2. Sustainable Transport

Key Objective: To ensure that our transport systems meet society's economic, social and



environmental needs whilst minimising their undesirable impacts on the economy, society and the environment.

### **EU 3. Sustainable Consumption and Production**

Key Objective: To promote sustainable consumption and production patterns.

### **EU 4. Conservation and Management of Natural Resources**

Key Objective: To improve management and avoid overexploitation of natural resources, recognising the value of ecosystem services.

### **EU 5. Public Health**

Key Objective: To promote good public health on equal conditions and improve protection against health threats.

### **EU 6. Social Inclusion, Demography and Migration**

Key Objective: To create a socially inclusive society by taking into account solidarity between and within generations and to secure and increase the quality of life of citizens as a precondition for lasting individual well-being.

#### **Overall Objective 1**

1. To provide and enforce environmental friendly SMiLEs (cost-effective energy use, utilization of renewable energy sources, environmental management system (EMS), pollution abatement)

#### **Overall Objective 2**

2. To enforce economic prosperous SMiLEs (competitive, productive, innovative, new added value, establishment of new and growth of existing SMiLEs, vertical/horizontal networking)

#### **Overall Objective 3**

3. To foster social cohesive SMiLEs (good working conditions, social care for the employees, education and career development, social welfare of the local/national community. HRD)

#### **Objective**

#### **Restructured SMiLEs for Sustainable Development**

##### **Result 1**

1. Favourable SMiLEs' environment enforced

Results 1x:

1.1 *Strong institutional capacity completed*<sup>38</sup>

<sup>38</sup> *Short-term results* (in the next 5 years) are indicated in *italics*.



**1.1.1 Sufficient capacity and organization of public administration for providing services to SMiLEs established**

**1.1.1.1 Institutionalization of the SMiLEs forum/dialogue between economy and government developed**

**1.1.1.1.1 Confidence between SMiLEs and government prepared**

**1.1.1.2 Efficient three-parties social dialogue (government, entrepreneurs, workers) enabled**

**1.1.1.3 Efficient Inspection services (labour, market, environment, sanitary, construction, SMiLEs) established**

**1.1.1.4 Sufficient auditing institutions and practice in the state administration established**

**1.1.1.5 Sufficient number of certified bodies for implementing standards established**

**1.1.1.6 Sufficient Coordination of state administration enabled**

**1.1.1.7 High transparency of institutions enabled**

**1.1.1.8 Stability of HRM of administration staff at central and local level after each election enabled**

**1.1.1.9 Strong capacity (knowledge) of the administration at central and local level in the implementation of the SD reforms completed**

**1.1.1.10 Sufficient HR in the Public Administration for providing services to SMiLEs enabled**

**1.1.1.11 Appropriate measures to fight Corruption designed and implemented**

**1.1.2 Efficient Legal and judiciary system created**

**1.1.2.1 Institutions for ownership relations secured**

**1.1.2.1.1 Efficient judiciary system established**

**1.1.2.1.1.1 Stable changes for construction planed**

**1.1.2.1.1.2 Stable changes of physical planning planed**

**1.1.2.1.1.3 Good cadastre evidence designed**

**1.1.2.1.1.4 Stable changes in the legal regulations planed**

**1.1.2.1.1.5 Compliance with legal regulations enabled**

**1.1.2.1.1.6 Created Legislation enforced**

**1.1.2.1.2 Appropriate measures to fight corruption designed and implemented**

**1.2 Legal environment prepared**

**1.2.1 Regulations for statistical bases for SMiLEs defined**

**1.2.2 Law for SMEs enacted**

**1.2.2.1 Law for renewable energies enacted**

**1.2.2.2 Sufficient legal regulations for facilitating the start up of new SMEs prepared**

**1.2.2.3 Law for performing activities of small size enacted**

**1.2.3 Administrative procedures in implementing legal regulations downsized**

**1.2.4 Classification of SMEs with EU regulations harmonized**

**1.3 Efficient business structure and information flow provided**

**1.3.1 Transport infrastructure developed**

**1.3.2 Sufficient sector connection of SMiLEs established**



- 1.3.2.1 *Suitable business structure created*
  - 1.3.2.1.1 *Strong capacity of information/ consulting centres established*
  - 1.3.2.1.2 *Fully operational TIRZ established*
- 1.3.3 *Information system of SMiLEs at state administration level enforced*
- 1.3.4 *Campaign at state level for entrepreneurship and SD of SMiLEs (especially among youth and women) enacted*
- 1.3.5 *Sufficient Information flows and raise Awareness on SMiLEs' SD established*

## Result 2

### 2. Strong production factors developed

#### Results 2x:

- 2.1 High level technology and equipment implemented
  - 2.1.1 Technical and technological superiority prepared
    - 2.1.1.1 Standardized packing implemented
    - 2.1.1.2 Macedonian products to fulfil EU standards prepared
    - 2.1.1.3 Contemporary equipment analysed and implemented
    - 2.1.1.4 Contemporary technology analysed and implemented
- 2.2 Proper raw materials produced
  - 2.2.1 Low dependence from the imports enabled
  - 2.2.2 Effective use of chip and low quality raw materials enabled
  - 2.2.3 Sufficient basic production enabled

## Result 3

### 3. Sufficient financial support provided

#### Results 3x:

- 3.1 *Capital market completed*
  - 3.1.1 *Systems for micro finance developed*
    - 3.1.1.x *Sufficient knowledge on share trading and capital investment provided (x - for 3.1.1 till 3.1.4)*
  - 3.1.2 *Guarantee funds for SD investments in SMiLEs provided*
  - 3.1.3 *Stock-share institutions established*
  - 3.1.4 *Sufficient knowledge on share trading and capital investment provided*
  - 3.1.5 *Affordable financial instruments provided*
    - 3.1.5.y *Sufficient bank competition completed (y - for 3.1.5 till 3.1.8)*
  - 3.1.6 *Banking programs for innovative and new businesses developed*
  - 3.1.7 *Affordable banking credits provided*
  - 3.1.8 *Various types of financial products developed*
  - 3.1.9 *Unlimited access to financial markets prepared*
  - 3.1.10 *High interest of foreign investors triggered*
    - 3.1.10.1 *Access to sufficient number of business angels provided*
    - 3.1.10.2 *Sufficient foreign direct investments (FDI) provided*
- 3.2 *Sufficient working capital provided*
  - 3.2.1 *High financial capability of SMiLEs developed*
  - 3.2.2 *Sufficient budget for SD provided*
  - 3.2.3 *Financial funds established*



## Result 4

### 4. Human Resources in SMiLEs improved

#### Results 4x:

#### 4.1 High level technology development conducted

##### 4.1.1 Need for quality management acknowledged

##### 4.1.1.x Long-term vision for development enabled (x for 4.1.1 till 4.1.3)

##### 4.1.1.x.1 Cooperation between SMiLEs & Science developed

##### 4.1.1.x.1.y Environment for vision driven entrepreneurs provided (y for 4.1.1.x.1 till 4.1.1.x.4)

##### 4.1.1.x.1.z Quality education for SMiLEs' managers provided (z for 4.1.1.x.1 till 4.1.1.x.4)

##### 4.1.1.x.1.w Contemporary managers for SMiLEsS developed (w for 4.1.1.x.1 till 4.1.1.x.4)

##### 4.1.1.x.2 Entrepreneurial & management knowledge and skills provided

##### 4.1.1.x.3 Awareness for companies' restructuring need developed

##### 4.1.1.x.4 Sufficient international cooperation for TT provided

##### 4.1.2 Clear concept and strategy for support identified

##### 4.1.3 Readiness for changes acceptance developed

##### 4.1.4 Sufficient information on tenders enabled

#### 4.2 High productive and motivated workforce provided

##### 4.2.1 Labour market developed

##### 4.2.1.1 Workforce mobility provided

##### 4.2.1.1.1 Active support to changes provided

##### 4.2.1.1.1.1 Managers obsessed with future SD developed

##### 4.2.1.1.1.1.u Favourable age structure of the labour force provided (u for 4.2.1.1.1.1 till 4.2.1.1.1.3)

##### 4.2.1.1.1.2 European mentality enforced

##### 4.2.1.1.1.3 Readiness for acceptance of changes developed

##### 4.2.1.1.2 Sufficient contemporary knowledge and qualification of labour force provided

##### 4.2.1.1.2.1 Updated education system (connected with labour market) provided

##### 4.2.1.1.2.2 Motivational system for support to the learning of the workforce designed

##### 4.2.1.1.2.3 Formal system for knowledge validation (LLL) established

## Result 5

### 5. Marketing improved

#### Results 5x:

#### 5.1 Promotion of Macedonian products in the country & international conducted

##### 5.1.1 Sufficient research of new markets carried out

##### 5.1.2 Promotional strategy for Macedonian SMiLEs' products/ services developed





- 5.2 Promotion for Macedonian potentials for sustainable products (healthy, environmental friendly, renewable energy sources etc.) conducted
- 5.2.1 *Promotional strategy for Macedonian SMiLEs' products/services developed (same as 5.1.2)*

## Result

### 6. Pollution reduced

#### Results 6x:

6.1 *Proper Waste Management provided*

6.2 *Natural and Renewable Energy Sources used*

6.3 Contemporary Equipment for Pollution Abatement provided

## 7. Concluding provisions

There is no doubt that ensuring sustainable development in the Republic of Macedonia as outlined in the previous chapters is a major **process of change for the entire country**. The same can be said about implementing the National Strategy for Sustainable Development as given in Part I. It addresses **a new way of thinking and working**. In this connection, the progress of implementation depends on the Enabling Environment and the Implementation Capacity (for details see the Sustainable Development Framework Report, Chapters 3 and 4).

The **Enabling Environment** in essence addresses what is realistic and possible to do in the given context. It covers widely different issues such as political awareness, willingness and capacity, institutional willingness and capacity, domestic and foreign investment willingness and capacity. In short, the Enabling Environment provides the current reality check of the enabling conditions for introducing sustainable development.

The **Implementation Capacity** addresses the current practical capacity for actual implementation and is consequently a practical application of the enabling environment.

The following chapters discuss the Enabling Environment and the Implementation Capacity in their various aspects.

**As can be seen from *Part I The overall strategic framework*, it addresses the identified weaknesses of the enabling environment as well as the implementation capacity as these are some of the most important stepping stones for introducing a strategy-oriented and participatory sustainable development for the Republic of Macedonia.**



## 7.1 The enabling environment

### 7.1.1 The importance of political awareness and capacity

The basic enabling factor for achieving major change in any strategic context is *trust*.

The vision and overall new development direction of the Republic of Macedonia is set out in line with the overarching EU policy of sustainable development. Since sustainable development promotes a better quality of life, this alone should stimulate initial trust in the future. Beyond the NSSD Project, the National Council for Sustainable Development (NCSD) should be politically responsible for the implementation of the NSSD including support of the process for increasing the trust in the future as an integral part of further public awareness and public participation activities. By promoting public participation, the citizens of the Republic of Macedonia are provided with a powerful tool for bottom-up change and Local Agenda 21 initiatives.

The second basic enabling factor is political awareness in order to introduce major changes and more importantly political willingness to motivate and implement these changes. This is most probably going to meet a lot of resistance from all walks of life in the Macedonian society. However, if the political willingness and the political capacity for sustainable development are not developed to an appropriate level, the introduction of sustainable development could end up as an academic initiative with limited impact.

As a first step, an assessment of the commitment to the concepts and principles of sustainability of the Republic of Macedonia has been prepared by the National Specialists based on a comparison with the EU Renewed SD Strategy. This assessment addresses all points in the strategy and is presented in Annex No. 3. As can be seen from this assessment the process of alignment with the EU SDS has started in Macedonia but there is a long way to go before reaching full alignment. A recurrent assessment like this could be used as a strong monitoring tool for political awareness.

### 7.1.2 The importance of the legal and regulatory instruments

The third basic enabling factor concerns the legal and regulatory framework. As far as it can be judged based on the 11 AARs, this is mainly in place as part of the EU alignment and accession process. Consequently this should not be a major issue as the alignment and accession process is ongoing with the aim of starting membership negotiations for the Republic of Macedonia. Furthermore, a number of new laws and bylaws are supporting SD directly. However, the key issue seems to be the willingness and capacity to enforce the legal and regulatory framework and the administrative and organisational capacity in general to implement laws and regulations. The state of the legal and regulatory framework is further elaborated in the following, especially in relation to investment, which is the fourth and last basic enabling factor. It is addressed



in the last section of this chapter. For a more comprehensive and detailed assessment, reference is made to the *Sustainable Development Framework Report*, Section 2.1 Policy and Legal Framework in the chapter dealing with the Knowledge Platform, and the individual area sections in the said chapter.

The legislation related to the **economic sectors** in the Republic of Macedonia still has to make a lot of progress. The EU progress report, November 2006 stated that overall, the Republic of Macedonia will have to make considerable and sustained efforts *to align its legislation with the environmental Acquis, and especially to implement and enforce it, in the medium term*. Effective compliance with EU legislation could be achieved only in the long term. It requires a high level of investment (e.g. in the areas of waste management and water treatment) and a considerable administrative effort. Some progress has been made towards strengthening the legislative framework but progress in implementing the legislation remains limited, especially in areas that require large investments. Selective, immediate action could improve the situation considerably – with comparatively small outlay.

In general there is no regulation to enable the assessment of the impact of new legislation on business. With regard to **SMEs** there is weak legislation on the standardisation of products and services, taxation and financing of SMEs. With regard to **agriculture** the achieved progress towards improved regulation is limited to certain areas, due to the complexity and size of the EU Acquis. With regard to **environment**, the main weaknesses are concerning the country's law enforcement capacity - especially reflected in the non-implementation of the regulation for assessing business operations in the environment. Concerning **environmental protection**, progress is related to the need for a high level of investment, which is difficult to achieve from the State. Also, there is lack of synergy between environmental protection policy and other policies. With regard to **energy** the sector shows certain progress in relation to the primary legislation, but there is lack of secondary legislation and capacity for enforcement of the strategic documents.

All in all, this implies that intensive application of resources is needed besides building the capacity to implement and enforce legislation, especially in regional and rural areas. This will take a substantial investment budget from the State especially as professional guidance is needed from the best of Macedonian advocates and legal advisers. Donor assistance may be solicited and projects enumerated.

### **7.1.3 The need for a conducive and supportive sustainable development investment climate**

**The fourth and last basic enabling factor** concerns the investment climate and the potential for investments, which naturally is a basic precondition for all projects and activities within sustainable development.



The need to stimulate investment in general was formally recognized in 2003 when the Ministry of Economy of the Republic of Macedonia published the first programme for stimulating investment with the assistance of the UNDP and USAID. During the next four years efforts were made to improve the investment environment and considerable progress has been made. However, results, in terms of investment, have proved disappointing. The UNDP continued their support and in August 2007 the second programme for stimulating investment was published.

The new programme to stimulate investment will be implemented utilising the state budget funds. This is a signal of the government's commitment to support this recognized priority. During the implementation period of the programme (2007 – 2010), annual action plans will be prepared outlining objectives, priority measures, projects, institutional responsibilities and timelines for implementation. Based on these, financial plans will be made and resources allocated. The investment promotion agency (Invest Macedonia), the Ministry of Economy, the Deputy Prime Minister's office, ministers without portfolio, other Ministries - as well as consultative partners such as the Investors Council and Business Associations will all participate.

### **Conclusion**

One enabling factor is to some extent in place, namely the legal and regulatory framework. The sustainable development investment climate needs to be addressed, structured and improved. However, the two most crucial factors - the trust in the future, and the political willingness and capacity - are in dire need of being addressed and should have the highest priority.

## **7.2 Implementation capacity**

The following analysis and assessment targets the capacity for implementing viable and realistic SD projects and activities. It is based on the *11 Analysis and Assessment Reports (AAR)*, the six main issue blocks<sup>39</sup>, elaborations presented in the knowledge platform of the *Sustainable Development Framework Report (SDFR)*, and the elaborations in the previous chapter about the enabling environment.

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<sup>39</sup>

1. Policy and Legal Framework (cross-cutting)
2. Environment (cross-cutting)
3. Energy (cross-cutting)
4. Rural Development (includes agriculture, forestry, and tourism)
5. Social Issues (includes employment, social care, health, and education)
6. "SMILES" (includes industry, SMEs, infrastructure and traffic)



## 7.2.1 Necessary technical and professional capacity available

The **basic factor** within the implementation capacity is sufficiently available in Macedonia. This factor entails the technical and professional capacity for identifying, formulating, designing, planning, programming and implementing the necessary projects and activities. However, there seems to be a weakness when applying this capacity in a more crosscutting and strategic oriented way. In addition the concepts and principles for SD, and how to apply these concepts by using technical and professional capacities seem weak.

## 7.2.2 Institutional and organisational capacity is weak

As for the **second basic factor**, namely the institutional and organisational capacity for introducing, applying and enforcing laws, by-laws and regulations, seems to be very weak. The public sector does not seem to have the necessary capacity in terms of manpower, knowledge and systems, and procedures for processing and approving projects and activities in relation to SD in a qualified and timely way. This is the case even though in some of the public institutions there are ongoing activities for improving the situation.

It is also questionable if the private sector has the necessary number of companies within the necessary technical fields and other fields to design and construct/implement SD projects and activities.

This is not judged to be as critical as the lack of capacity in the public sector. The reason for this is that the capacity of the private sector is expected to develop fast due to market pressures. However, this relies on a well functioning public sector to process the projects and activities.

The above conclusions concerning the capacity of the public sector are substantiated by three preliminary ROACH (*Results-Oriented Approach for Capacity Change*, see SDFR Chapter 4.2) Analyses and by summarising the results of the Problem/Objective Trees analyses within the different sectors and crosscutting issue-working groups. These further analyses confirm that:

- A key issue in relation to institutional and organisational issues is the weak organisational and institutional capacity of the public sector.
- Lack of capacity for strategic planning, strategic work and crosscutting co-ordination is identified as a key issue.
- Political interference, involvement and influence are identified as a key issue.



- Ministries, ZELS and Academic Institutions are identified as potentially important change agents.

### 7.2.3 Investment and funding capacity needs to be strengthened further

The **third and last basic factor** is the economic, financing and funding capacity. In this connection, the capacity of the banking sector and its ability to process funding applications for SD projects and activities is of interest. As stressed above there is reluctance within domestic as well as foreign investors to invest in the Republic of Macedonia. This will of course be reflected in the available funding for SD projects and activities.

It is further aggravated by the rather limited domestic capacity for partaking in cost recovery activities, which will be a precondition for a number of external funded SD projects especially within the sectors of water, wastewater, and solid waste.

Adding to this, we have a banking sector that does not seem up to par concerning modern management of investment in project portfolio. This implies a severe constraining factor for implementing SD projects and activities. However, as mentioned above this is not deemed too critical.

In conclusion, only one out of the three basic enabling factors is sufficiently available in Macedonia, namely the technical and professional capacity. However, there seem to be a weakness when it comes to following the concept and principles behind SD when applying this capacity in a crosscutting and more strategic oriented way. The organisational and institutional capacity of the public sector needs to be strengthened. In line with the improved sustainable development investment climate, the economic, financing and funding capacity need to be developed and strengthened on a national and international level. This is the third and last basic factor within the implementation capacity,

A long list of relevant project ideas is given in Annex No. 6. They should be assessed through a comprehensive selection process in accordance with the strategic framework given in Part II.



## 8. Strategy implementation, monitoring of progress and incremental costs

The implementation of the National Strategy for Sustainable Development in the Republic of Macedonia calls for active participation and dialogue between a wide range of stakeholders. It is not the State and its Government Institutions, alone which are responsible for sustainable development, but it is the responsibility of the society as a whole. Starting from local level each and every citizen can and shall contribute and take action.

However, it is the State's responsibility to provide the necessary institutional capacity and set-up in order to ensure professional implementation of the strategy and to safeguard the movement from sector planning towards integrated planning and with social, economic and environmental objectives being complementary and interdependent throughout the development process, which is the heart of the concept of sustainable development.

As can be seen from Part I, this is thoroughly emphasised in the Three Guiding Principles as well as the Seven Strategic Thrusts. In accordance with this the operational responsibilities lay with the municipalities and the private sector, while the instigating, guiding and boosting responsibilities lay with the State with pilot and demonstration projects as one of the most powerful tools

A system of indicators shall monitor progress in achieving the objectives of the NSSD and accommodate a process of learning and improving. Major investments are needed to redirect the society towards sustainable development. This is also to motivate a new way of thinking and working as well as technological breakthroughs and innovation. In particular addressing the entrepreneurial spirit of the young generation, they should serve as lighthouses with high impact, demonstration and replication value.

### 8.1 Institutional framework to support the implementation of the National Strategy for Sustainable Development

***The National Council for Sustainable Development (NCSD)*** should be set up as early as possible in 2008 and the council should be politically responsible for the implementation of the NSSD. The NCSD should be chaired by the Prime Minister and include all relevant line ministries, executive representatives from the municipalities, the private sector and from other key SD stakeholders in civil society. The NCSD shall serve as an open forum for all Macedonian stakeholders to present their views and in time it



could develop into a proper Agency for Sustainable Development. The NCSD shall debate the central policy issues related to the NSSD process and serve as a driving force for raising awareness, ensuring transparency and strengthening commitment. As ICT (Information and Communication Technology) is a key tool in making the Republic of Macedonia sustainable it is proposed that the **National ICT Council**, proposed in the National Strategy and Action Plan for Information Society Development, should be merged with the NCSD.

The NCSD should be provided with a strong secretariat with executive power. This Secretariat could in time turn into a proper Agency for Sustainable Development. The **Agency for Sustainable Development** could have the function of merging together and further developing existing agencies as the Agency for Spatial Planning, the Agency for Promotion of Entrepreneurship, the Agency for Energy Efficiency, the Agency for Sport and Youth and other agencies addressing and dealing with sustainable development.

In the short run the secretariat function of the NCSD could be placed in the planned Secretariat for Informatics Society, which then should be renamed the **Secretariat for Informatics and Sustainable Development Society**.

The first task of the NCSD should be to carefully review this final draft NSSD and consequently make directions for its revision, detailing, finalisation and implementation. In this connection it is important to underline the dynamic concept behind this NSSD, which entails that it should be continuously assessed and respond to changes, through the preparation of annual national strategic working plans by the NCSD with point of departure in this NSSD.

## 8.2 Monitoring of progress and SD Indicators

The NCSD shall regularly report the progress of the NSSD implementation (every year) and update the NSSD (every 2 years). The progress reports as well as the biennial NSSD updates shall be discussed in the NCSD and submitted to the EU institutions and United Nations as well as presented to the public.

In order to effectively monitor the implementation of the National Strategy for Sustainable Development in the Republic of Macedonia quantitative **Sustainable Development Indicators (SDI)** provide a key tool for regular assessment of achieved progress. This is meant to assist decision-makers and to inform the general public about achievements, trade-offs and failures in attaining sustainable development.

The identification of appropriate indicators is an iterative process. The list of national SDIs as presented in Annex No. 7 take into account indicators recommended in EU documents and the national specifics. The selection criteria of SDI followed the recommendations given in the Commission of the European Communities document on *Sustainable Development Indicators to monitor the implementation of the EU*





*Sustainable Development Strategy*, Brussels, 9.2.2005, SEC (2005). The list in Annex 7 focuses on *best available* SDI to measure progress in ensuring sustainable development through the overall strategic framework given in Part I.

It is recommended that the State Statistical Office of the Republic of Macedonia should publish the main sustainable development indicators in the Statistic Yearbook and in other relevant publications. Depending on the best available and best-needed nature of indicators, these categories call for different kinds of development efforts relating to concepts, methodologies and data collection procedures. It is recommended that when established the National Agency for Sustainable Development in liaison with the State Statistical Office shall investigate and report annually to the National Council for Sustainable Development (NCSO) on the feasibility of the *best needed* indicators and should ensure the availability of those indicators. In order to provide *GIS-based Regional Sustainable Development Indicators (RSDI)* in future it is recommended that the Agency for Spatial Planning of the Republic of Macedonia should closely collaborate with both, the NASD, when established, and the State Statistical Office. These RSDI reflect the situation in smaller territorial administrative units.

### 8.3 Financing and incremental costs

Since 1995, a database of investment projects in the public infrastructure of the Republic of Macedonia was set up in the Ministry of Finance and the concerned Ministries and it is continuously updated. The Public Investment Programme (PIP) of the Republic of Macedonia 2007-2009 was prepared in accordance with the Operational Programme of the Government of the Republic of Macedonia. When preparing the PIP, sector development policies and priority infrastructure projects have been taken into account. They are included in the 2006-2010 Government Operational Programme. Additionally, the financial frame is set for the implementation of this National Strategy for Sustainable Development on the short run supported by the Pre-accession Economic Programme 2007–2009 of the Republic of Macedonia.

Part I of this NSSD provides a preliminary overview of the funds and resources needed for implementing the NSSD including funding of immediately needed pilot and demonstration projects.

The Government's determination to encourage foreign investments primarily through concessions, donations, direct and joint ventures is important. Besides this, further targeted increase of foreign grants is necessary for support in water, wastewater management, solid waste management, irrigation, environment, education and health. EU pre-accession funds are expected to be available for the country in the next years.

The implementation of this NSSD is a stepwise process of addressing the various objectives and results. Each result might define a project of its own – starting from the



Root Objectives/Results and consequently working upward in the Objective Tree; or it is a set of results in a certain component, which naturally defines a project.

Beyond the classical financing instruments mentioned above – Public Investment Programme (PIP), foreign and domestic investments and foreign grants – new models like e.g. Public-Private Partnership (PPP) shall be carefully tested. PPP describes a government service or private business venture, which is funded and operated through a partnership of Government and one or more private sector companies. PPP provides opportunities for both, foreign and domestic investments supportive to Sustainable Development.

With the adoption and implementation of the European strategy outlined in the VI Environment Action Programme of the European Community 2002-2012, the Government of the Republic of Macedonia through the formulation of strategic instruments and actions, both voluntary and mandatory, shall aim at the *re-orientation* of public and private investments towards eco-compatible technologies.

The banking system in the Republic of Macedonia plays a crucial role in mobilizing domestic investments. Banks in other European countries have acknowledged that companies' commitment to sustainable development and practical day-by-day implementation of distinct measures affect, in the long run, the reliability of investments. Therefore, it is recommended that the Government of the Republic of Macedonia in liaison with the international donor community should initiate a dialogue with the country's banking system in order to promote so-called *green investments* and to design procedures for the concession of favourable credits focussing on environmental and innovative sustainable development technologies.

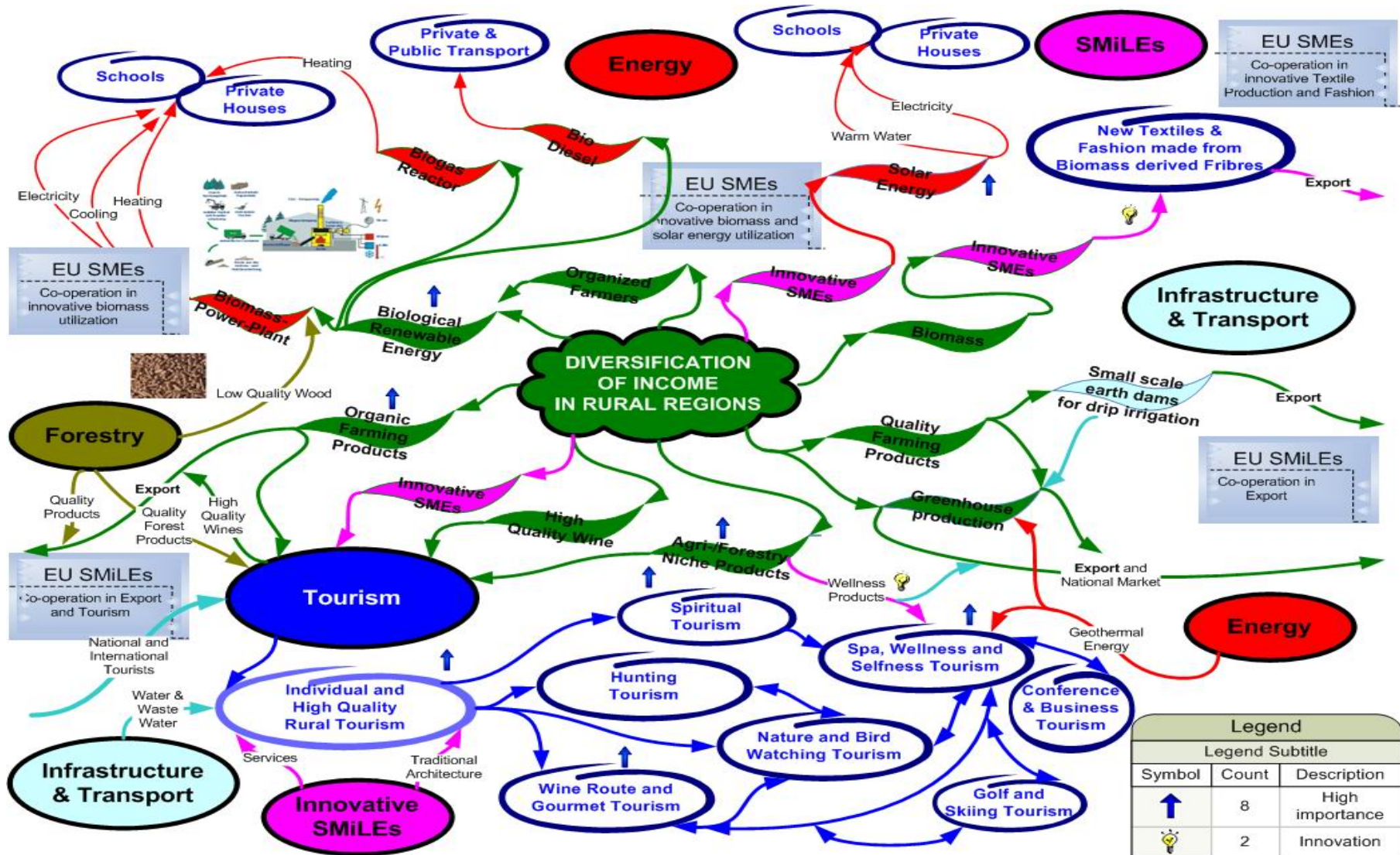
Last but not least the Republic of Macedonia can learn from other European countries' experience on gradually introducing appropriate fiscal incentives and taxation instruments for promoting market transparency and prices that reflect the real economic, social and environmental costs of products and services and at the same time create awareness in the choices which can be made by consumers. In the medium and long-run, it is recommended that a new tax system should be introduced to support Sustainable Development in the Republic of Macedonia. This should mainly be based on consumed resources (*natural-resource-user-pays* concept) as envisaged in the Agenda 21, Chapter 8 of the UN Conference on Environment and Development in Rio de Janeiro in 1992, and technically supported by a Geographic Information System (GIS).



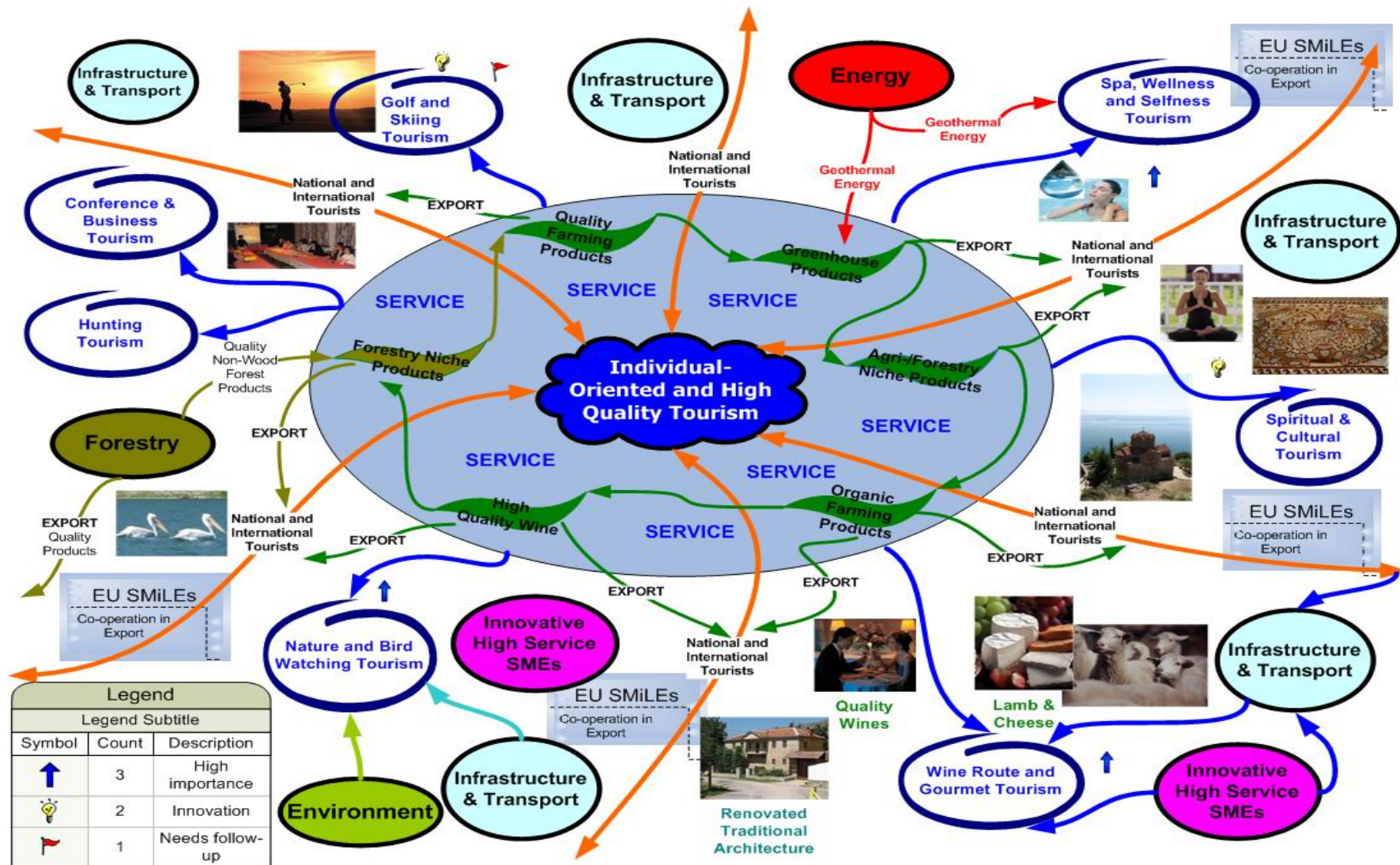
## **Annex No. 1:**

# **Mind Mappings visualizing the Synergies between various Sectors and designing the SD Road Map for the Republic of Macedonia**

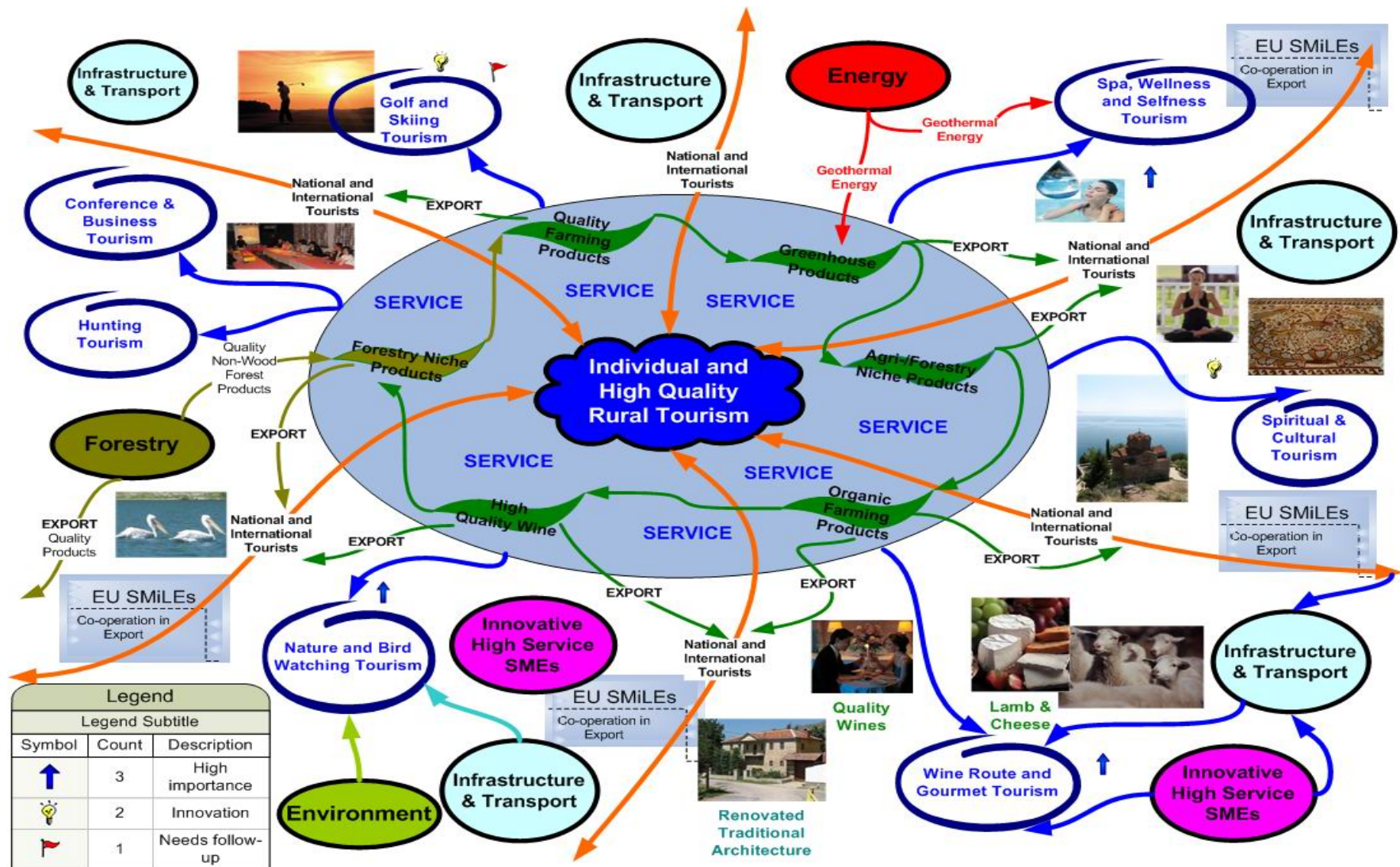




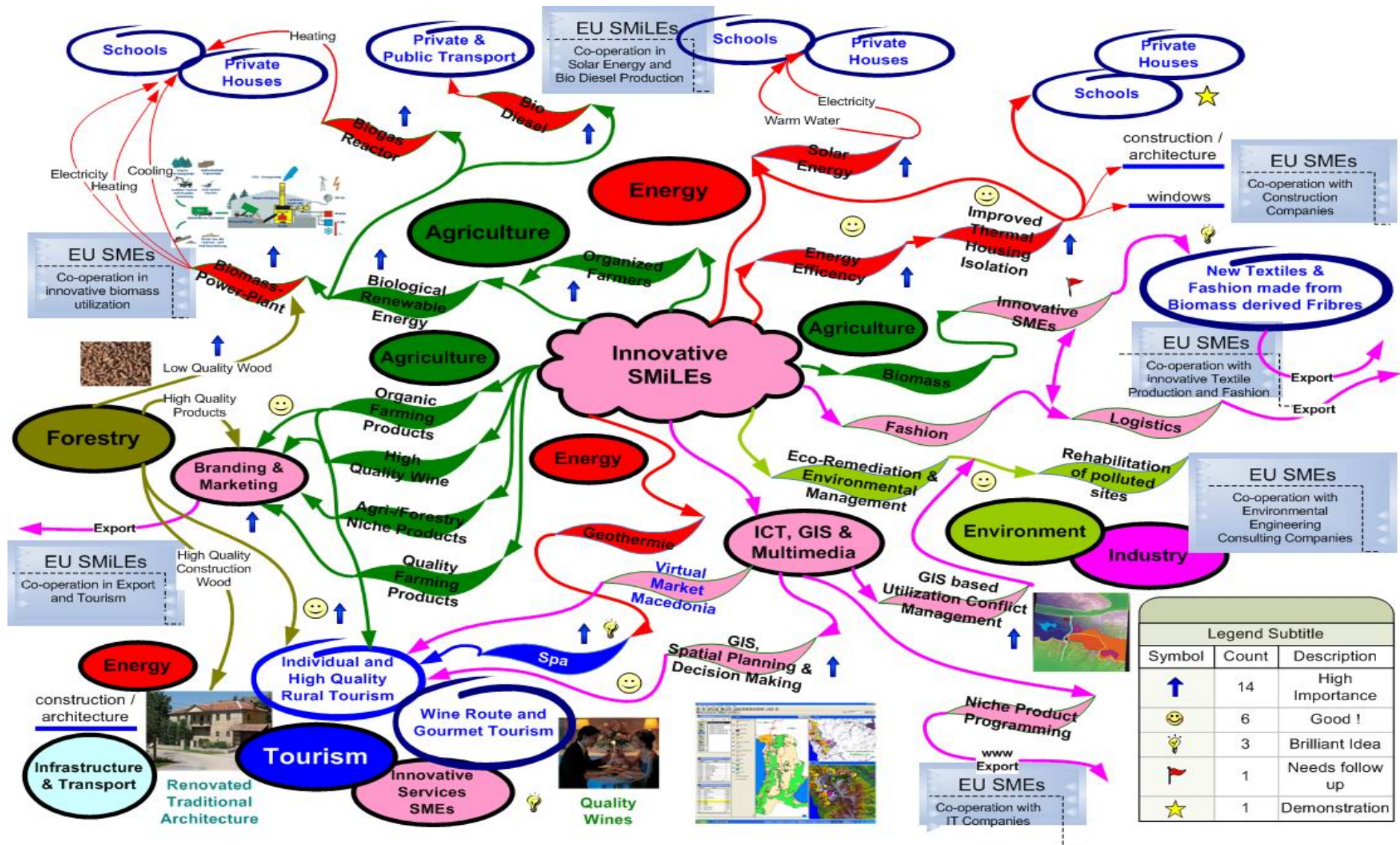
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💡	2	Innovation

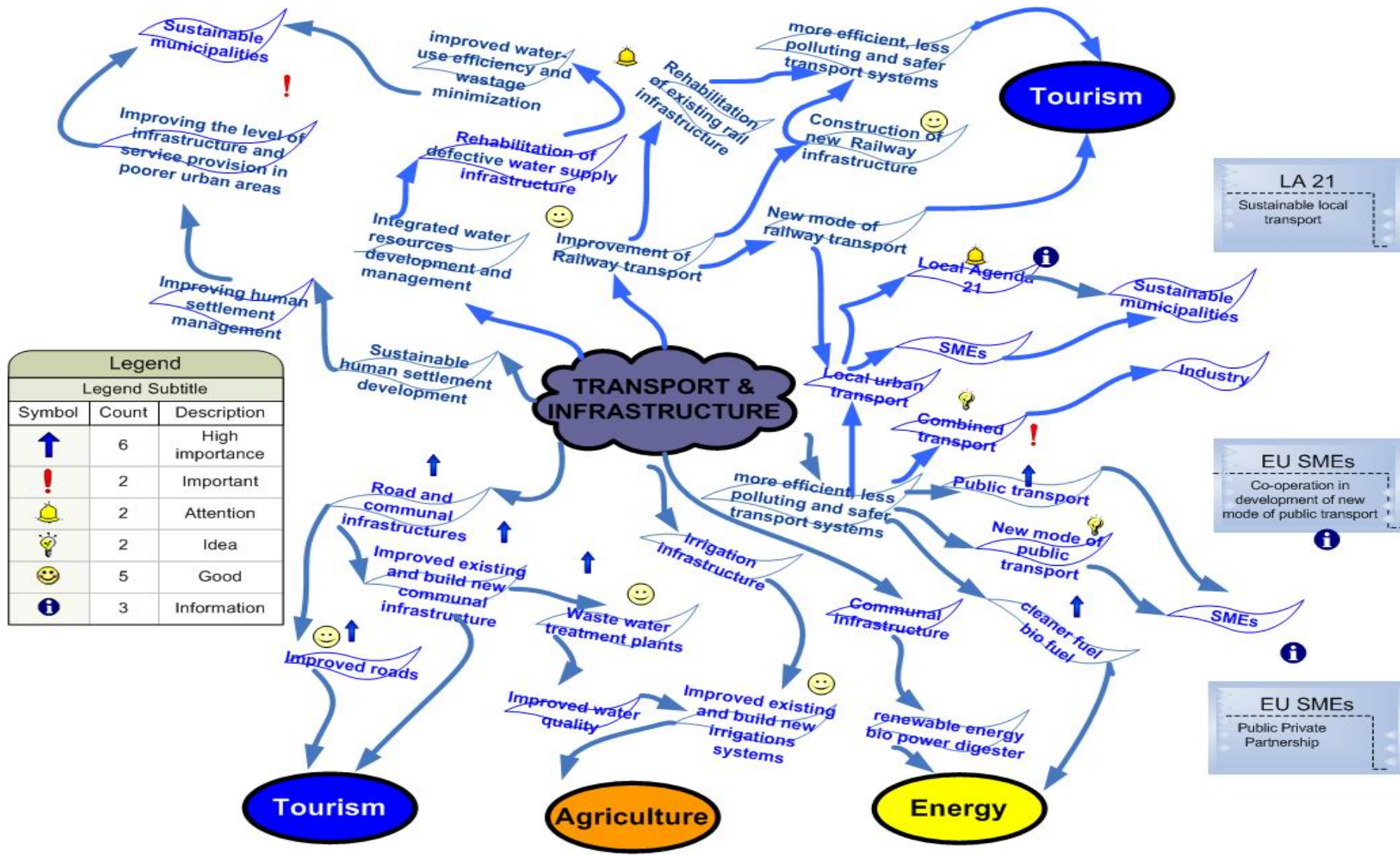














Support to the Preparation of a National Strategy for Sustainable Development  
in  
The Republic of Macedonia

Draft Final National Strategy for Sustainable Development February 2008

Part II: Strategic background and analysis

## **Annex No. 2:**

# **Objective Trees as designed by the NSSD Working Groups**



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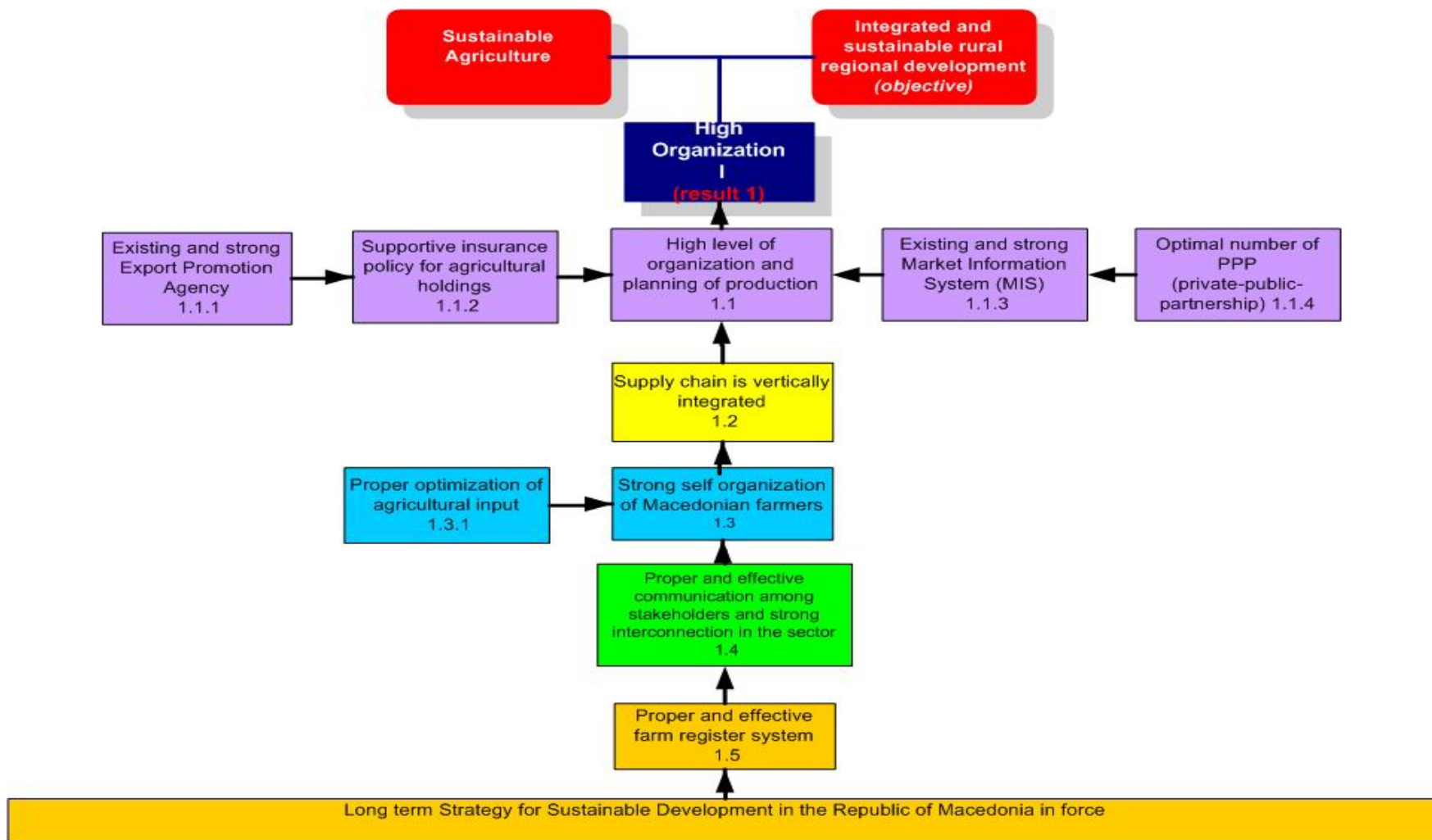
Part II: Strategic background and analysis

## **Annex No. 2:**

# **Objective Tree Agriculture and Rural Development**

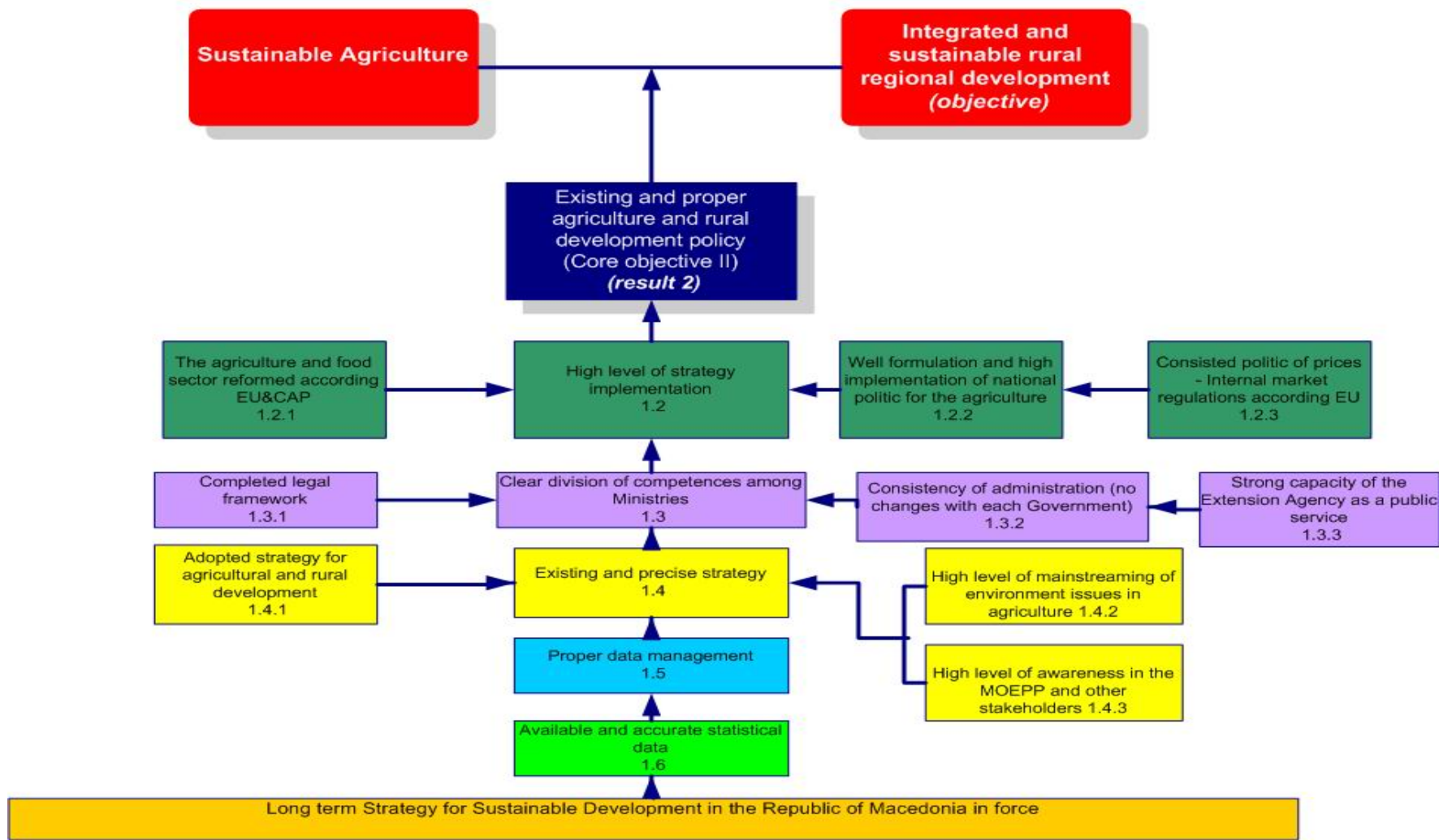


### OBJECTIVE TREE AGRICULTURE SECTOR IN THE REPUBLIC OF MACEDONIA I



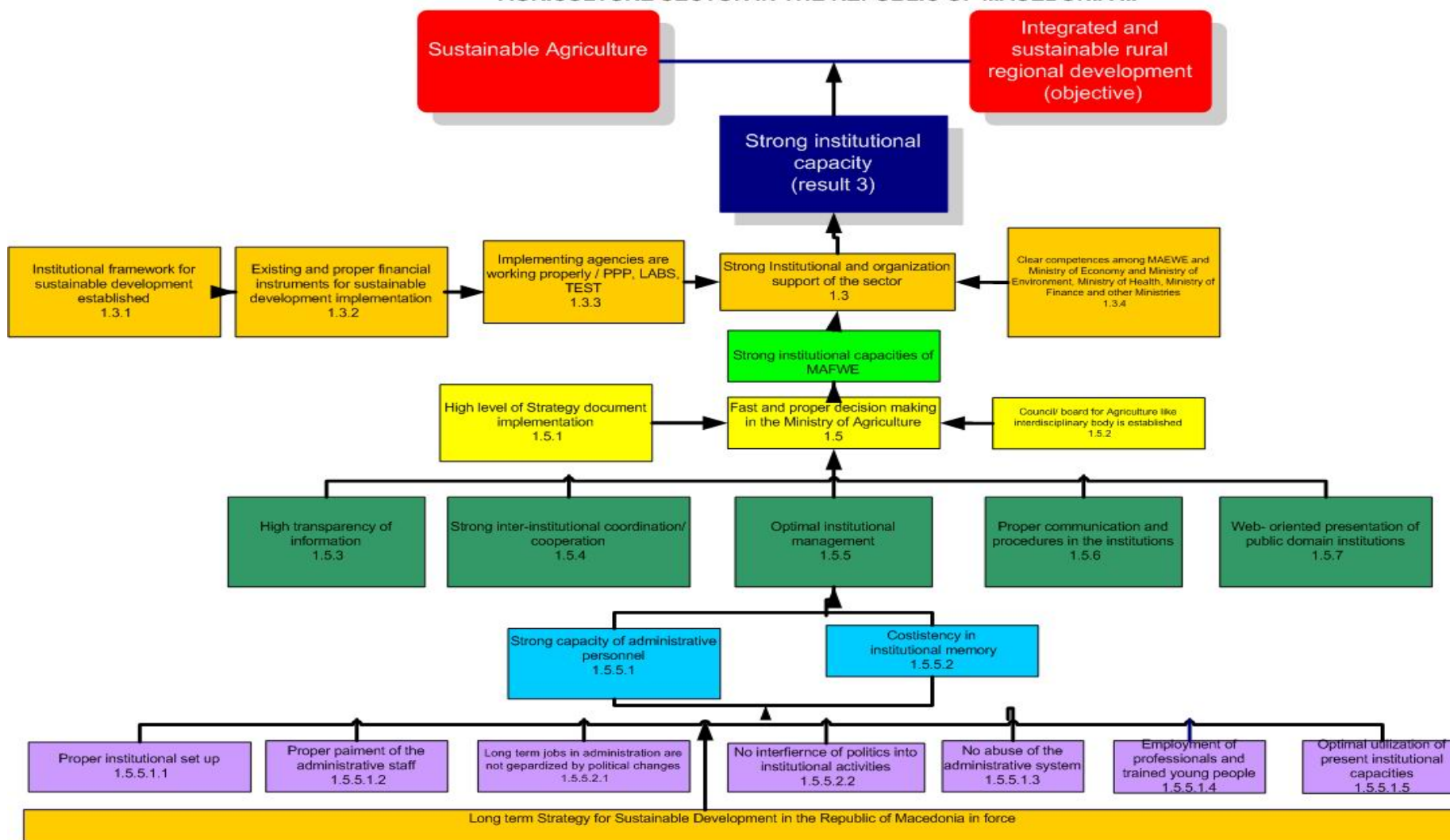


OBJECTIVE TREE  
AGRICULTURE SECTOR IN THE REPUBLIC OF MACEDONIA II



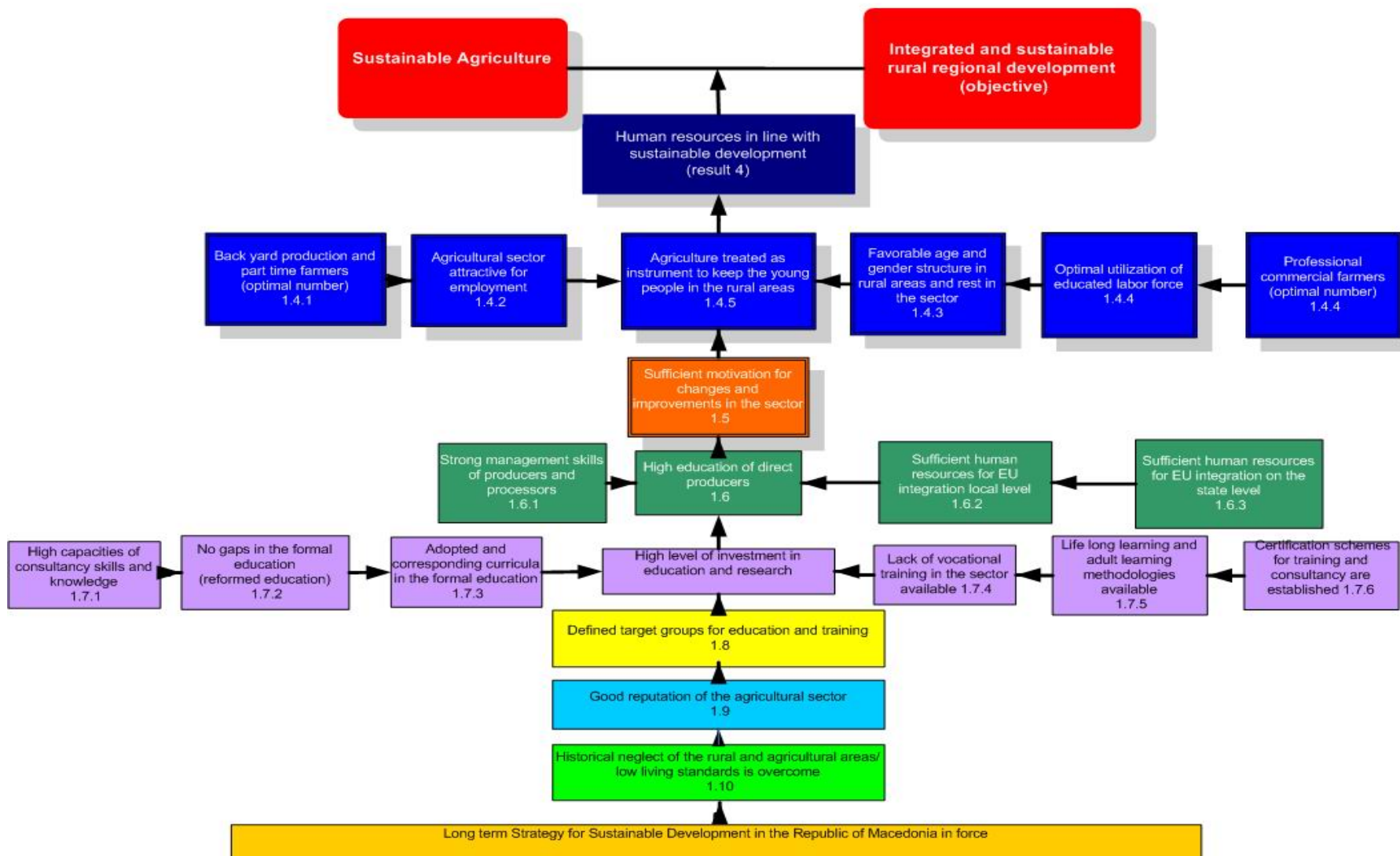


**OBJECTIVE TREE  
AGRICULTURE SECTOR IN THE REPUBLIC OF MACEDONIA III**





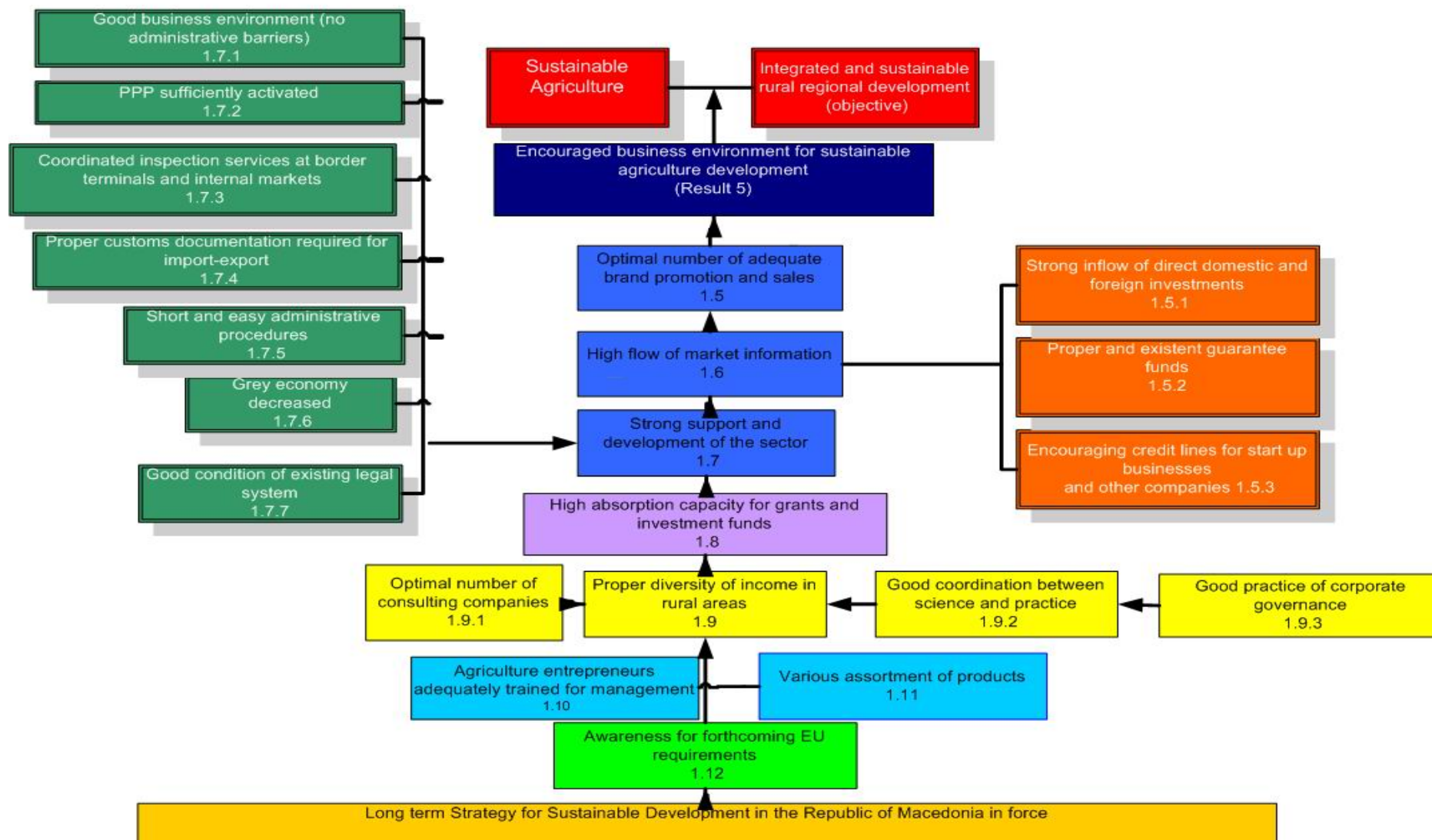
### OBJECTIVE TREE AGRICULTURE SECTOR IN THE REPUBLIC OF MACEDONIA IV





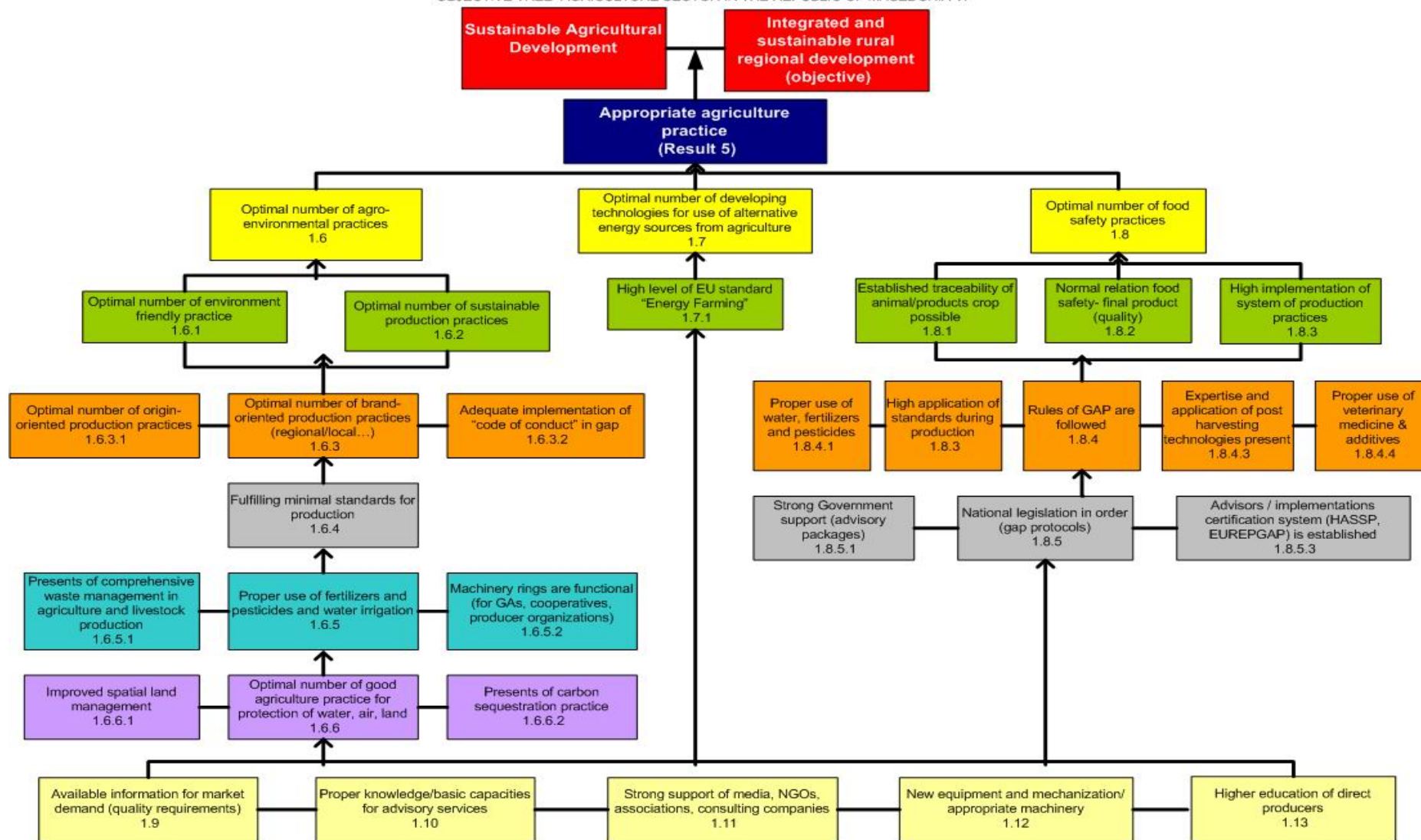


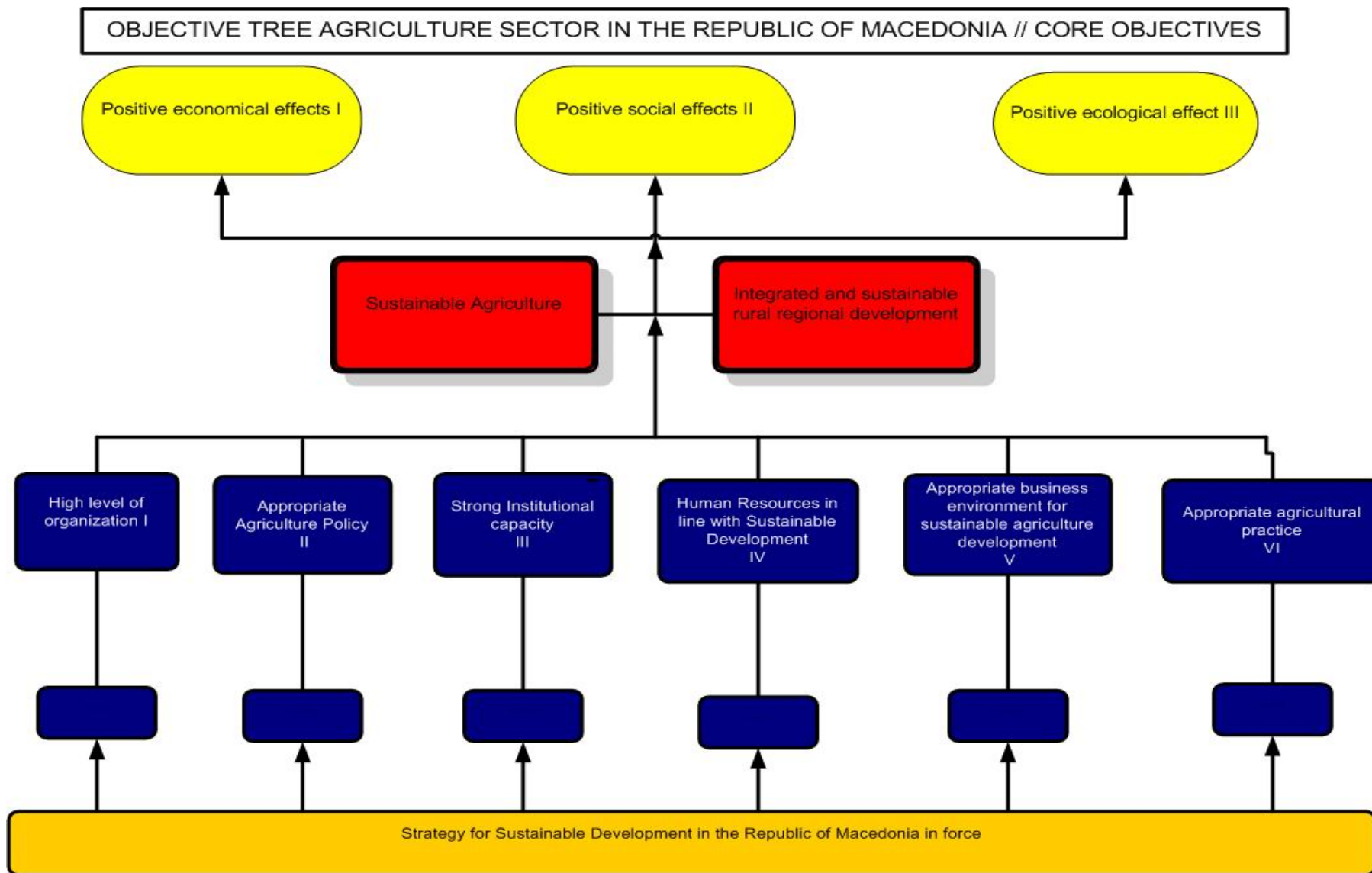
### OBJECTIVE TREE AGRICULTURE SECTOR IN THE REPUBLIC OF MACEDONIA V





OBJECTIVE TREE AGRICULTURE SECTOR IN THE REPUBLIC OF MACEDONIA VI







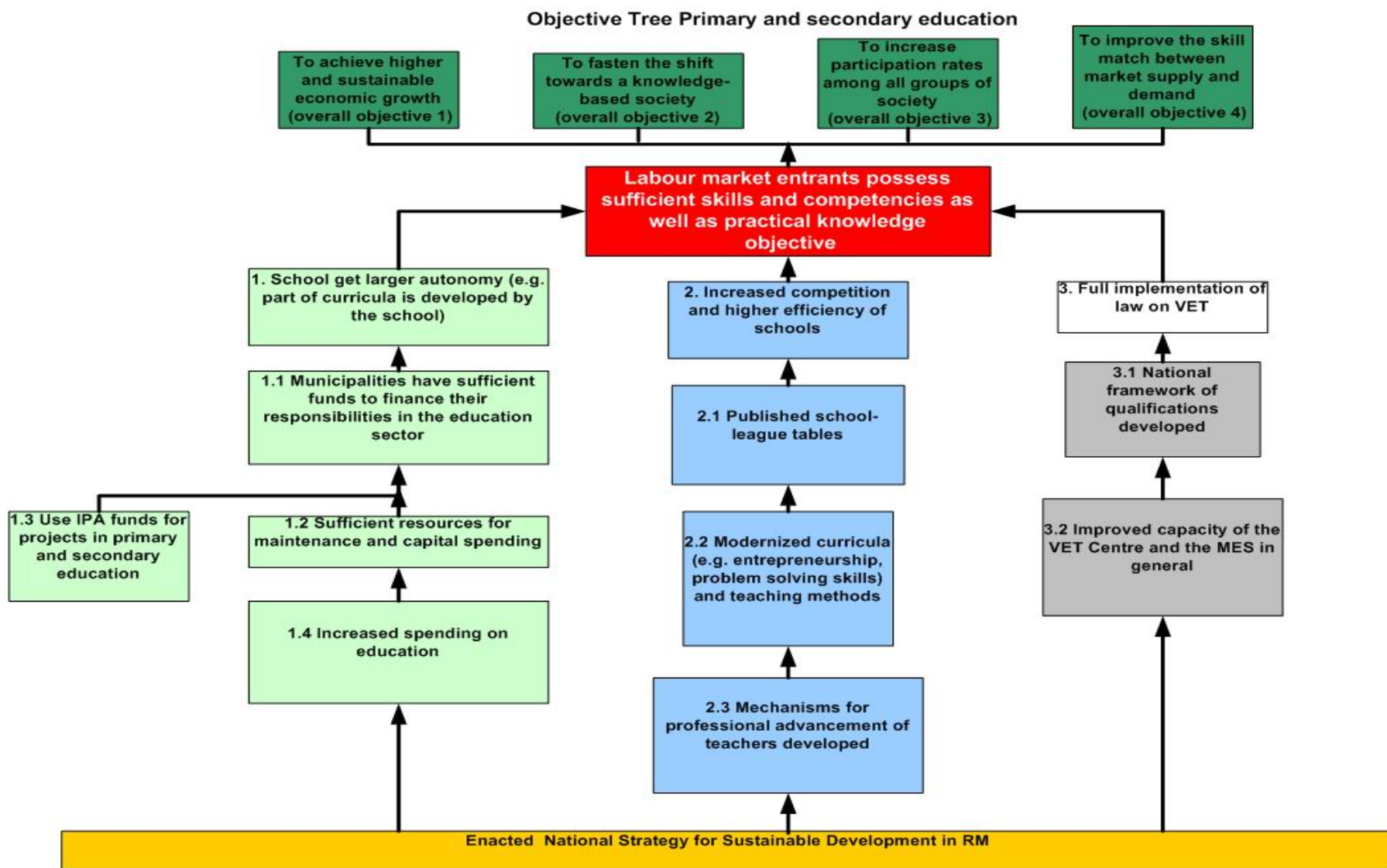
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The Republic of Macedonia

**Draft Final National Strategy for Sustainable Development February 2008**

Part II: Strategic background and analysis

## **Annex No. 2:**

# **Objective Tree Education**





Sector / Cross-Cutting-Issue:
<b>Key Challenges / Key Objective(s) as in Renewed EU SDS (June 2006)</b>
<p><b>EU 3. Sustainable Consumption and Production</b> <u>Key Objective:</u> To promote sustainable consumption and production patterns.</p> <p><b>EU 4. Conservation and Management of Natural Resources</b> <u>Key Objective:</u> To improve management and avoid overexploitation of natural resources, recognising the value of ecosystem services.</p> <p><b>EU 5. Public Health</b> <u>Key Objective:</u> To promote good public health on equal conditions and improve protection against health threats.</p> <p><b>EU 6. Social Inclusion, Demography and Migration</b> <u>Key Objective:</u> To create a socially inclusive society by taking into account solidarity between and within generations and to secure and increase the quality of life of citizens as a precondition for lasting individual well-being.</p> <p><b>EU 7. Cross-Cutting Policies contributing to the Knowledge Society</b> <u>Key Objective:</u> To contribute to the development of a Knowledge Society in the Republic of Macedonia, based on Education, which is a prerequisite for promoting the behavioural changes and providing citizens with the key competences needed to achieve sustainable development.</p>
<b>Specific RM Key Challenges / Key Objective(s)</b>
<p><b>RM 1. Good Governance and Better Policy-Making</b> <u>Key Objective:</u> To set out an approach for Good Governance and Better Policy-Making based on better regulation and on the principle that sustainable development has to be integrated into policy-making at all levels. This requires all levels of government to support, and to cooperate with, each other, taking into account the different institutional settings, cultures and specific circumstances in the different regions of the Republic of Macedonia.</p> <p><b>RM 2. Diversification of Income in Rural Regions and Sustainable Development Challenges</b> <u>Key Objective:</u> To actively promote sustainable development in order to diversify the income in the rural regions of the Republic of Macedonia (RM), to generate regional added value-cycles, to facilitate regional and urban sustainable development spatial planning, and to ensure that the Government of the RM's internal and external policies are consistent with global sustainable development and its international commitments.</p>



### RM 3. Economic Prosperity and Job Creation

Key Objective: To contribute to increasing competitiveness, economic prosperity and enhancing job creation by performing necessary structural changes which enables the economy at various levels to cope with the challenges of globalisation by creating a playing field in which dynamism, innovation and creative entrepreneurship can flourish whilst ensuring social equity and a healthy environment.

#### Overall Objective(s)

1. To achieve higher and sustainable economic growth

#### Overall Objective(s)

2. To fasten the shift towards a knowledge-based society

#### Overall Objective(s)

3. To increase participation rates among all groups of society

#### Overall Objective(s)

4. To improve the skill match between market supply and demand

#### Objective

1. Labour market entrants possess sufficient skills and competencies as well as practical knowledge

#### Result

1. Schools get larger autonomy and decision-making powers

1.1. Increased funding and administrative capacity of municipalities

1.2. More resources are allocated for maintenance and capital projects

1.3. Use IPA funds for projects in primary and secondary education

1.4. Increased spending on education

#### Result

2. Competition is increased and hence the efficiency of schools

Published school-league tables

Modernized curricula and teaching methods that develop functional literacy

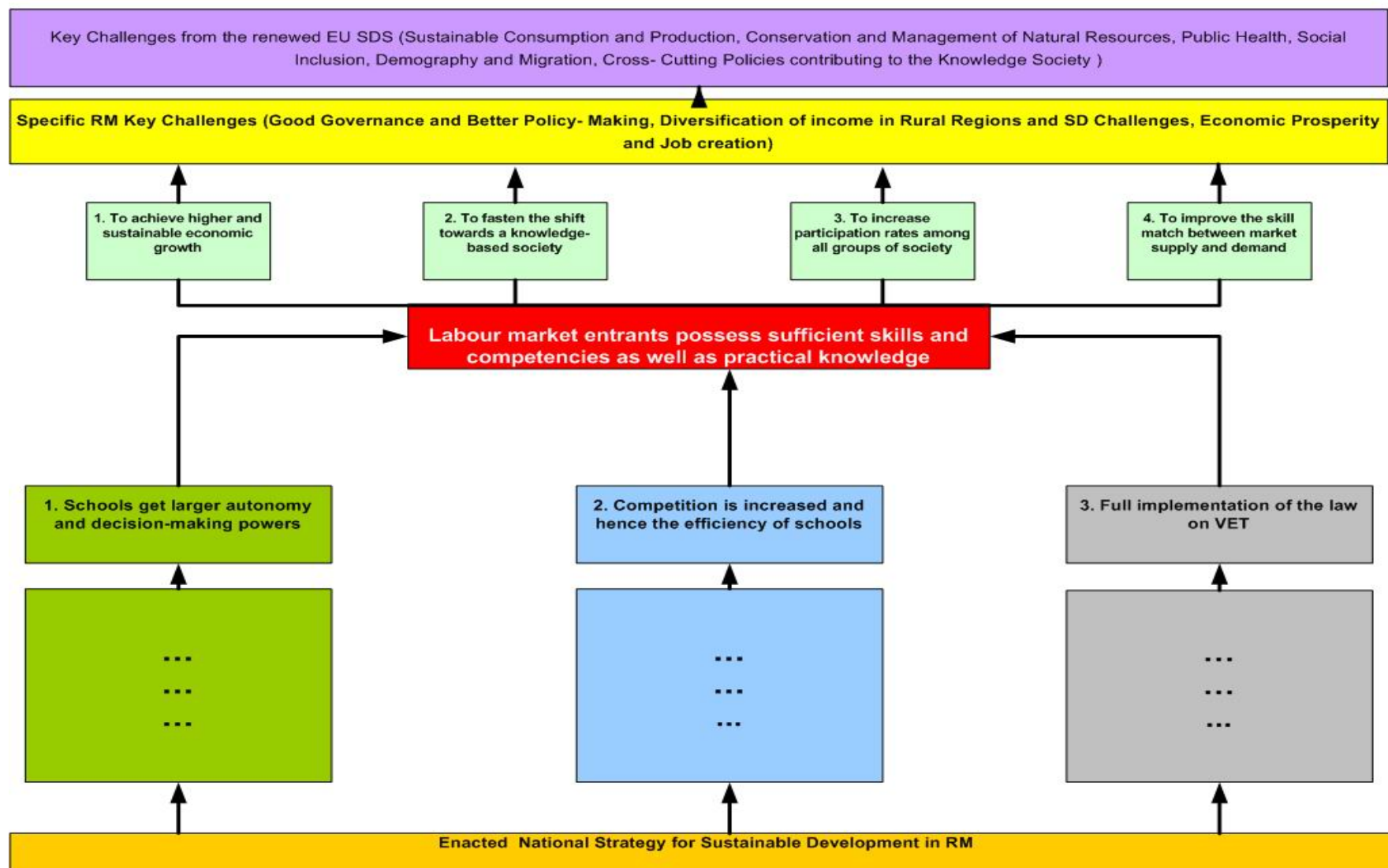
2.3. Developed mechanisms for professional advancement of teachers

#### Result

3. Full implementation of the law on VET

3.1. Developed national framework of qualifications

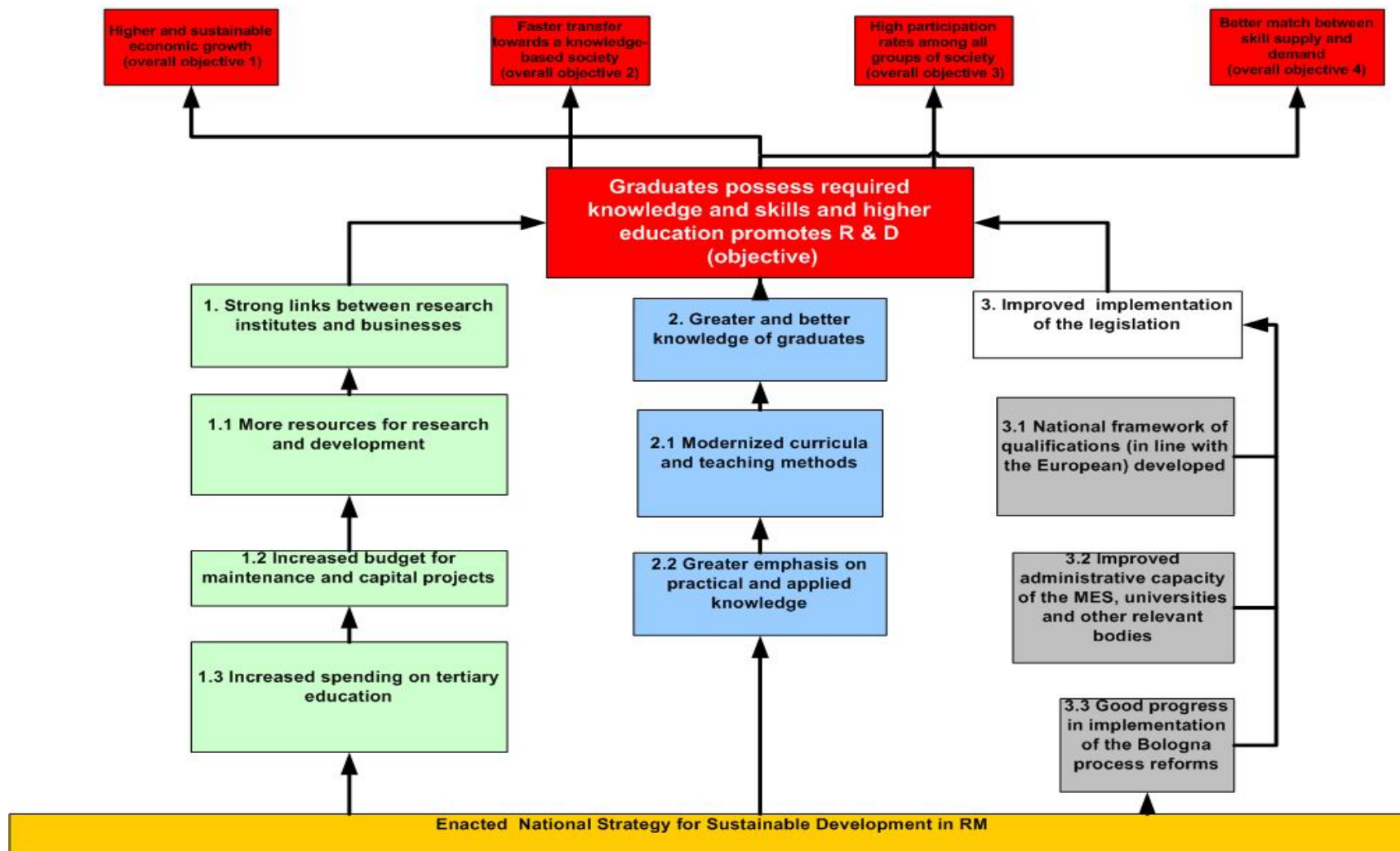
3.2. Improved capacity of the VET Centre and the MES in general







### Objective Tree tertiary education





## Sector / Cross-Cutting-Issue:

### Key Challenges / Key Objective(s) as in Renewed EU SDS (June 2006)

#### EU 3. Sustainable Consumption and Production

Key Objective: To promote sustainable consumption and production patterns.

#### EU 4. Conservation and Management of Natural Resources

Key Objective: To improve management and avoid overexploitation of natural resources, recognising the value of ecosystem services.

#### EU 5. Public Health

Key Objective: To promote good public health on equal conditions and improve protection against health threats.

#### EU 6. Social Inclusion, Demography and Migration

Key Objective: To create a socially inclusive society by taking into account solidarity between and within generations and to secure and increase the quality of life of citizens as a precondition for lasting individual well-being.

#### EU 7. Cross-Cutting Policies contributing to the Knowledge Society

Key Objective: To contribute to the development of a Knowledge Society in the Republic of Macedonia, based on Education, which is a prerequisite for promoting the behavioural changes and providing citizens with the key competences needed to achieve sustainable development.

### Specific RM Key Challenges / Key Objective(s)

#### RM 1. Good Governance and Better Policy-Making

Key Objective: To set out an approach for Good Governance and Better Policy-Making based on better regulation and on the principle that sustainable development has to be integrated into policy-making at all levels. This requires all levels of government to support, and to cooperate with, each other, taking into account the different institutional settings, cultures and specific circumstances in the different regions of the Republic of Macedonia.

#### RM 2. Diversification of Income in Rural Regions and Sustainable Development Challenges

Key Objective: To actively promote sustainable development in order to diversify the income in the rural regions of the Republic of Macedonia (RM), to generate regional added value-cycles, to facilitate regional and urban sustainable development spatial planning, and to ensure that the Government of the RM's internal and external policies are consistent with global sustainable development and its international commitments.



### RM 3. Economic Prosperity and Job Creation

Key Objective: To contribute to increasing competitiveness, economic prosperity and enhancing job creation by performing necessary structural changes which enables the economy at various levels to cope with the challenges of globalisation by creating a playing field in which dynamism, innovation and creative entrepreneurship can flourish whilst ensuring social equity and a healthy environment.

#### Overall Objective(s)

1. To achieve higher and sustainable economic growth

#### Overall Objective(s)

2. To fasten the shift towards a knowledge-based society

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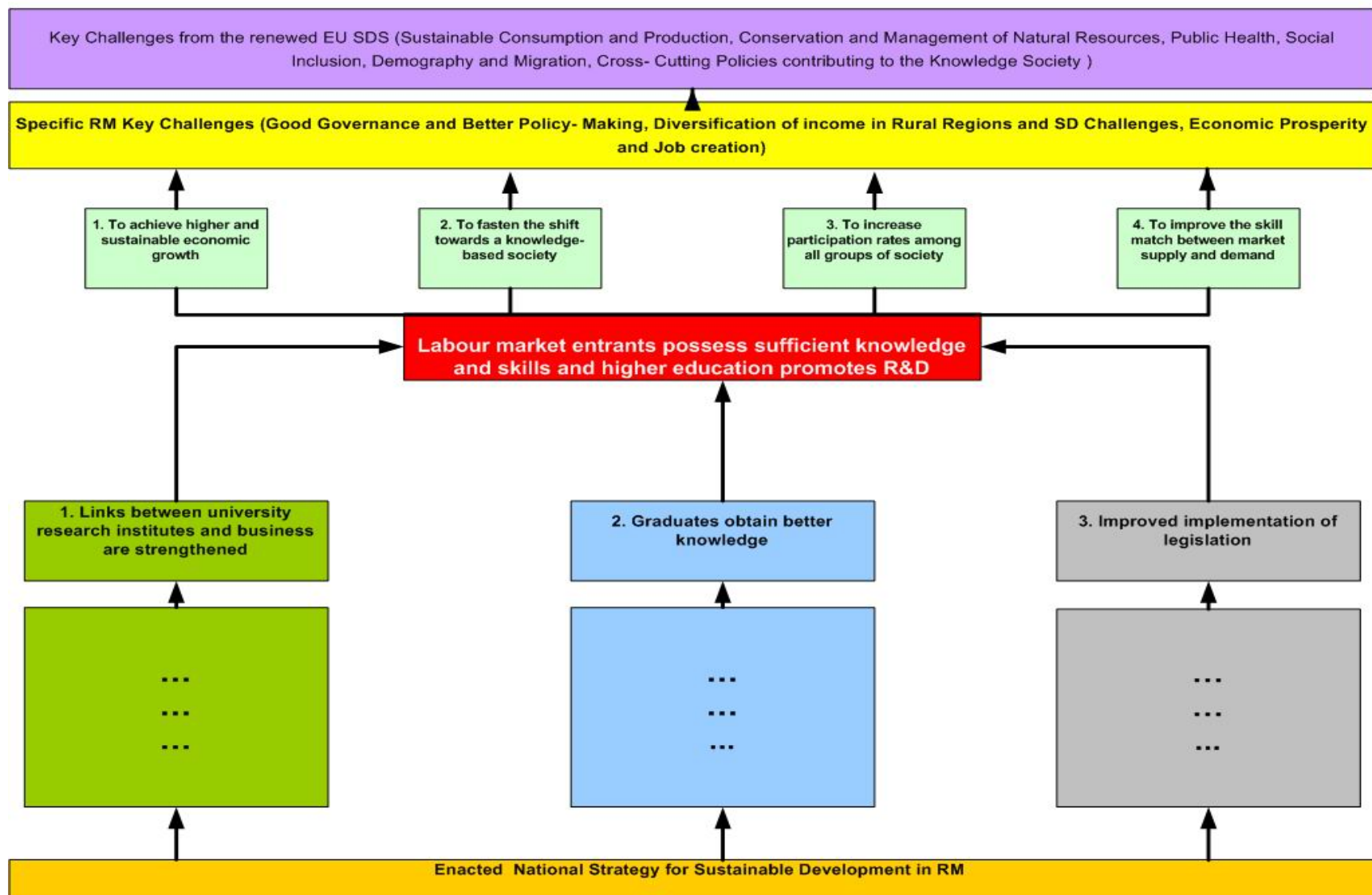
2.3. Developed mechanisms for professional advancement of teachers

#### Result

3. Full implementation of the law on VET

3.1. Developed national framework of qualifications

3.2. Improved capacity of the VET Centre and the MES in general





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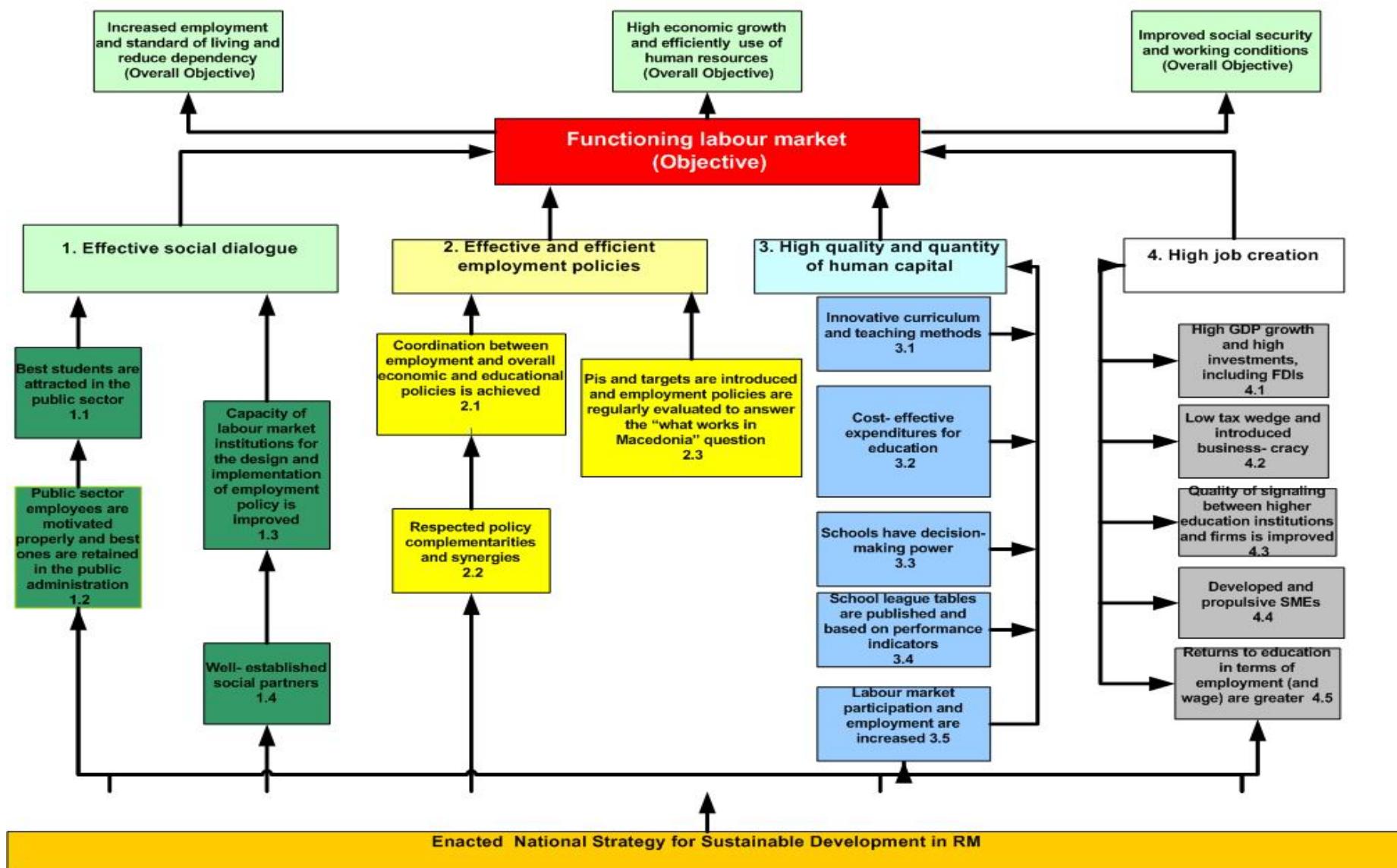
Part II: Strategic background and analysis

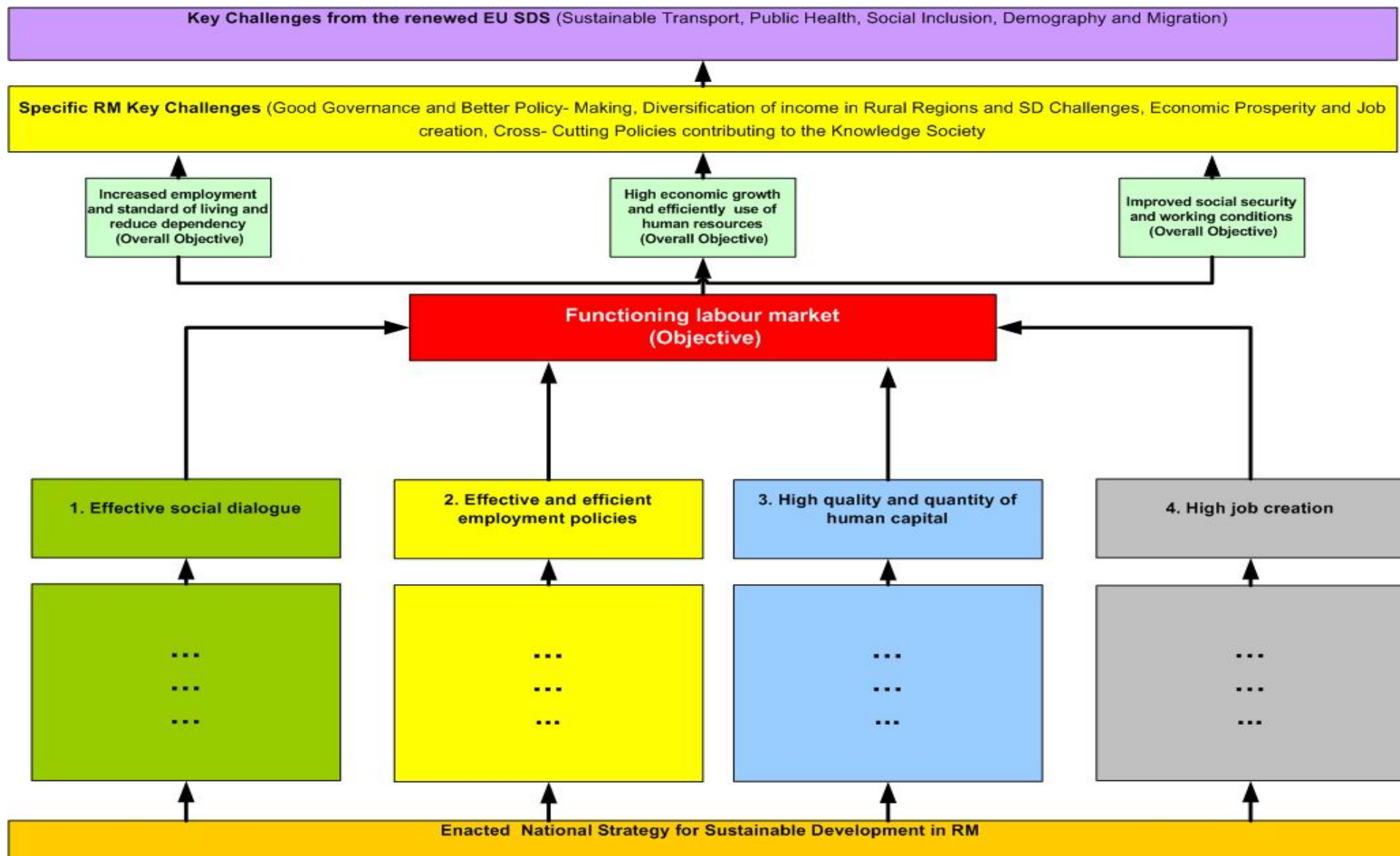
## **Annex No. 2:**

# **Objective Tree Employment**



### Objective Tree Employment







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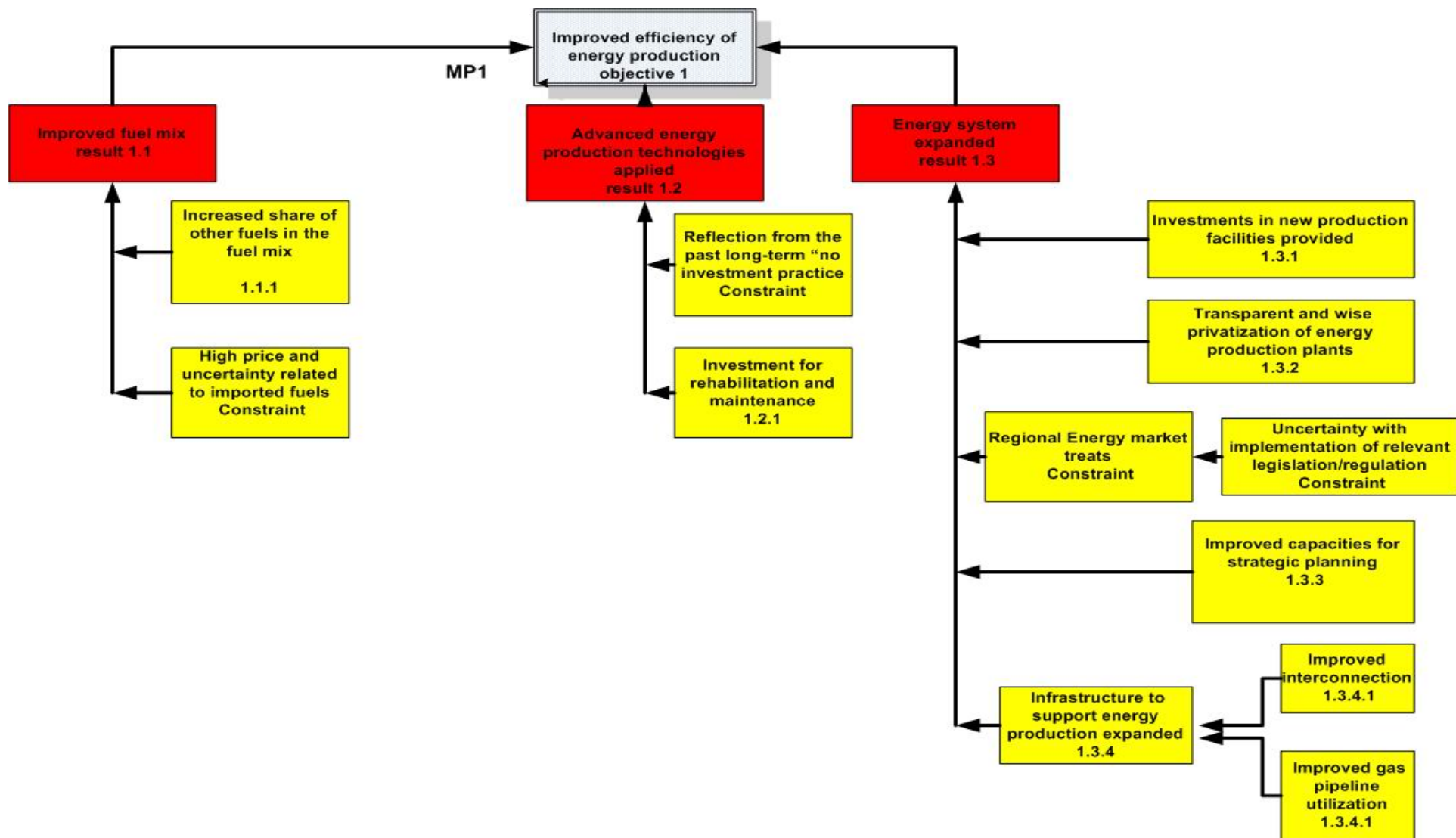
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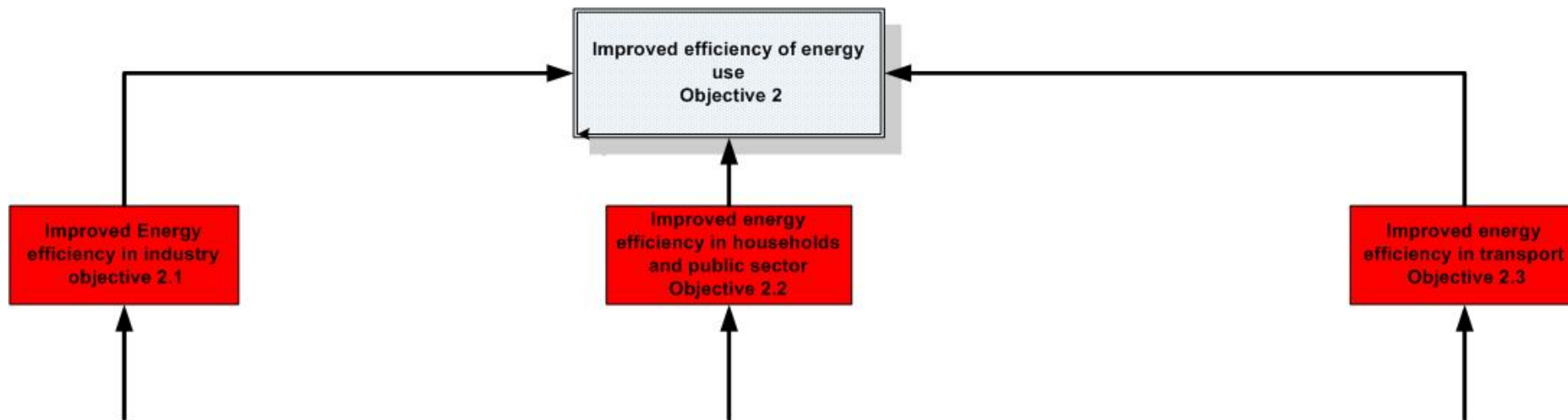
Part II: Strategic background and analysis

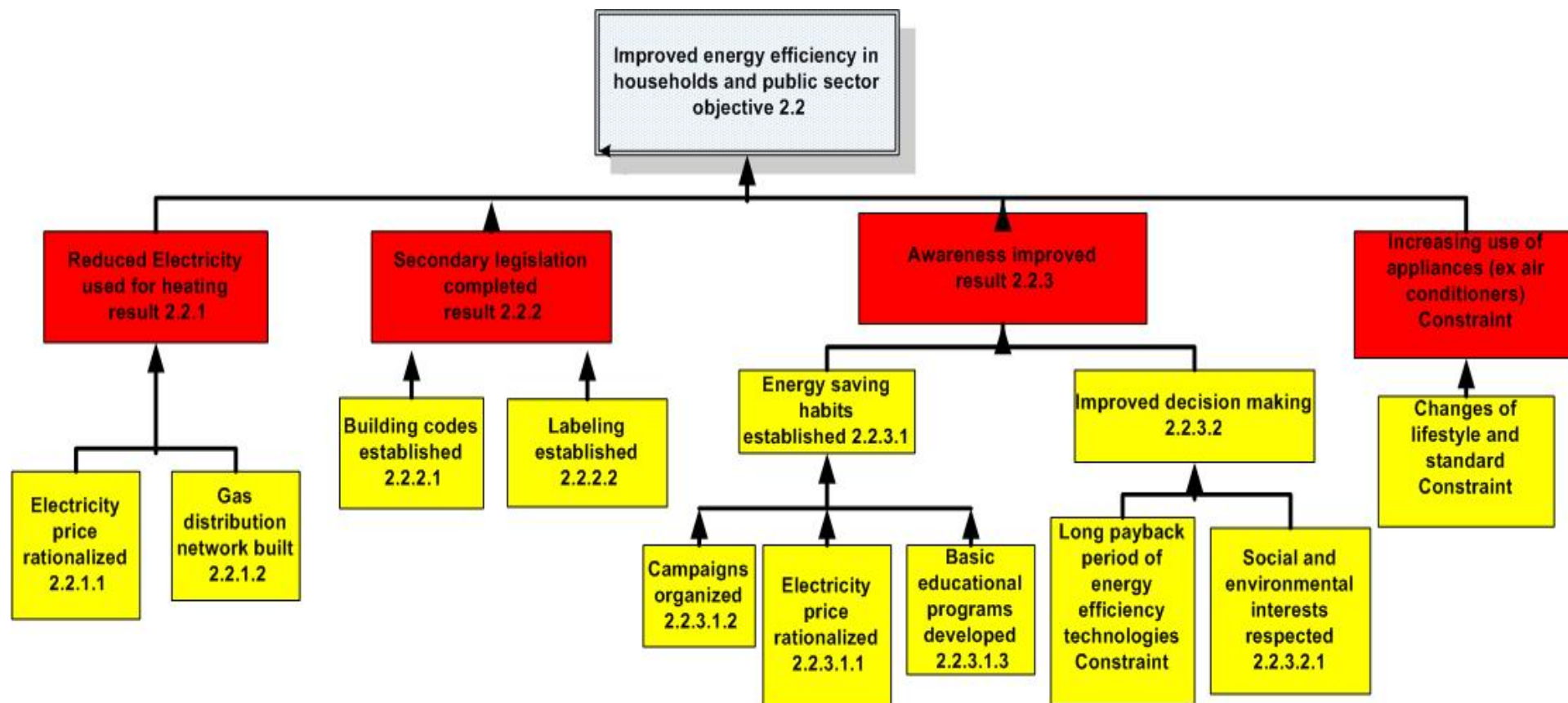
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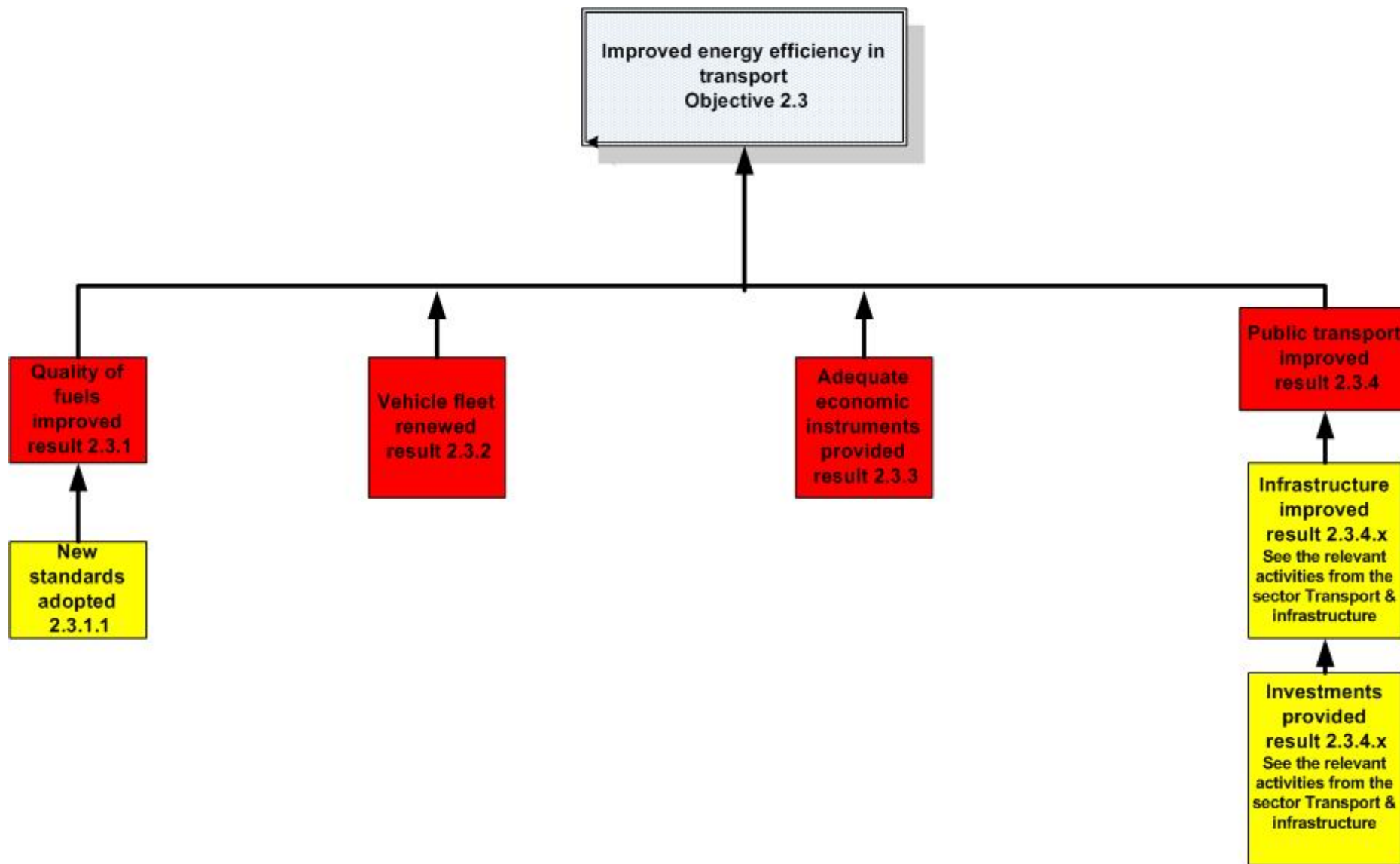
# **Objective Tree Energy**

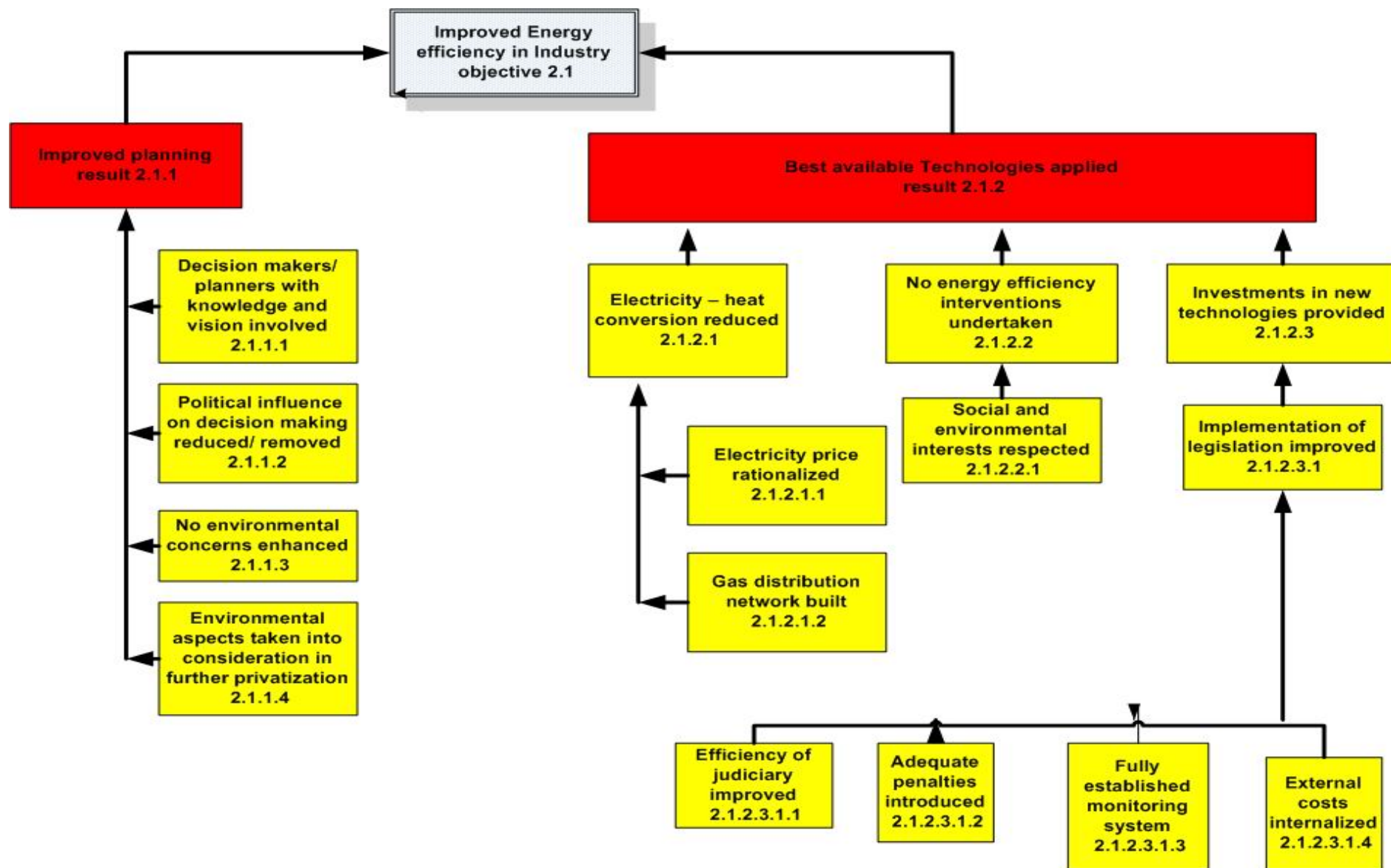


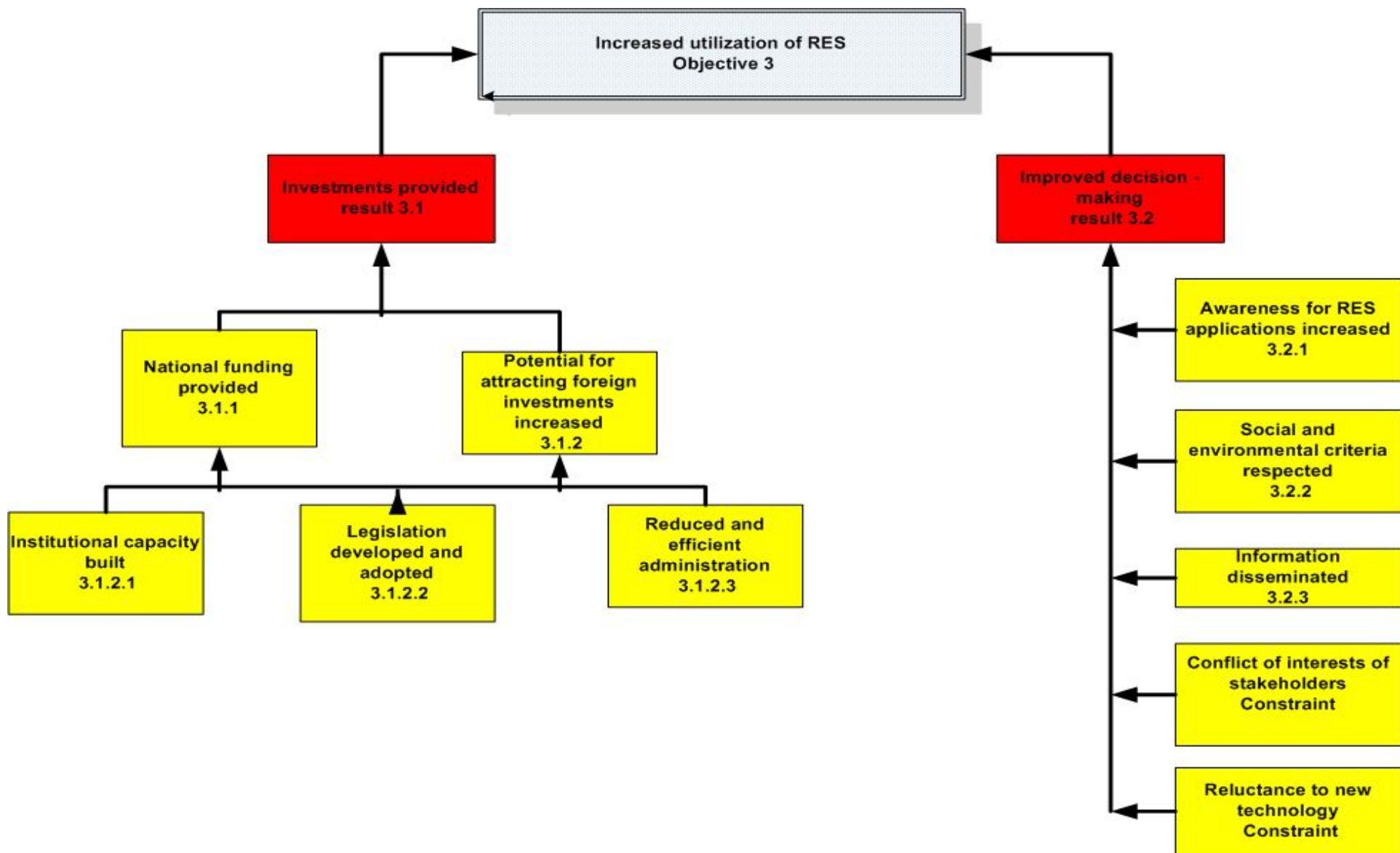














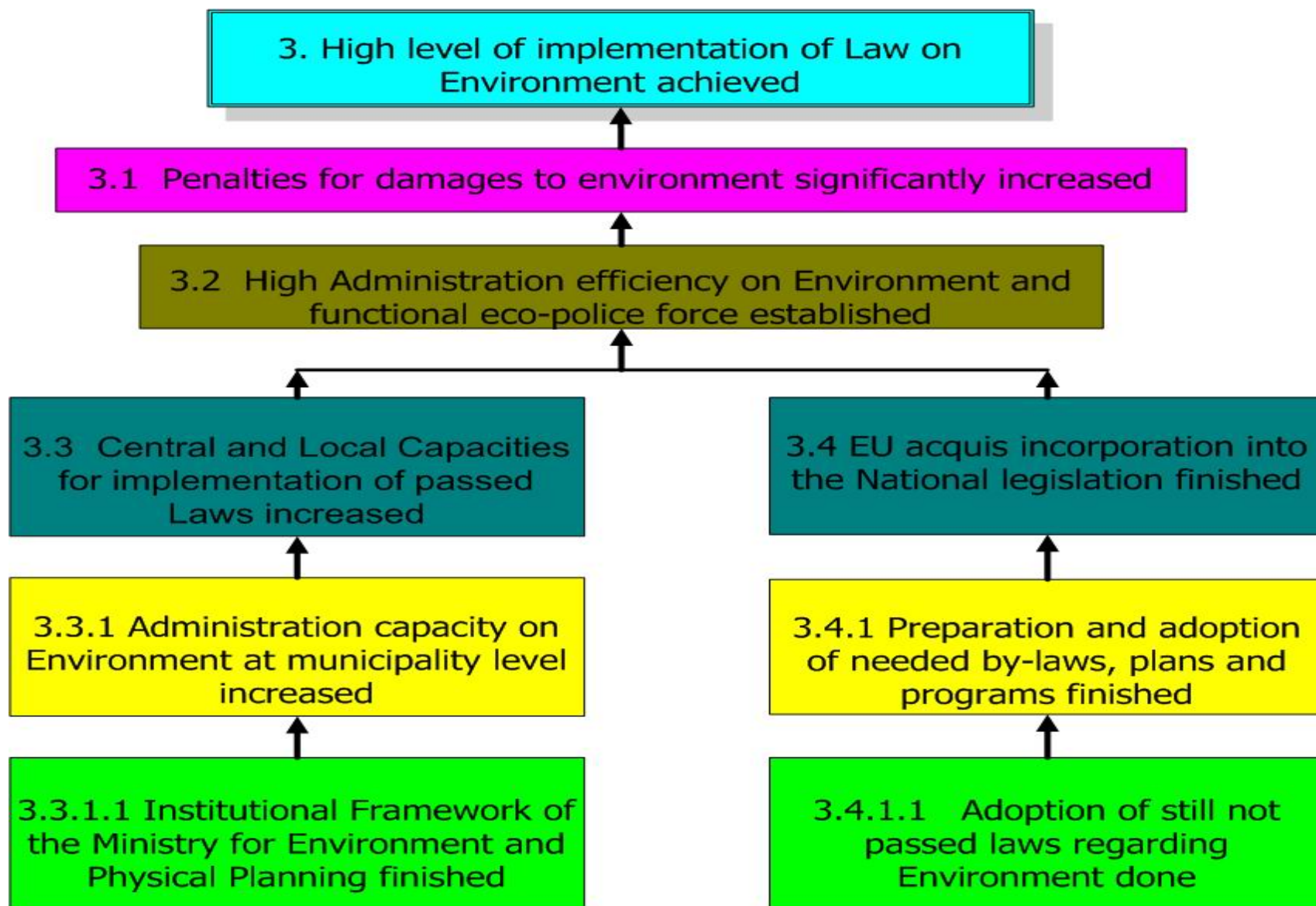
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## **Annex No. 2:**

# **Objective Tree Environment**







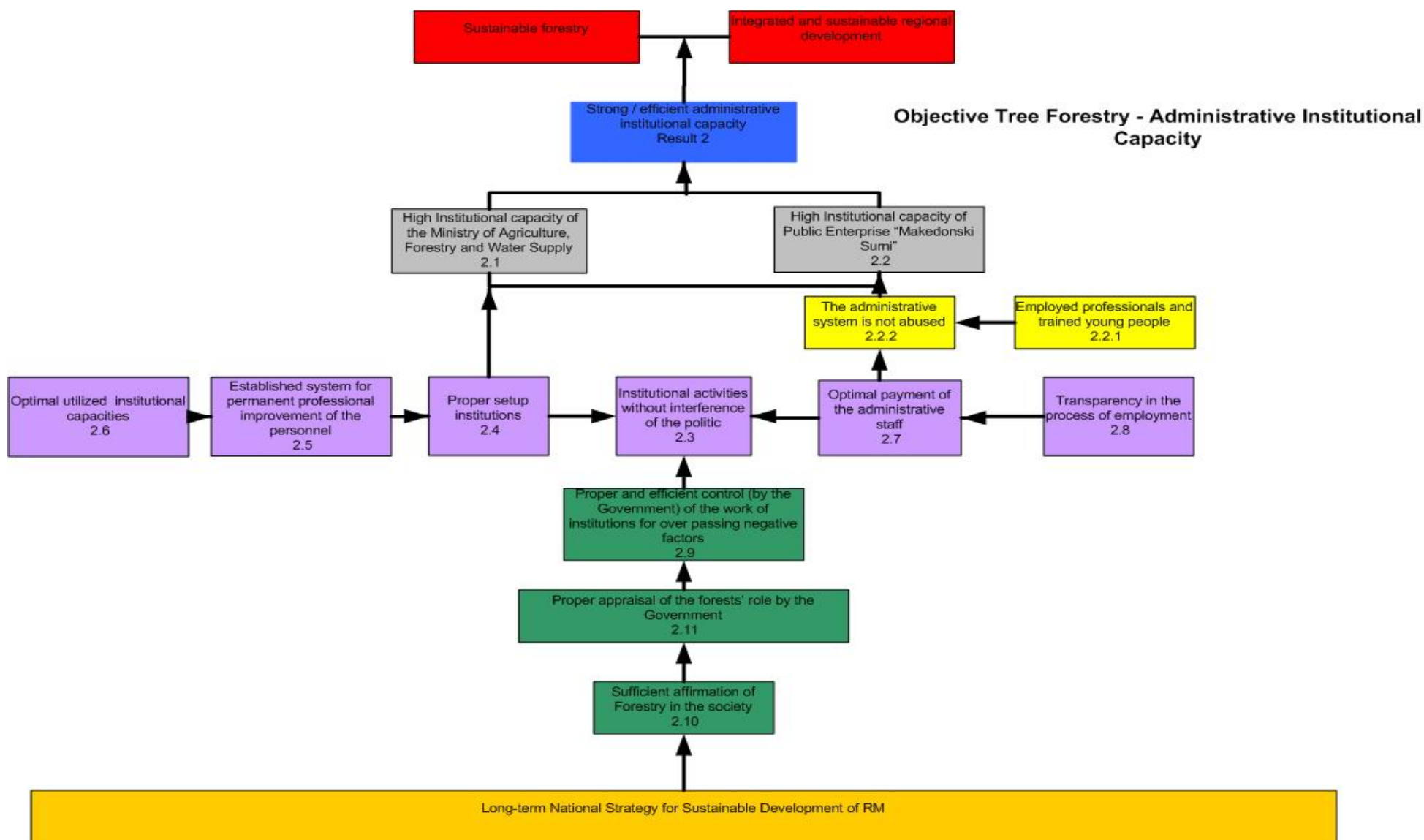
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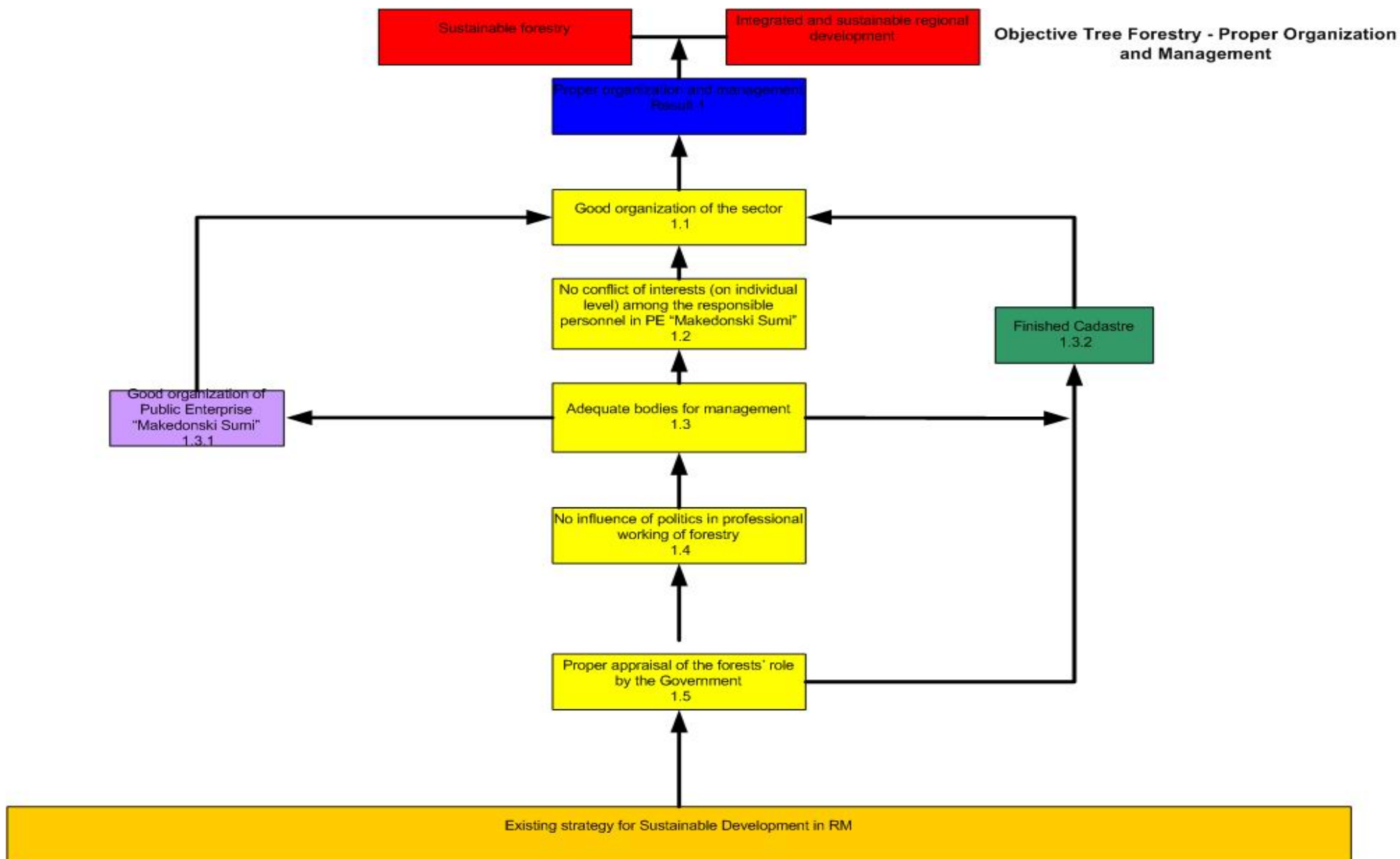
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## **Annex No. 2:**

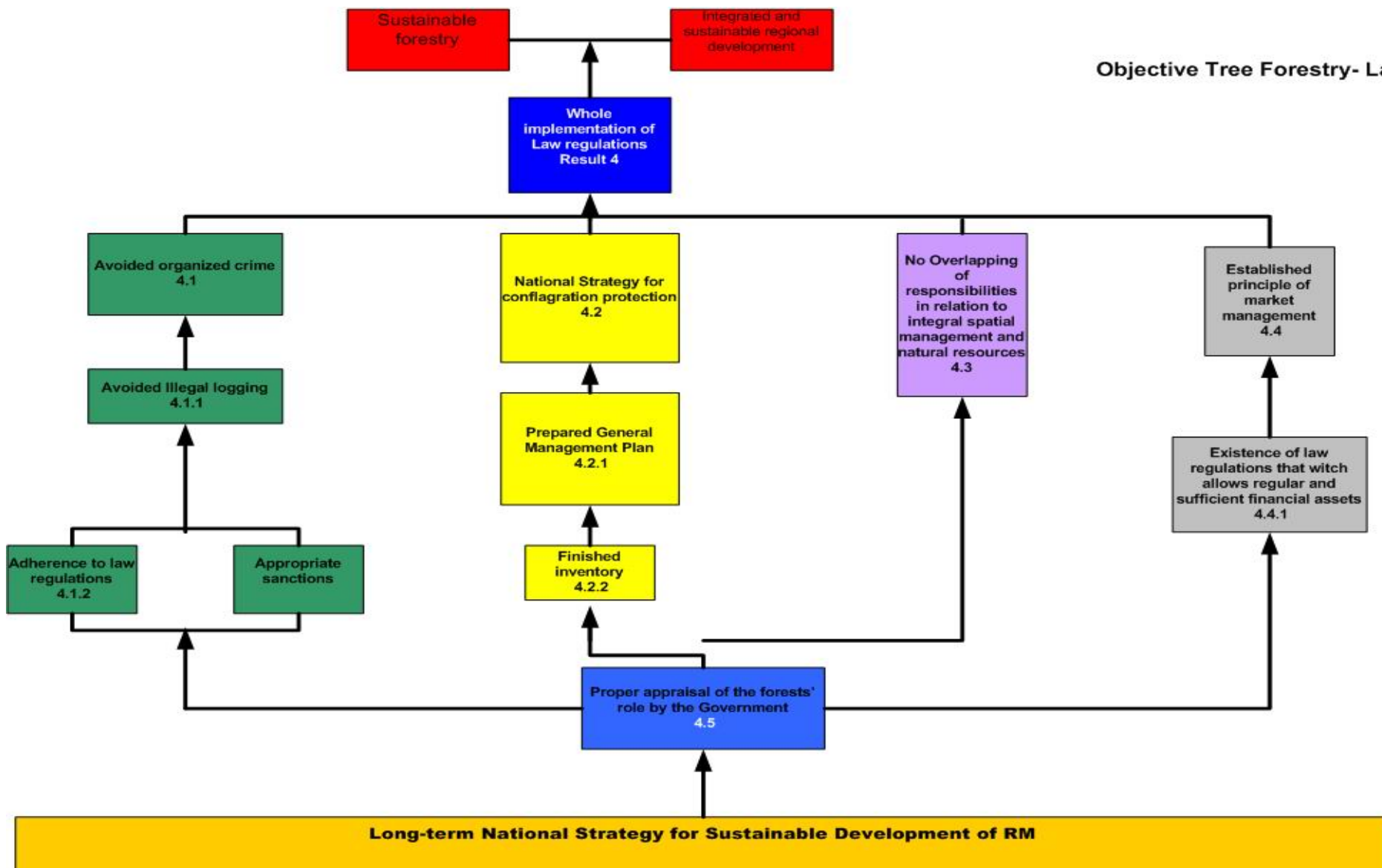
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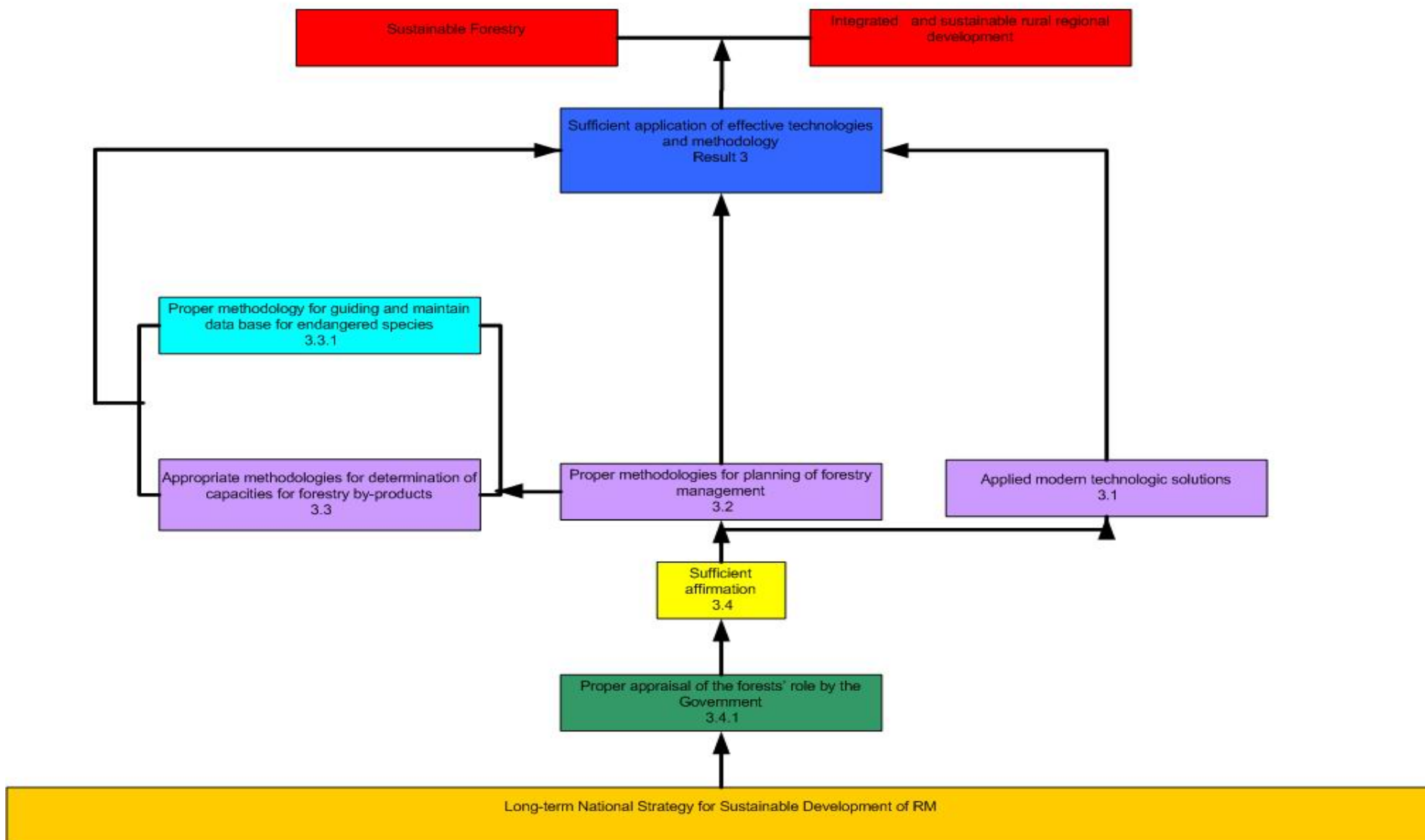


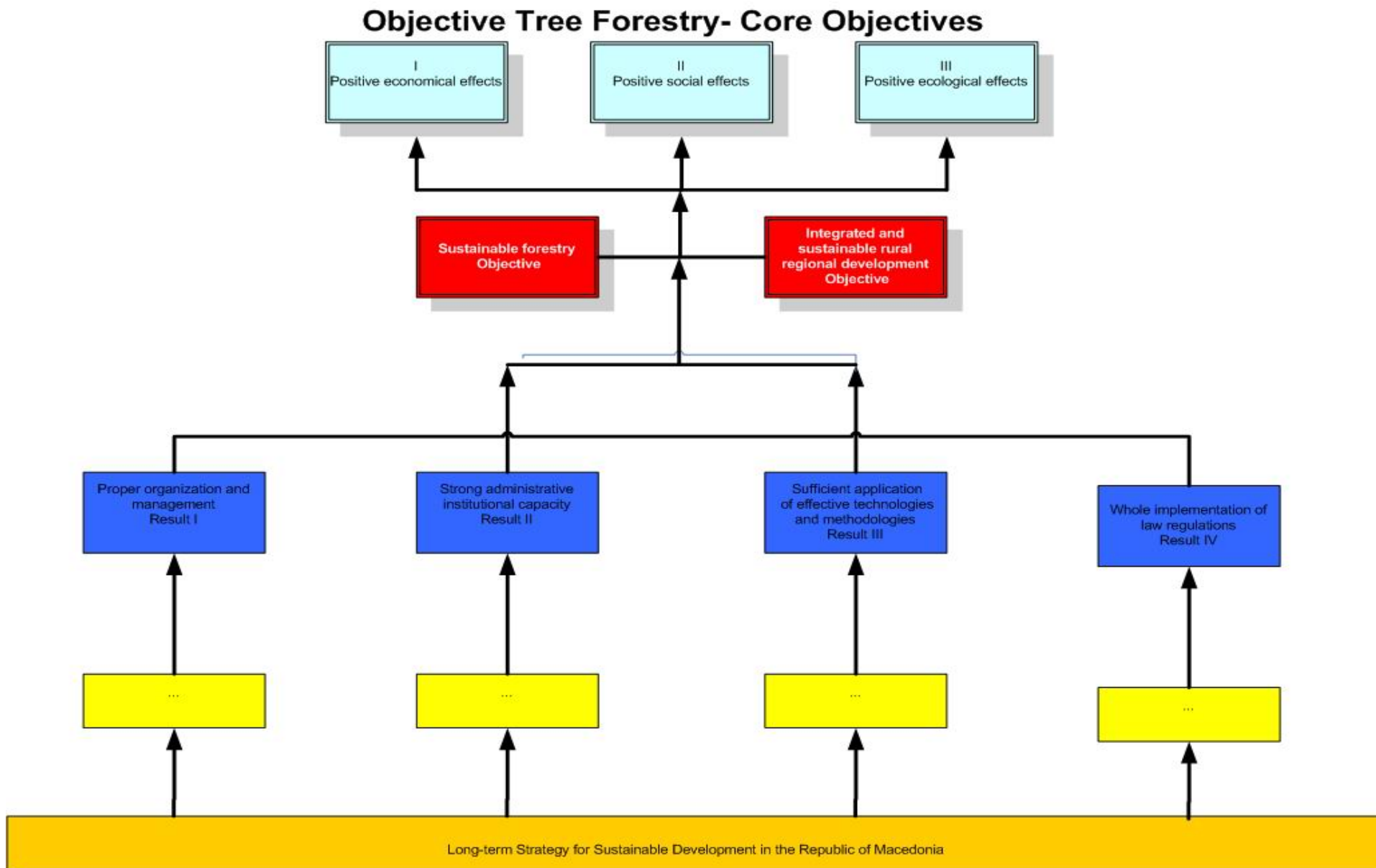
**Objective Tree Forestry- Law**





### Objective Tree Forestry Technologies and methodology







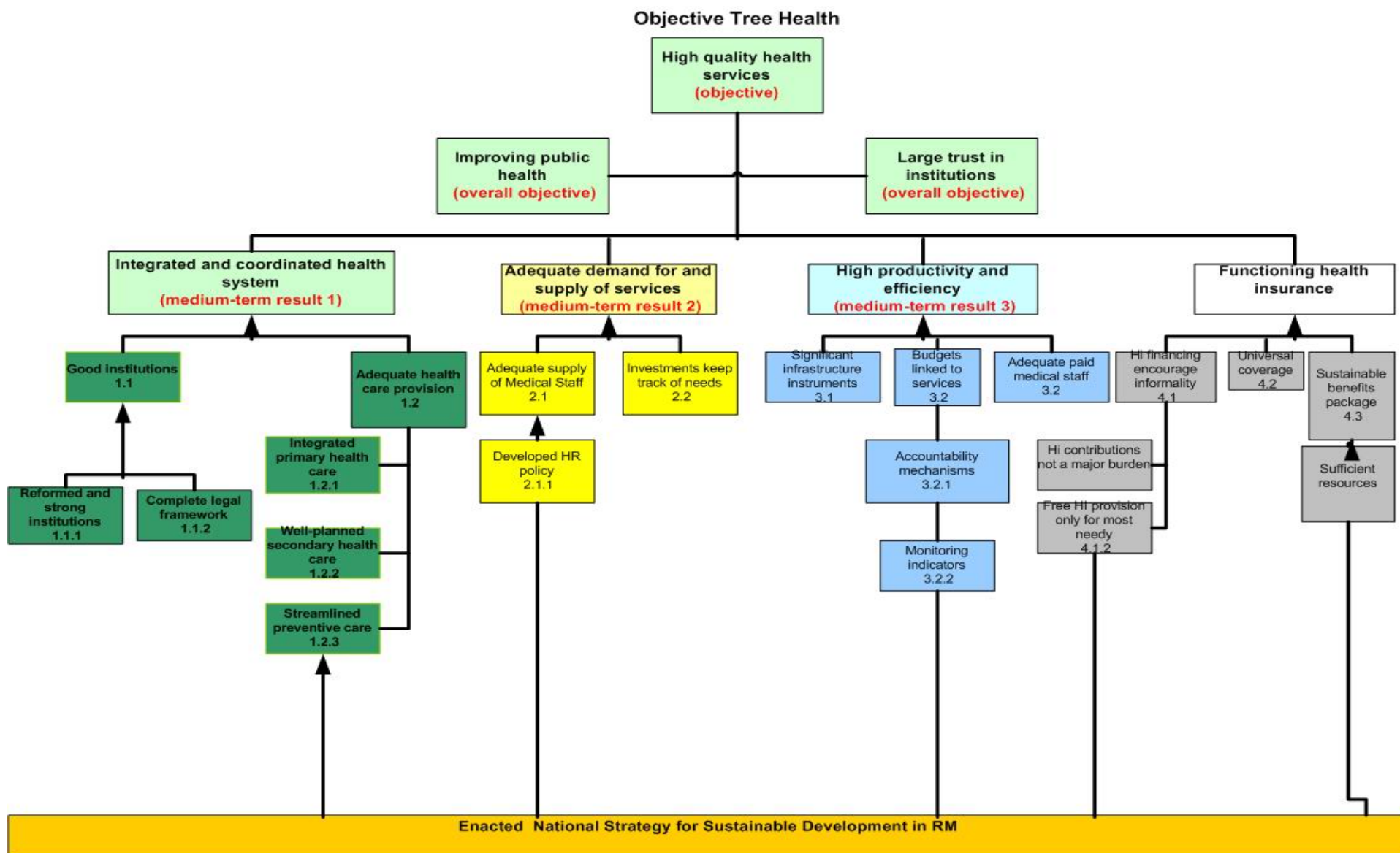
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## **Annex No. 2:**

# **Objective Tree Social Issues / Health**







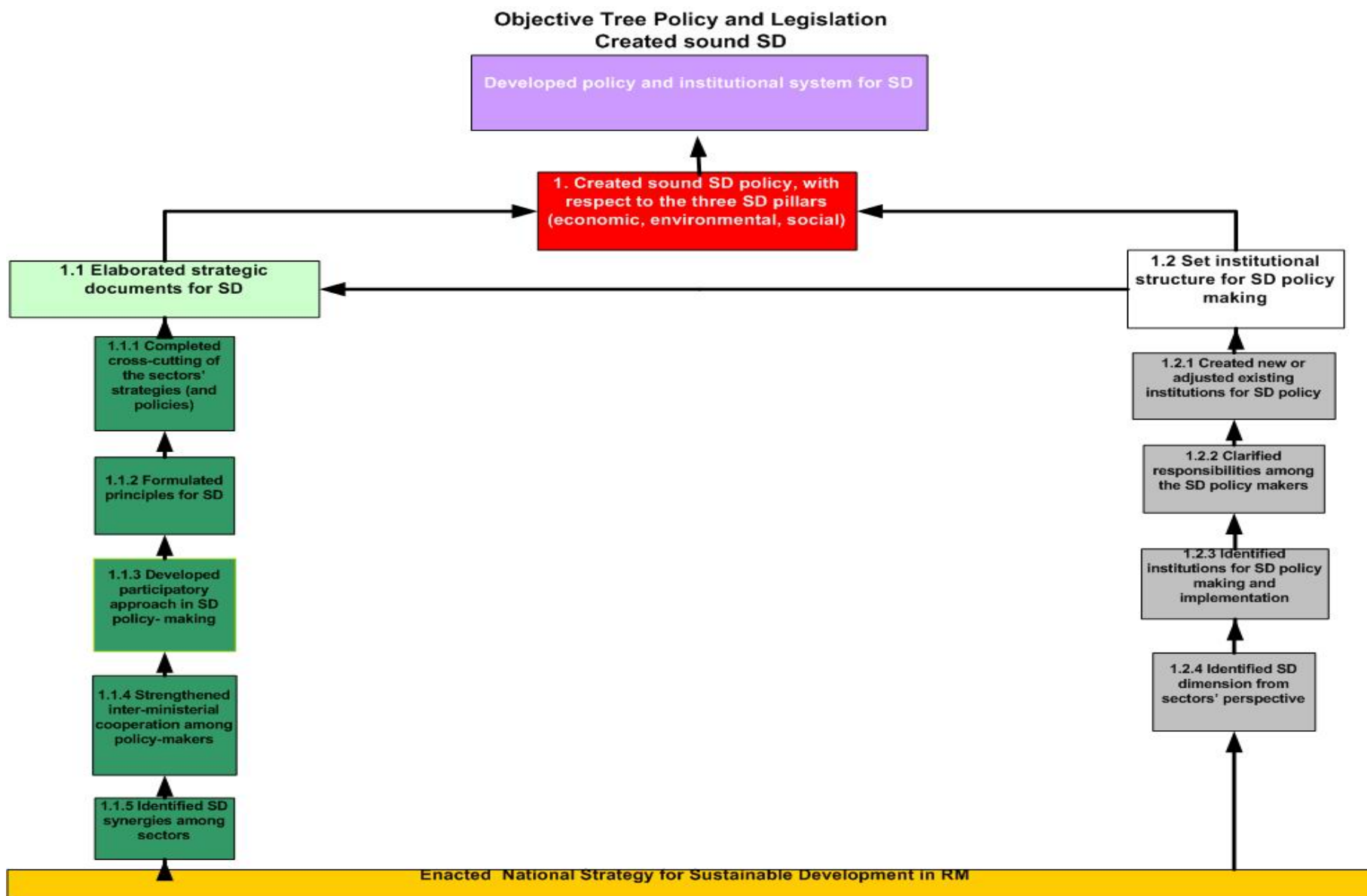
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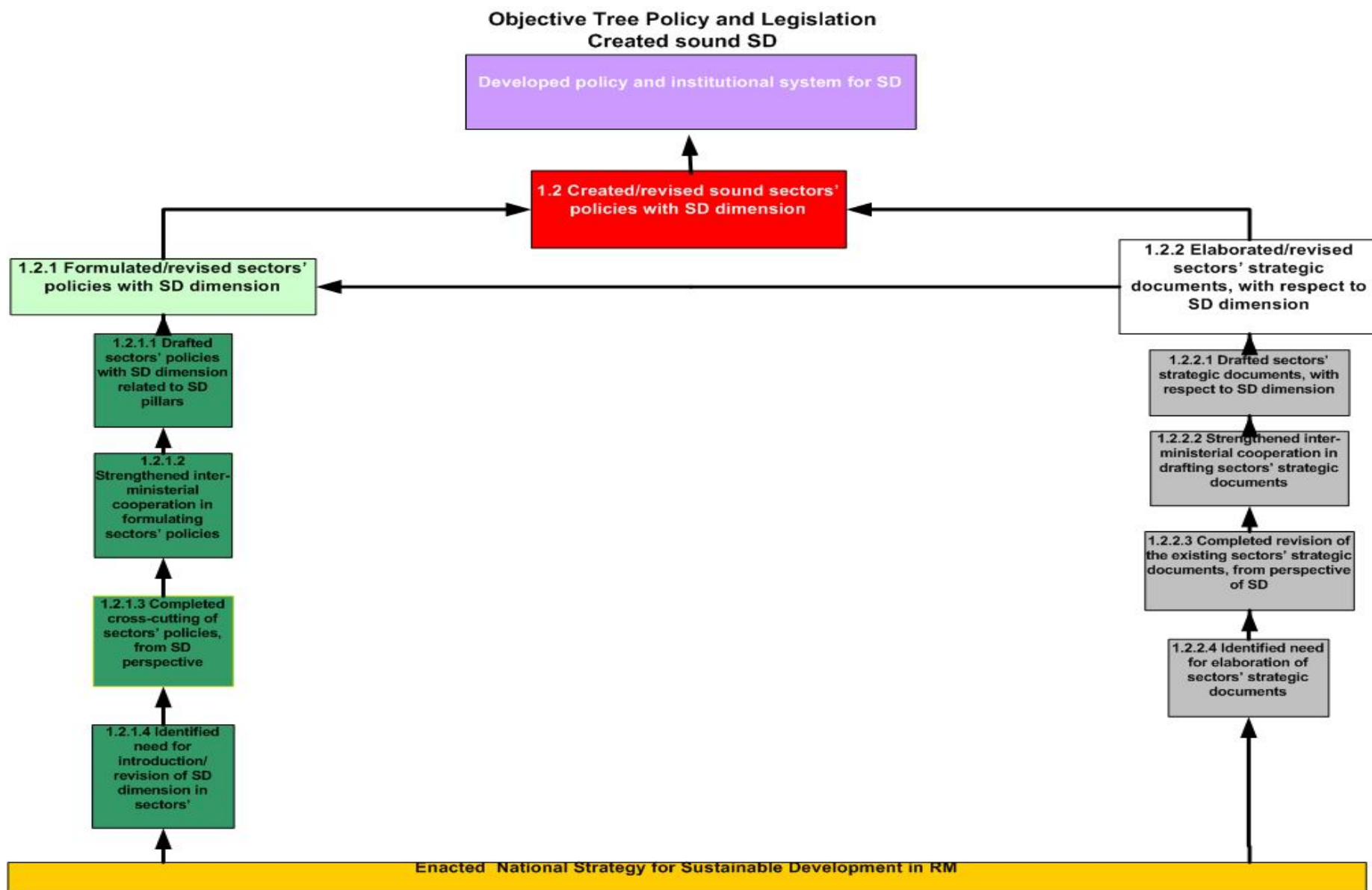
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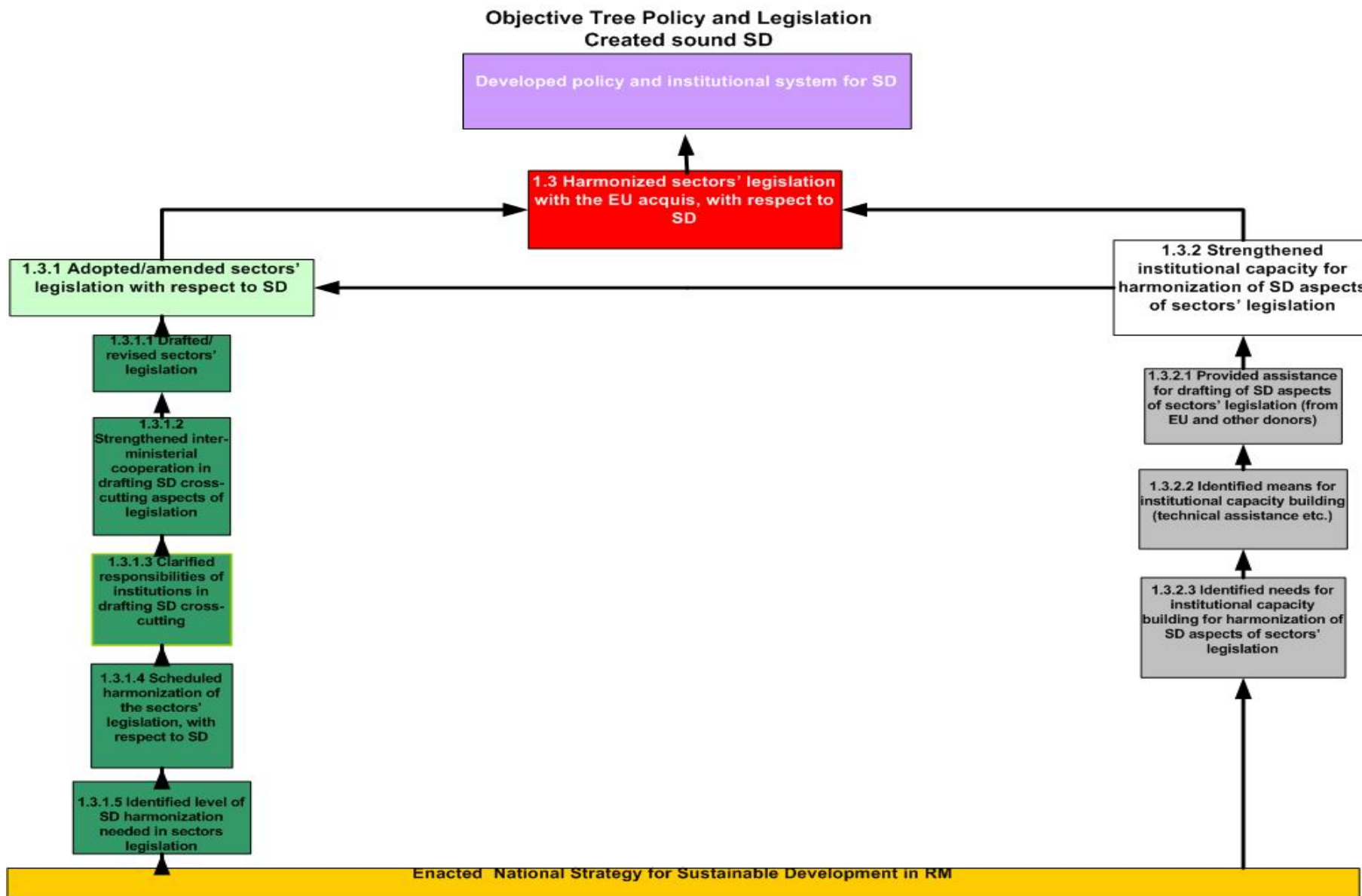
Part II: Strategic background and analysis

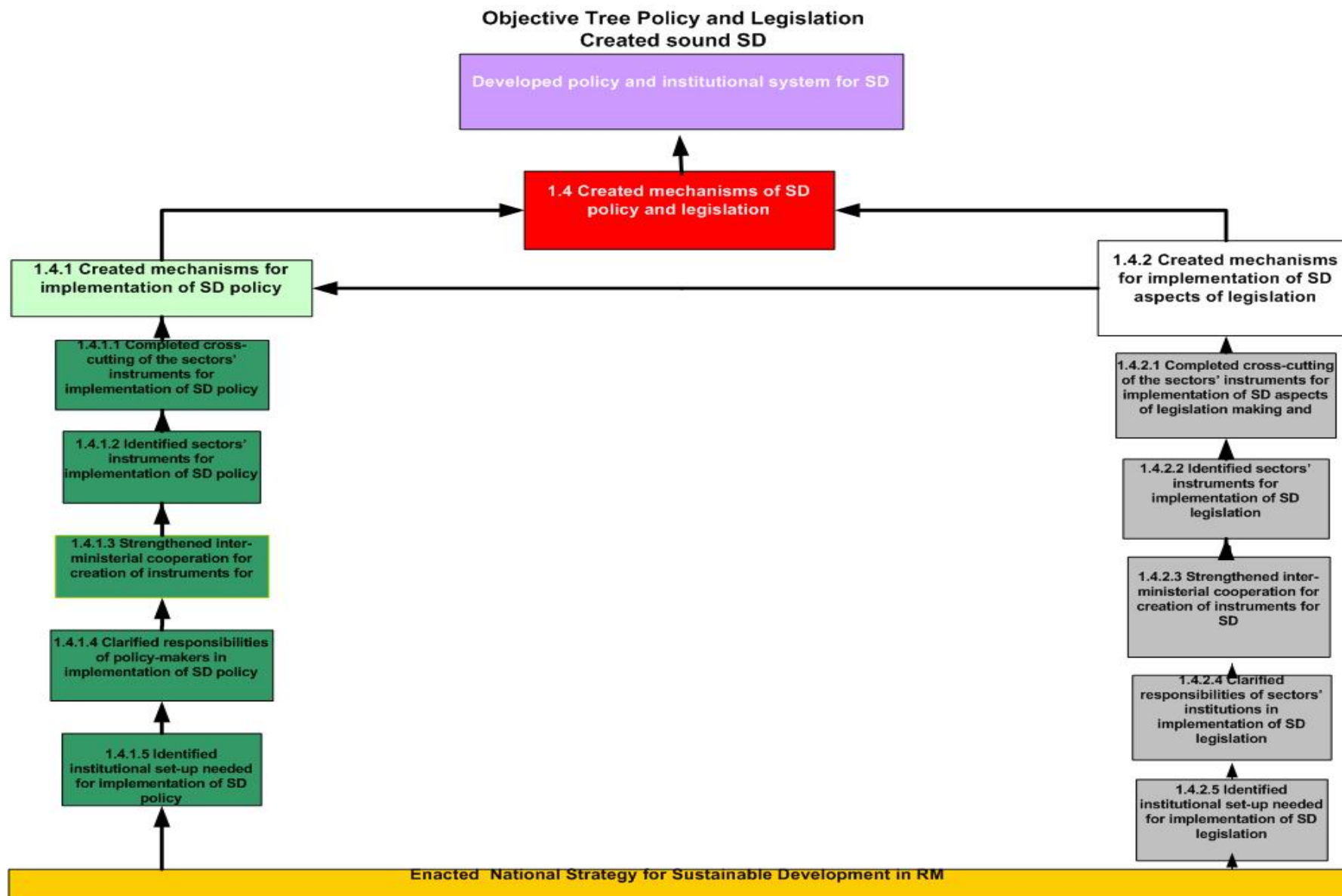
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# **Objective Tree Policy and Legal Issues**



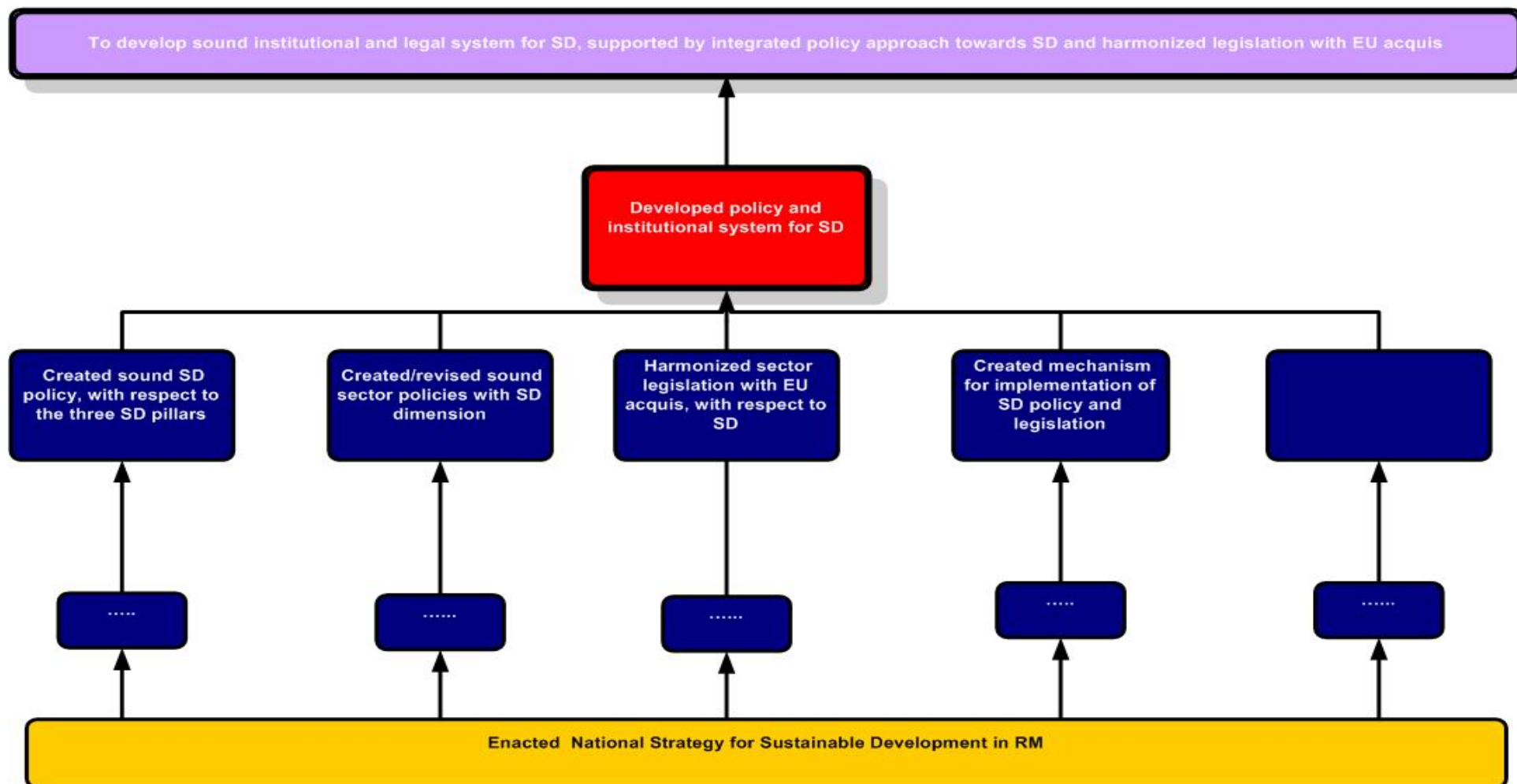








**OBJECTIVE TREE POLICY AND LEGISLATION SECTOR IN THE REPUBLIC OF MACEDONIA // CORE OBJECTIVES**





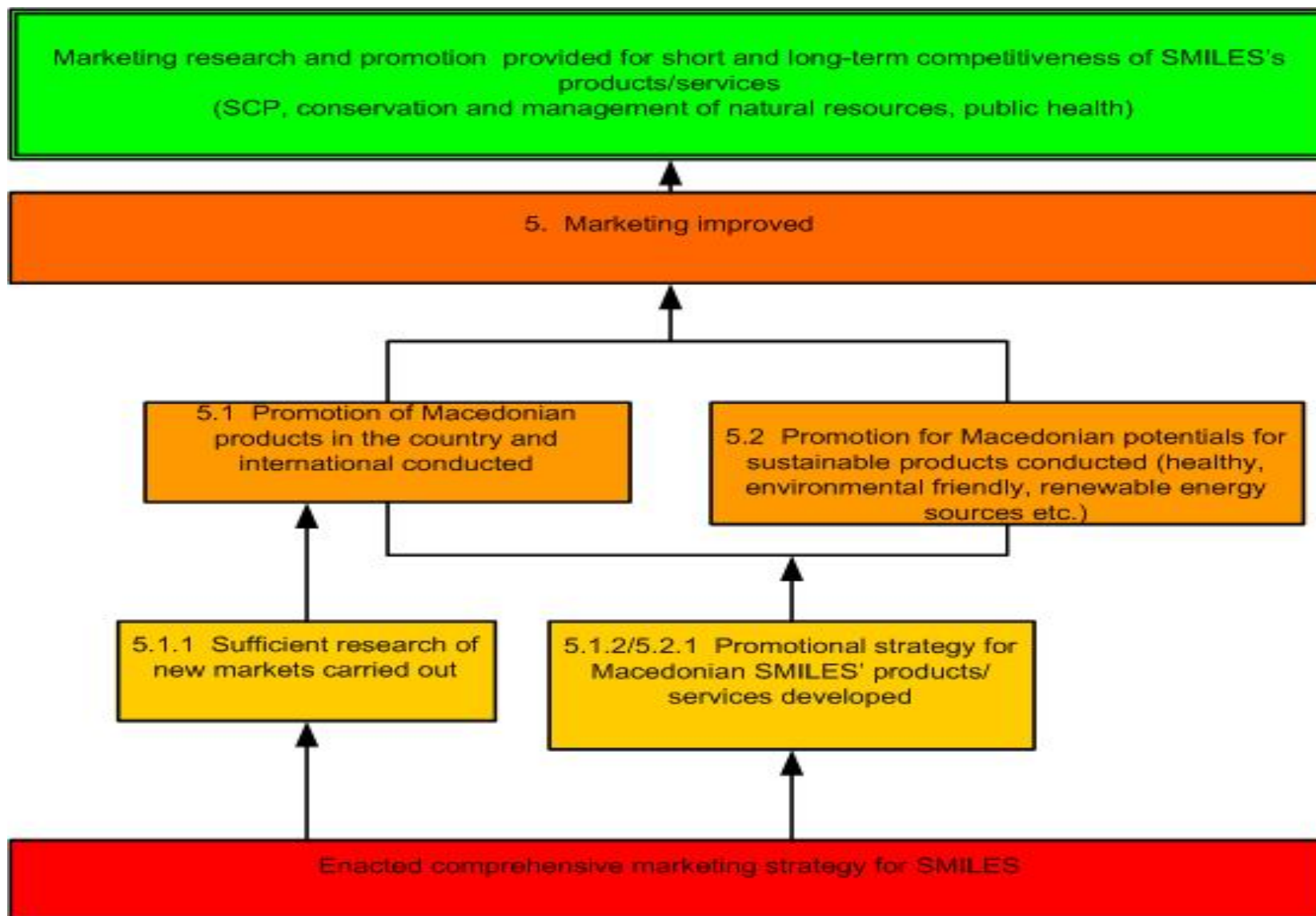
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The Republic of Macedonia

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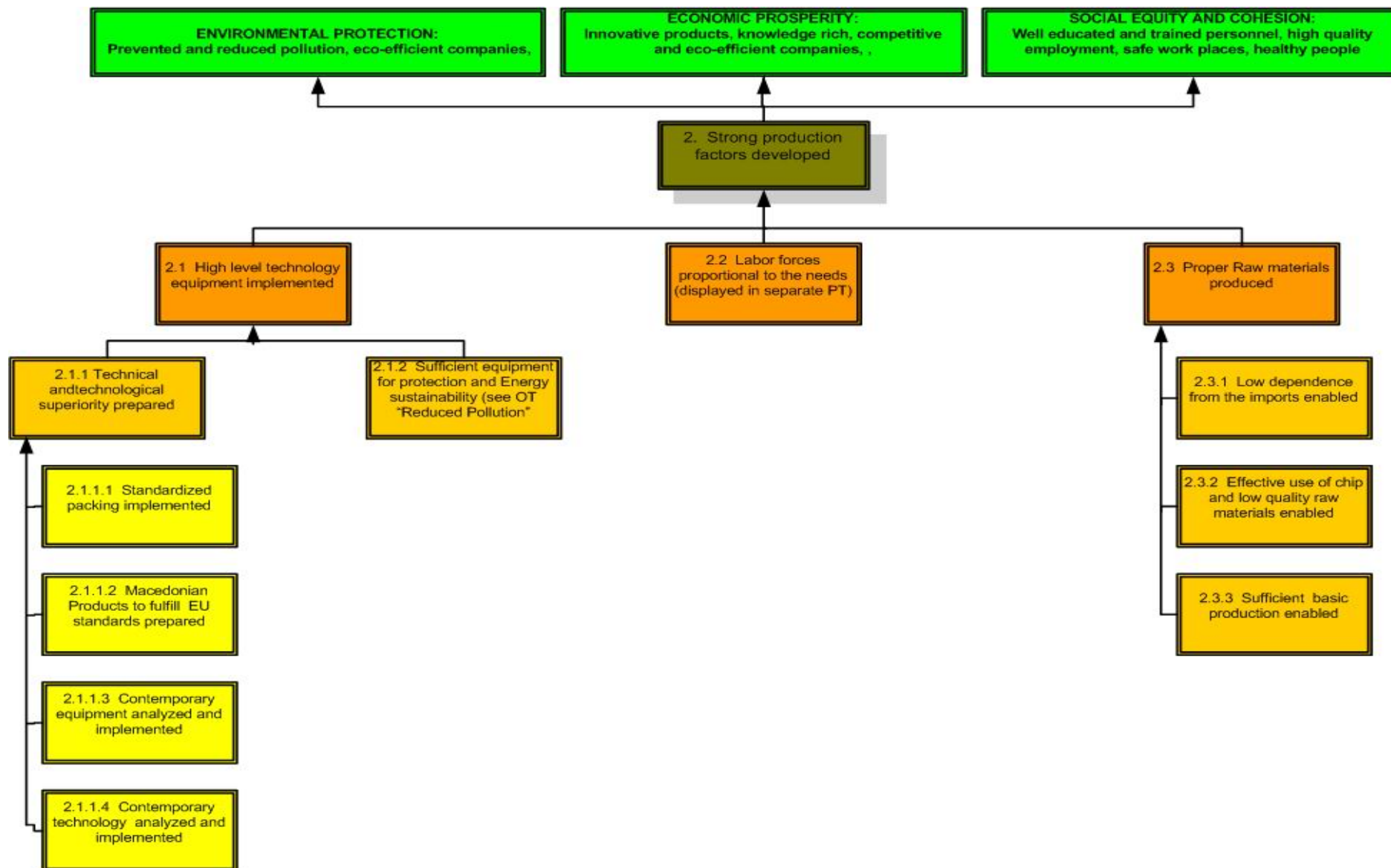
Part II: Strategic background and analysis

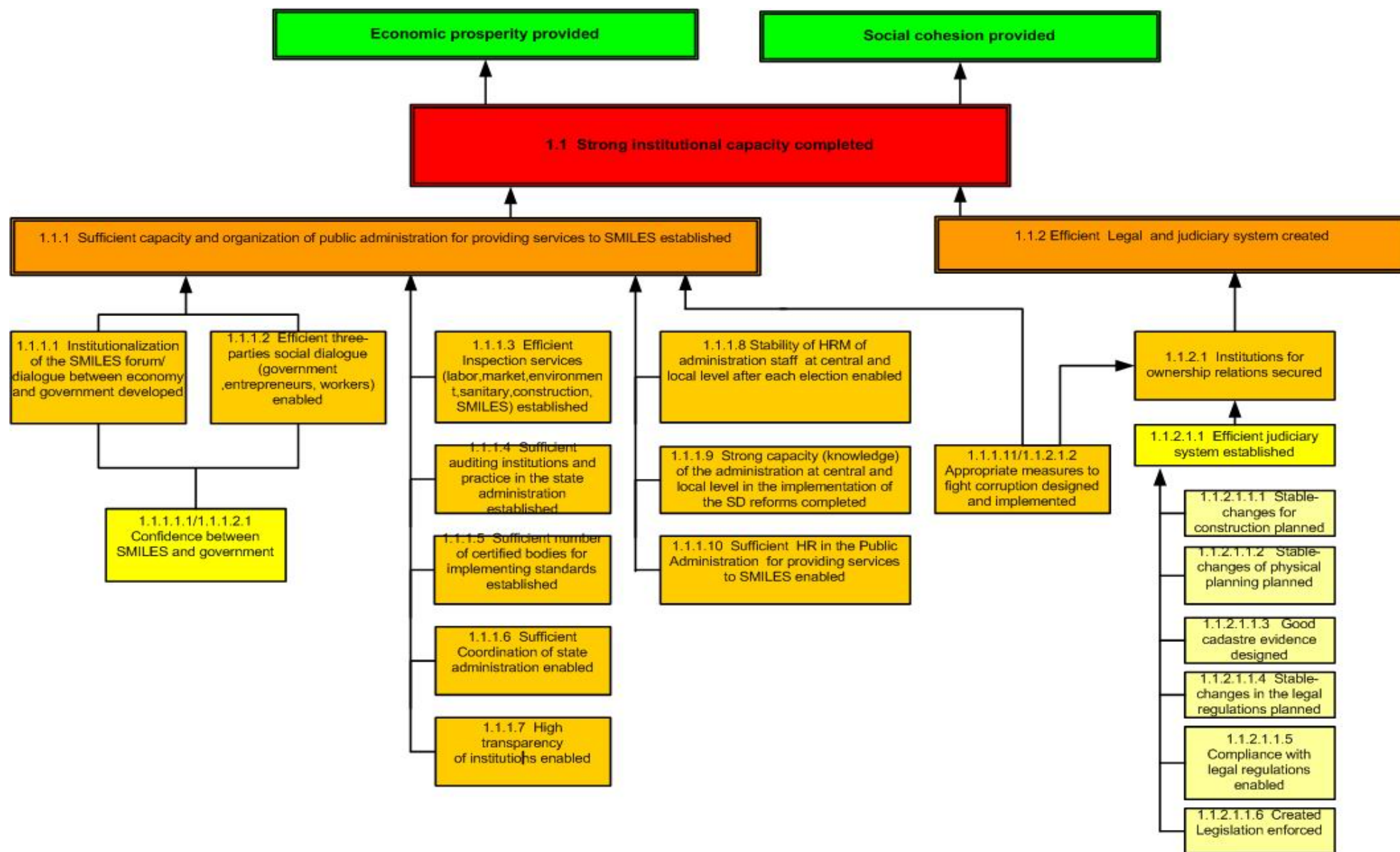
## **Annex No. 2:**

# **Objective Tree Small, Medium and Large Enterprises**



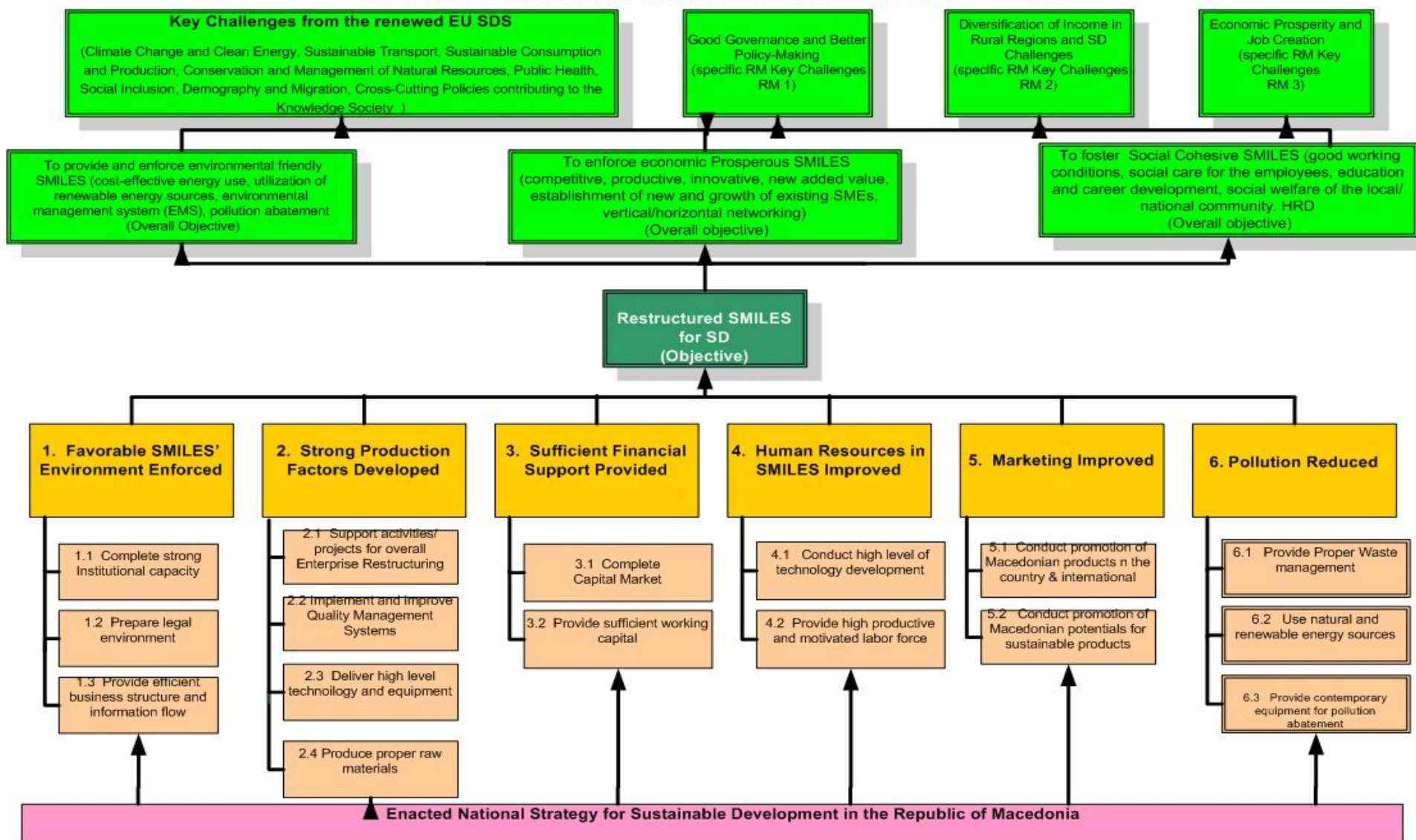






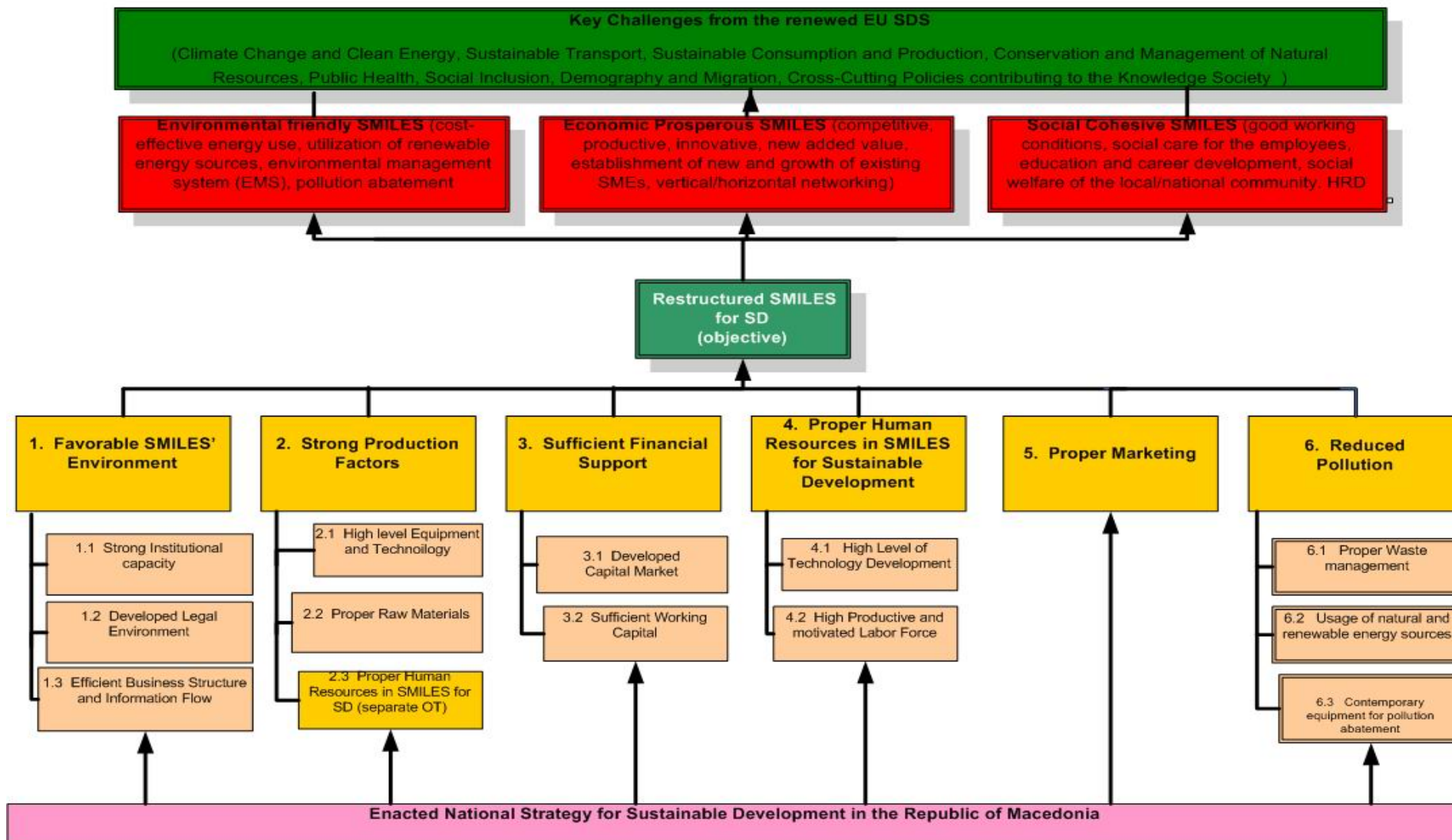


**OVERALL OBJECTIVE TREE: SMILES IN THE REPUBLIC OF MACEDONIA**





### OVERALL OBJECTIVE TREE: SMILES IN THE REPUBLIC OF MACEDONIA





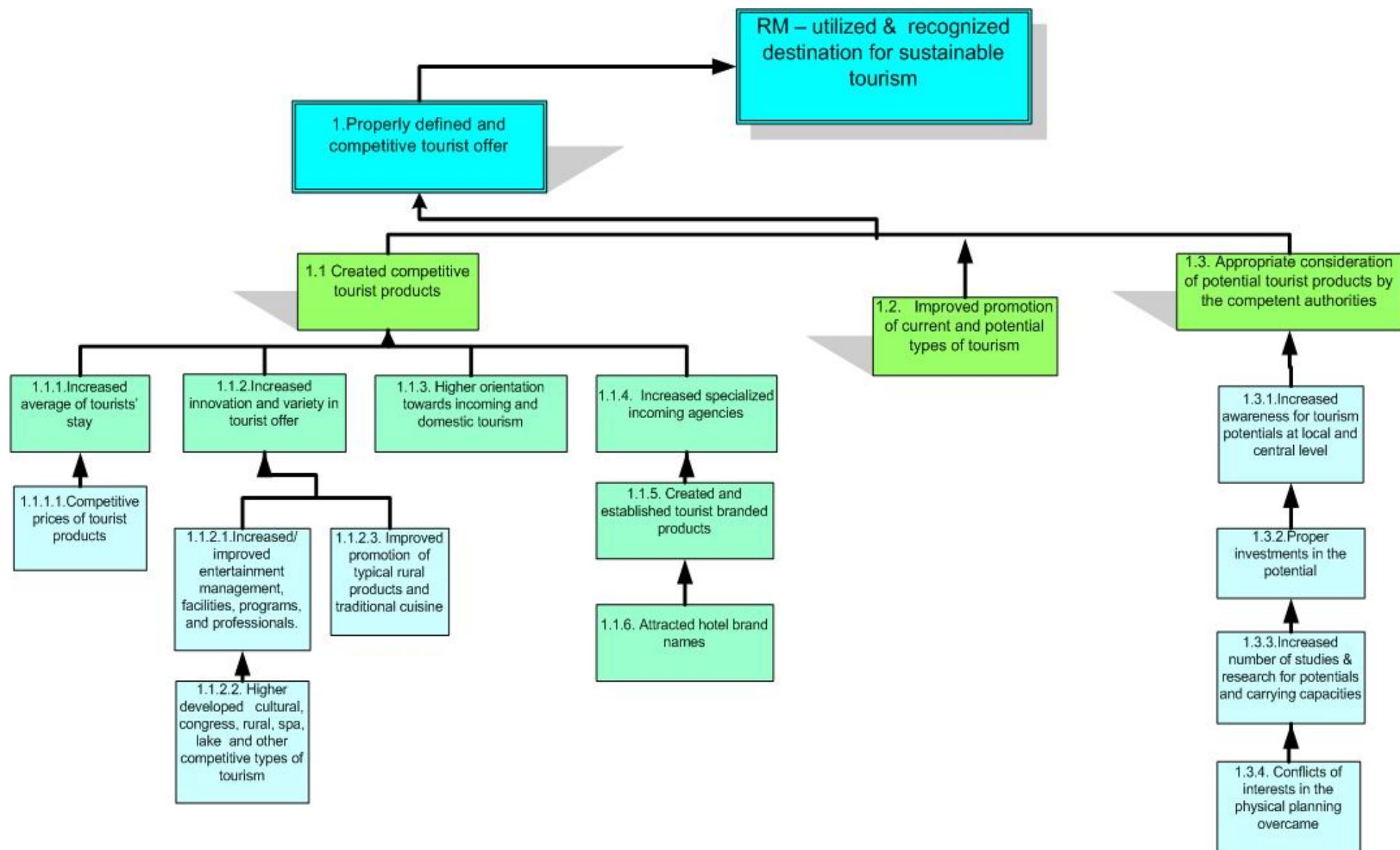
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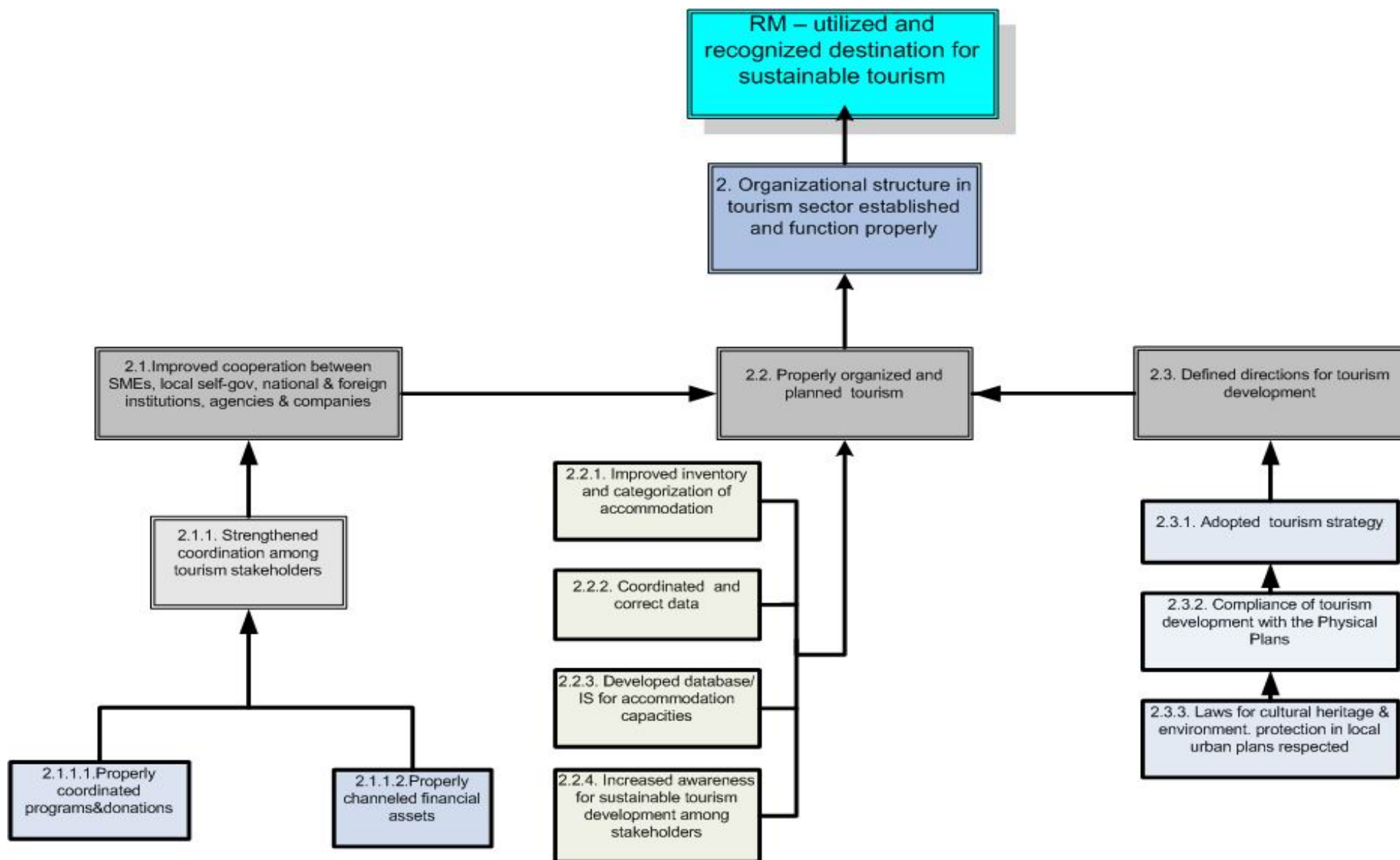
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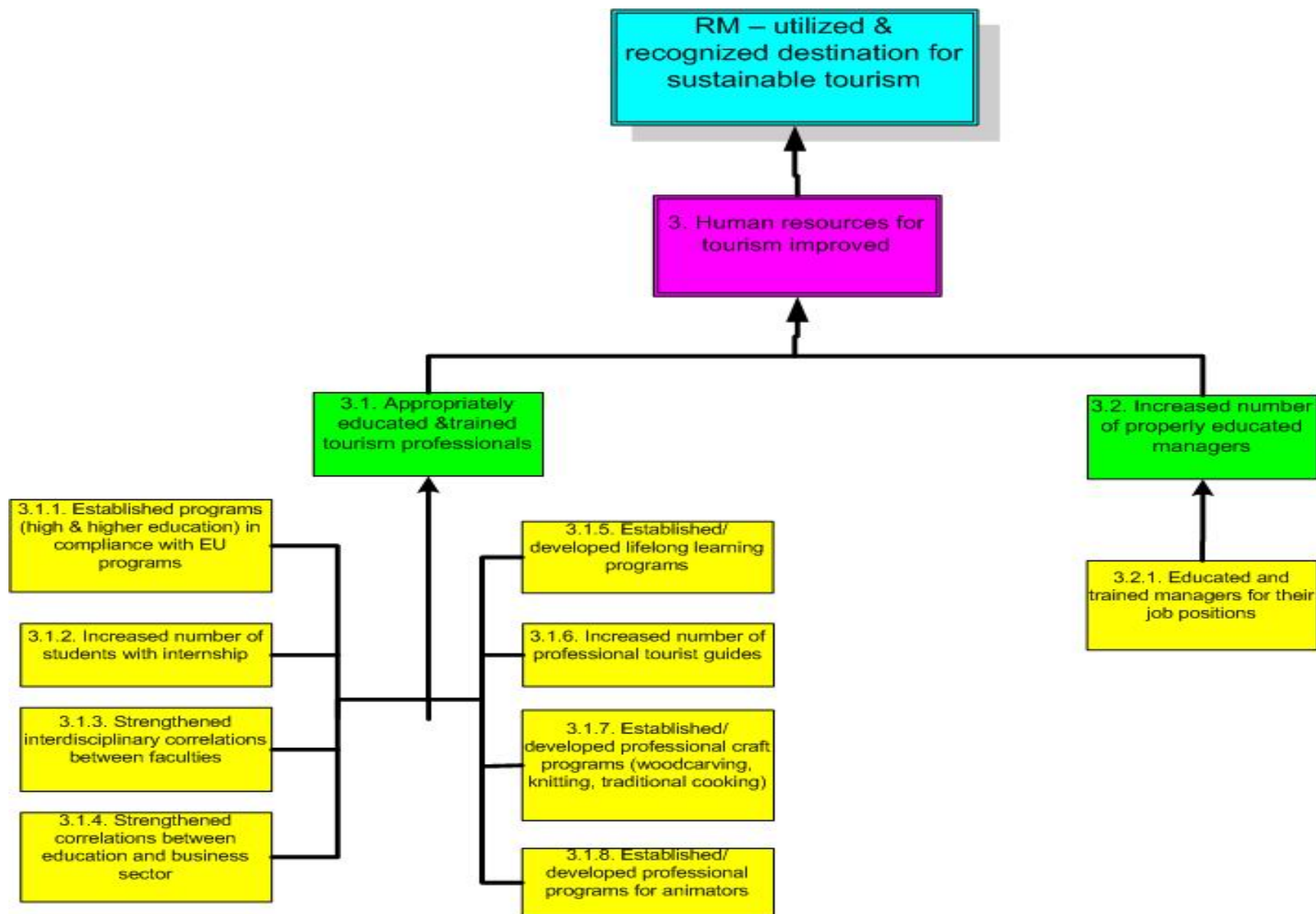
Part II: Strategic background and analysis

## **Annex No. 2:**

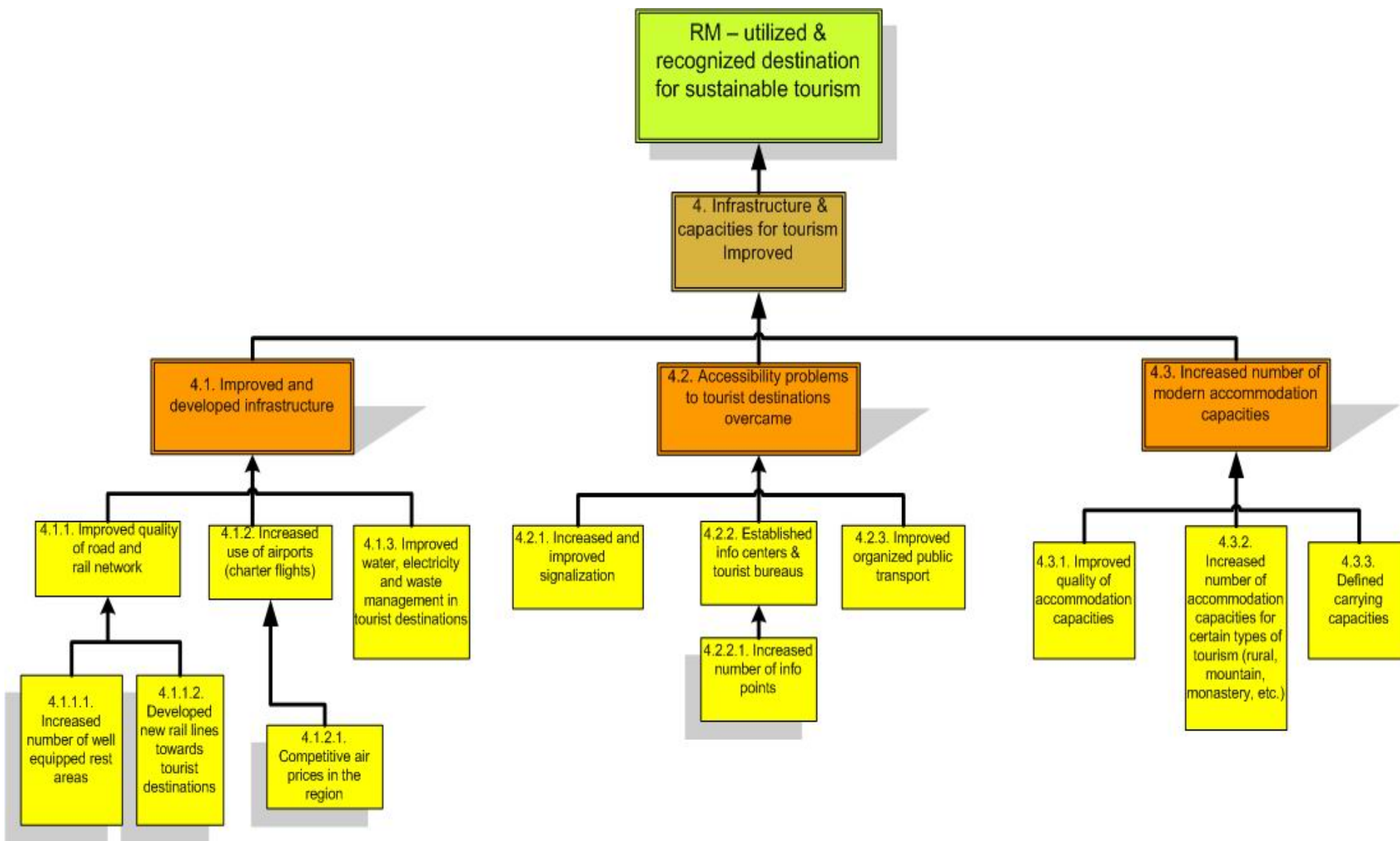
# **Objective Tree Tourism**

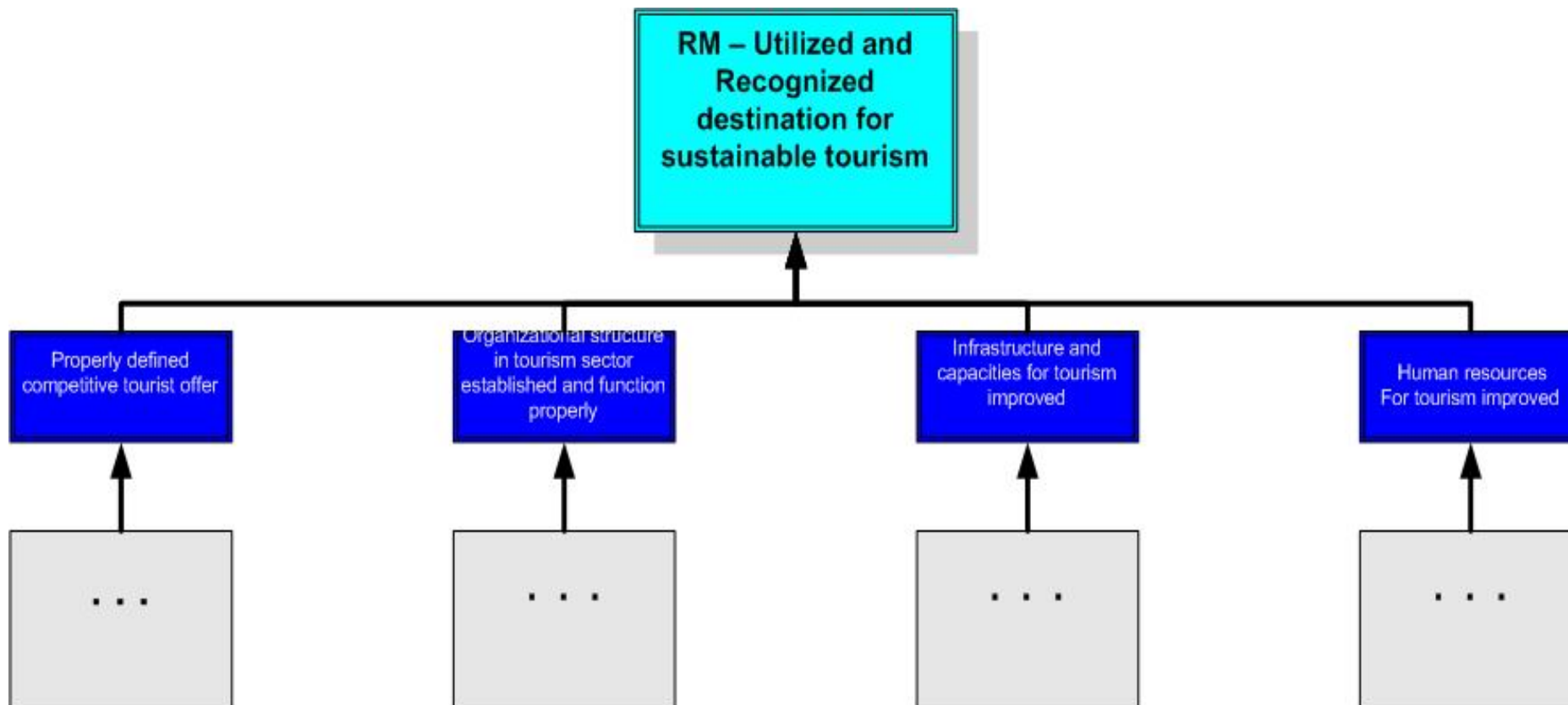














## **Annex No. 3:**

# **The Commitment of the Republic of Macedonia to Sustainable Development as of February 2008**



# The Commitment of the Republic of Macedonia to Sustainable Development as of February 2008

## *Comparing the Present Status with the EU Strategy for Sustainable Development (Review of the EU Sustainable Development Strategy (EU SDS) – Renewed Strategy. Dated 26 June 2006)*

In the following: “RM” means that the Republic of Macedonia is in accord with the said issue in the said assessment block. “NA” means “Non Applicable” as this issue is solely the responsibility of the EU.

Commitment to SD	Fully Committed	Partly Committed	Initial Steps Taken	Not Committed
1. Concept		RM		
2. Barcelona		RM		
3. Renewed SDS				RM
4. Global Solidarity	NA	NA		NA
5. SD Communities		RM		
6. Declaration		RM		
<b>Total Score</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>1</b>

Table 1: Our Commitment to Sustainable Development

Key Objectives	Fully Achieved	Partly Achieved	Initial Steps Taken	Not Achieved
Environmental Protection			RM	
Social Equity and Cohesion				RM
Economic Prosperity				RM
Meeting our International Responsibilities	NA	NA		NA
<b>Total Score</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>2</b>

Table 2: Key Objectives

Policy Guiding Principles	Fully Applied	Partly Applied	Initial Steps Taken	Not Applied
Promotion and Protection of Fundamental Rights		RM		
Solidarity within and Between Generations			RM	
Open and Democratic Society		RM		
Involvement of Citizens				RM
Involvement of Business and Social Partners		RM		
Policy Coherence and Governance				RM



Policy Integration				RM
Use Best Available Knowledge				RM
Precautionary Principle				RM
Make Polluters Pay			RM	
<b>Total Score</b>	<b>0</b>	<b>3</b>	<b>2</b>	<b>5</b>

Table 3: Policy Guiding Principles

Making Use of Synergies Between the EU SDS and the Lisbon Strategy for Growth and Jobs	Fully Exploited	Partly Exploited	Initial Steps Taken	Not Exploited
7. Competitiveness, economic growth, jobs			RM	
8. Innovation and entrepreneurship				RM
9. Investment			RM	
<b>Total Score</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>1</b>

Table 4: Making Use of the Synergies between the EU SDS and the Lisbon Strategy for Growth and Jobs

Better Policy Making	Fully Implemented	Partly Implemented	Initial Steps Taken	Not Implemented
10. Cross-cutting Co-ordination				RM
11. Impact Assessment				RM
12. Feasibility Assessment		RM		
<b>Total Score</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>2</b>

Table 5: Better Policy-Making

13.1. Seven Key Challenges: <i>Addressing the Overall Objectives</i>	Fully Addressed	Partly Addressed	Initial Steps Taken	Not Addressed
<b>1. Climate Change and Clean Energy:</b> <i>To limit climate change and its costs and negative effects to society and the environment</i>			RM	
<b>2. Sustainable Transport:</b> <i>To ensure that our transport systems meet society's economic, social and environmental needs whilst minimising their undesirable impacts on the economy, society and the environment</i>				RM
<b>3. Sustainable Consumption and Production:</b> <i>To promote sustainable consumption and production patterns</i>				RM
<b>4. Conservation and Management of Natural Resources:</b> <i>To improve management and avoid overexploitation of natural resources, recognising the value of ecosystem services</i>			RM	
<b>5. Public Health:</b> <i>To promote good public health on equal conditions and improve protection against health threats</i>			RM	
<b>6. Social Inclusion, Demography and Migration:</b> <i>To create a socially inclusive society by taking into account solidarity between and within generations and to secure and</i>			RM	



<i>increase the equality of life of citizens as a precondition for lasting individual well-being.</i>				
<b>7. Global Poverty and Sustainable Development Challenges:</b>	NA	NA		NA
<i>To actively promote sustainable development worldwide and ensure that the European Union's internal and external policies are consistent with global development and its international commitments</i>				
<b>Total Score</b>	<b>0</b>	<b>3</b>	<b>1</b>	<b>2</b>

Table 6: Seven Key Challenges: Addressing the Overall Objectives

13.2. Seven Key Challenges: <i>Achieving the Operational Objectives and Targets</i>	Fully Achieved	Partly Achieved	Initial Steps Taken	Not Achieved
<b>1. Climate Change and Clean Energy:</b> <i>Kyoto Protocol; 2006 Energy Policy for Europe, Policy Integration, 2010 and 2015 Targets for energy and electricity consumption; 2010 and 2015 Targets for biofuels; 2017 Target for overall energy saving</i>				RM
<b>2. Sustainable Transport:</b> <i>Decoupling; sustainable transport; reducing pollutants; environmental friendly transport; transport noise, EU framework for public passenger transport; new car fleet; halving road transport deaths by 2010</i>				RM
<b>3. Sustainable Consumption and Production:</b> <i>Carrying capacity of ecosystems and decoupling; environmental and social performance for products and processes; Green Public Procurement by 2010; global market share in environmental technologies and eco-innovations</i>				RM
<b>4. Conservation and Management of Natural Resources:</b> <i>Resource efficiency; competitive advantage, improving management; halting the loss of biodiversity; UN global objectives on forests 2015; avoiding the generation of waste</i>				RM
<b>5. Public Health:</b> <i>Developing respond capacity; food and feed legislation; high animal health; lifestyle-related and chronic diseases; reducing health inequalities; REACH 2020; improving information; improving mental health</i>			RM	
<b>6. Social Inclusion, Demography and Migration:</b> <i>2010 goals for poverty and social inclusion; social and territorial cohesion; modernise social protection; women and older workers; EU migration policy; negative effects of globalisation</i>			RM	
<b>7. Global Poverty and Sustainable Development Challenges:</b> <i>Internationally agreed goals and targets; IEG (International Environmental Governance); aid by 2010 and 2015; WTO negotiations; coherence and quality in aid policies; EU</i>	RM			



*external policies*

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<b>Total Score</b>	<b>1</b>	<b>0</b>	<b>2</b>	<b>4</b>
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Table 7: Seven Key Challenges: *Achieving the Operational Objectives and Targets*



13.3. Seven Key Challenges: <i>Actions Implemented</i>	Fully Implemented	Partly Implemented	Initial Steps Taken	Not Implemented
<b>1. Climate Change and Clean Energy:</b> <i>2012 follow up on the Montreal Climate Action Plan; reduction pathways; cost effective emission reduction for car and aviation; EU Emission trading scheme; Action Plan on Energy Efficiency; 2010 targets for renewable; use of biomass; efficiency of power stations</i>			RM	
<b>2. Sustainable Transport:</b> <i>Economic and environmental performance of all modes of transport; cost-effective instruments; alternatives to road transport; infrastructure charging; maritime and air traffic; road safety; urban transport plans</i>				RM
<b>3. Sustainable Consumption and Production:</b> <i>EU Sustainable Consumption and Production Plan by 2007; dialog with business; best practise; Environmental Technologies Action Plan; performance labelling; campaigns with retailers</i>			RM	
<b>4. Conservation and Management of Natural Resources:</b> <i>Common Fisheries Policy; targets for sustainable use of natural resources; Sustainable Forest Management; Natura 2000 Network; EU Biodiversity Strategy; integrated water resources management and integrated coastal zone management; Commission Green Paper on maritime affairs</i>		RM		
<b>5. Public Health:</b> <i>Action plans on handling health threats; health and disease prevention; positive emotional states; genetically modified food; HIV/AIDS, Tuberculosis and Malaria; awareness and understanding; indoor air quality; vulnerable groups including children; Transport Health and Environmental Pan European Programme</i>			RM	
<b>6. Social Inclusion, Demography and Migration:</b> <i>Child poverty; social inclusion and cohesion; European Act for Youth; European Pact for Gender Equality; pensions; demographic challenges including age and change of land; EU migration policy</i>			RM	
<b>7. Global Poverty and Sustainable Development Challenges:</b> <i>Water for Life Initiative; Common EU Programming Framework; EU strategies on Africa; international trade; European Investment Bank and EU-Africa Partnership for Infrastructure; UNEP into a strengthen UNEO</i>				RM
<b>Total Score</b>	<b>0</b>	<b>1</b>	<b>4</b>	<b>2</b>

Table 8: Seven Key Challenges: *Actions Implemented*





Cross-cutting Policies Contributing to the Knowledge Society: <i>Education and Training</i>	Fully Applied	Partly Applied	Initial Steps Taken	Not Applied
14. Education in general as a prerequisite for SD		RM		
15. Education as an instrument for social cohesion, well-being, and quality employment			RM	
16. Equal opportunities, ICT skills and regional divides with point of departure in the “2010 – A European Information Society for Growth and Employment”			RM	
17. National action plans in the context for the UN Decade of Education for Sustainable Development (2005 – 2014) especially the “Education and Training 2010” work programme			RM	
<b>Total Score</b>	<b>0</b>	<b>1</b>	<b>3</b>	<b>0</b>

Table 9: Cross-cutting Policies Contributing to the Knowledge Society: *Education and Training*

Cross-cutting Policies Contributing to the Knowledge Society: <i>Education and Training</i>	Fully Applied	Partly Applied	Initial Steps Taken	Not Applied
18. Short-term decision support projects and long-term visionary concepts based on cross-cutting and interdisciplinary work. The importance of the interplay between social, economic ecological systems, and risk analysis, back- and forecasting and prevention systems		RM		
19. Instrumental in ensuring effective implementation of the 7 <sup>th</sup> Framework Programme			RM	
20. The importance of national income accounting including environmental expenditures				RM



21. The important role of Universities and other higher education. Creation of partnerships with third country universities		RM		
<b>Total Score</b>	<b>0</b>	<b>2</b>	<b>1</b>	<b>1</b>

Table 10: Cross-cutting Policies Contributing to the Knowledge Society: *Research and Development*

Financing and Economic Instruments	Fully Applied	Partly Applied	Initial Steps Taken	Not Applied
22. Use of the full range of policy instruments including the ones that promote market transparency, and prices that reflect the real economic, social and environmental costs of products and services		RM		
23. Considering shift of taxation from labour to resource and energy consumption and/or pollution				RM
24. 2008 roadmap for reform for sectors with negative impact on SD				RM
25. SD Co-ordination between different EU funding sources	NA	NA		NA
<b>Total Score</b>	<b>0</b>	<b>1</b>		<b>2</b>

Table 11: Financing and Economic Instruments

Communication, Mobilising Actors and Multiplying Success	Fully Applied	Partly Applied	Initial Steps Taken	Not Applied
26. Increase public awareness of SD			RM	
27. Participatory preparation of a 50 years realistic SD vision				RM
28. Targeting communication to the most appropriate level			RM	
29. Sustainable communities including further strengthening of Agenda 21. Signature of the Aalborg Commitment				RM
30. Promotion of "European Sustainable Cities & Towns Campaign"				RM
31. A proposal in 2007, in accordance with European Alliance for Corporate Social Responsibility, for strengthen the dialog between politicians, business leaders, and workers' and non-governmental organisations				RM



32. Welcoming of civil society initiatives creating ownership for SD. Promoting full implementation of the Aarhus Convention to Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters					RM
<b>Total Score</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>5</b>	

Table 12: Communication, Mobilising, Actors and Multiplying Success

Implementation, Monitoring and Follow-up	Fully Achieved	Partly Achieved	Initial Steps Taken	Not Achieved
33. Progress Reporting starting September 2007 based on sustainable indicators based on the EUROSTAT SD Monitoring Report, which will be updated every two years	NA	NA		NA
34. Development of appropriate SD indicators	NA	NA		NA
35. Review and further development of the SD indicators in terms of quality, comparability and relevance in relation to the renewed EU SDS	NA	NA		NA
36. Progress examination by the Council of the development of SD indicators at latest in 2007 and at regular intervals after	NA	NA		NA
37. Appointment of National SDS focal points to provide at latest by June 2007 (and then two years interval) the necessary progress input in accordance with the NSSD				RM
38. December European Council (starting in 2007) should review SD progress every two years including the relation to the Lisbon Strategy for Growth and Jobs	NA	NA		NA
39. Co-operation between the European Parliament, the Council and the Commission to ensure broadest possible support. Also liaise with national parliaments	NA	NA		NA
40. Completion of the first national NSSDs by June 2007				RM
41. Voluntary peer reviews of NSSDs should start in 2006 with a first group of	NA	NA		NA



Member States. Subsequent peer reviews should start in 2007 with the next group of Member States			
42. Making use of the existing European Sustainable Development Network			RM
43. Strengthening or setting up multi-stakeholder national advisory councils on SD to stimulate informed debate			RM
44. Improvement of EU internal policy co-ordination	NA	NA	NA
45. At latest by 20011, the European Council will decide when a comprehensive review of the EU SDS needs to be launched	NA	NA	NA
<b>Total Score</b>	<b>0</b>	<b>0</b>	<b>4</b>

Table 13: Implementation, Monitoring and Follow-up



SD PROJECTS based on SHORT-TERM RESULTS formulated in the NSSD					
Project	NSSD Result Number	Brief explanation of the project	Needed amount (in Euro)		Possible funding sources
			For the project preparation	For the whole project	
1. Vardar Silicon Valley	<i>RM 4. Contemporary IT Education</i>	Creation of educational infrastructure and systems necessary for development of the knowledge society (HE in IT, SD)		136.000.000	- Donor/grant programs - Budget - Business community
2. Network of innovation-research centers	<i>2. Strong production</i>  <i>1.3.2.1.1 Strong capacity of information/ consulting centers</i>	Establishment/enforcement and networking (in the country and internationally) of 3 innovative research centers for SD (equipment, HR, networking, proto-types, commercialization)	3.000.000	10.000.000	- FP7, - Donor/grant development programs GTZ, SIDA, ADA, JICA, MEDF etc. - IPA funds - Business community
3. Awareness rising campaign on SD	<i>1.3.4 Campaign at state level for entrepreneurship and SD of SMiLEs (especially among youth and women) enacted</i>	Road show (youth and female festivals, multi media campaigns in local communities for SD)	100.000	300.000	- Budget - Donor/grant programs
4. Establishment of saving-cooperatives on sector/territory level	<i>3.1.1 Systems for micro finance developed</i>	Mobilization of available personal-business finance resources	100.000	500.000	- Financial institutions - Budgetary support - Business community
5. Enforcement of BSO for consulting/training in capital budgeting	<i>3.1.4 Sufficient knowledge on share trading and capital investment provided</i>	Development of training and consulting services for capital budgeting within the BSO's	10.000	100.000	- APPRM - Donor/grant programs
6. Establishment of BA (business angels) network	<i>3.1.10.1 Access to sufficient number of business angels</i>	Legislation development, incentives provision for BA' investment,	20.000	50.000	- Business community



SD PROJECTS based on SHORT-TERM RESULTS formulated in the NSSD						
Project	NSSD Result Number	Brief explanation of the project	Needed amount (in Euro)		Possible funding sources	
			For the project preparation	For the whole project		
		<i>provided</i>	recruitment of BA			- Business associations
7.	Centers of excellence – education/research on TQM	<i>4.1 High level technology development conducted</i>	Enforcement of University research centers, dispersion (in business community) and networking		3.000.000	- Business community - FP7, - Donor/grant development programs GTZ, SIDA, ADA, JICA, MEDF etc. - Budget
8.	Formal education improved - Entrepreneurial learning programs developed	<i>4.1.1 Need for quality management acknowledged</i>	Developed EL curricula for all educational levels, established network (business & education networks)		500.000	- TEMPUS, VET - Donor/grants
9.	Marketing centers of excellence for SD established	5. Marketing improved	Developed marketing strategy and organized marketing campaigns for awareness rising about SD		500.000	- Budget - Donor/Grants
10	Establishment of centers of excellence for waste treatment	6.1 Proper Waste Management provided	Permanent education programs developed, built infrastructure		30.000.000	- Central and municipal budgets - business community - Donor/grants
11	Establishment of research centers for natural and RES utilization	<i>6.2 Natural and Renewable Energy Sources used</i>	Established infrastructure for R&D for RES		3.000.000	- Budget - Donor/grants



<b>SD PROJECTS based on SHORT-TERM RESULTS formulated in the NSSD</b>					
<b>Project</b>	<b>NSSD Result Number</b>	<b>Brief explanation of the project</b>	<b>Needed amount (in Euro)</b>		<b>Possible funding sources</b>
			<b>For the project preparation</b>	<b>For the whole project</b>	
					- Businesses



**Annex No. 4:**

**Proposal for the  
Role and Mandate of the  
National Council for Sustainable Development  
(NCSD) of the  
Republic of Macedonia**

**Proposal for Role and Mandate of the  
National Council for Sustainable Development of the**





**Republic of Macedonia**  
**based on best practice analysis among the new EU members –**  
**The example from Lithuania**

**The National Council for Sustainable Development (NCSD) of the Republic of Macedonia shall**

- a) ensure the implementation of the basic principles on sustainable development set forth in the 1992 Declaration and Agenda 21 of the UN Conference on Environment and Development, in the 2001 EU Strategy for Sustainable Development and in the National Strategy for Sustainable Development in the Republic of Macedonia;
- b) coordinate short- and long-term programmes and strategies on economic development, environmental protection, cultural and social development with a view to ensuring sustainable development, adequate management and economic growth, rational exploitation of national and human resources;
- c) take into account the environmental, economic, social and cultural needs of the Republic of Macedonia, provide for priority directions in economic development; in order to achieve the above purposes, propose measures for prudent use of resources;
- d) determine the main tendencies of national economy and sustainable use of national resources, to prepare long-term prognoses of the tendencies;
- e) seek and ensure cooperation among public authorities and scientific research institutions, non-governmental organizations, industrial, business and public groups in resolving fundamental human health, environmental protection, social and economic issues;
- f) coordinate preparation of legal acts following the principles of sustainable development, requirements of international conventions and action plans of international organizations;
- g) encourage all executive authorities and industrial and business representatives to draw up strategies of action based on the principle of optimal exploitation of natural resources, taking into account the social and economic needs of residents;
- h) after coordination with all concerned institutions, submit to the Government proposals on the implementation of the sustainable development strategy and coordinate its plan of action;
- i) implement sustainable development priorities, taking into account Macedonia's environmental protection, social, economic and cultural indicators;
- j) analyze and assess economic and social processes, the state of environment, economy and society in Macedonia, tendencies towards change in global processes as regards sustainable development, mostly focusing on their impact on the Republic of Macedonia and Southeast Europe;
- k) according to the established procedure, submit to the Government of the Republic of Macedonia proposals on draft laws and other legal acts, national and strategic programmes.



## **Annex No. 5:**

# **Proposal for Institutional Set-up to Support the Implementation of Sustainable Development in the Republic of Macedonia, July 2007, NSSD Position Document I**



Support to the Preparation of a National Strategy for Sustainable Development in  
The Republic of Macedonia

Draft Final National Strategy for Sustainable Development February 2008

Part II: Strategic background and analysis

**Support to the Preparation of a  
National Strategy for Sustainable Development  
in the Republic of Macedonia**

A Sida-funded project in cooperation with the  
Ministry of Environment and Physical Planning,  
the Republic of Macedonia

Final as of 20<sup>th</sup> of July 2007

**Proposal for Institutional Set-up  
to Support the  
Implementation of Sustainable Development  
in the Republic of Macedonia**

July 2007

Sida Reg. No. 2005-001592

This report has been prepared by The NSSD Team  
(Comprising Project Management, National Specialists, Local Staff, and International Specialists)



## I Project Cover Sheet

<b>Project Title:</b>	Support to the Preparation of a National Strategy for Sustainable Development in the Republic of Macedonia
<b>Project Number:</b>	Sida ref. no. 2005-001592
<b>Date of Contract commencement:</b>	15 February 2006
<b>Date of Contract termination:</b>	14 February 2008
<b>Beneficiary Country:</b>	Republic of Macedonia
<b>Contractors Details</b>	
<b>Contractor /Implementer:</b>	Scanagri Sweden AB in consortium with NIRAS A/S and Euroconsultants S.A.
<b>Name of the Contractors' representative:</b>	Project Director Annika Sandell
<b>Contact data:</b>	Scanagri Sweden AB, c/o NIRAS, Kungsbros Strand 15, SE-112 26 Stockholm Tel: +46 8 545 533 11, Mobile: +46 70590 81 66, Fax: +46 8 545 533 33 E-mail: <a href="mailto:annika.sandell@scanagri.se">annika.sandell@scanagri.se</a>
<b>Beneficiary's data</b>	
<b>Beneficiary:</b>	Ministry of Environment and Physical Planning of the Republic of Macedonia
<b>Contact persons of the beneficiary:</b>	State Councillor: Menka Spirovska Technical National Project Coordinator: Vesna Indova
<b>Contact data:</b>	Str. Drezdenska 52, 1000 Skopje, Macedonia Mobile Menka Spirovska: +389 70 35 87 38 Mobile Vesna Indova: +389 70 350 951 E-mail: <a href="mailto:M.Spirovska@moepp.gov.mk">M.Spirovska@moepp.gov.mk</a> E-mail: <a href="mailto:v.indova@moepp.gov.mk">v.indova@moepp.gov.mk</a>
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## II List of Abbreviations

COC	Consolidated Conclusions
COF	Consolidated Findings
COR	Consolidated Recommendations
EPA	European (Union) Pre-Accession (Funds)
MoEPP	Ministry of Environment and Physical Planning
NASD	The National Agency for Sustainable Development
NCSD	National Council for Sustainable Development
NSDIB	The National Sustainable Development Investment Bank
NSSD	National Strategy for Sustainable Development
PPP	Public-Private-Partnership
PT	Project Team
RM	Republic of Macedonia
SD	Sustainable Development
SDCU	The Sustainable Development Campus University
SDF	Sustainable Development Framework
SDFR	Sustainable Development Framework Report
Sida	Swedish International Development Cooperation Agency
ToR	Terms of Reference
ZELS	Association of the Units of the Local Self-Government of the Republic of Macedonia



### **III Executive Summary**

Solidly based on the comprehensive elaborations in the 11 Assessment and Analysis Reports and on the Sustainable Development Framework, in the latter in particular referring to the building block of

#### **the Implementation Capacity, Chapter 4.2 Institutional and Organisational Capacity,**

the NSSD Project Team proposes a new Institutional Set-up to support the Implementation of Sustainable Development in the Republic of Macedonia with

1. National Council for Sustainable Development (NCSD),
2. National Agency for Sustainable Development (NASD),
3. National Sustainable Development Investment Bank (NSDIB), and
4. Sustainable Development Campus University (SDCU).

Apart from the National Council for Sustainable Development (NCSD) and the Sustainable Development Campus University (SDCU), the other institutions shall be established by re-organizing and refocusing existing structures to support sustainable development in the Republic of Macedonia. Thus, no additional funding is needed to found the National Agency for Sustainable Development (NASD) and the National Sustainable Development Investment Bank (NSDIB).



#### **IV The need for a new Institutional Set-up to Support the Implementation of Sustainable Development in the Republic of Macedonia**

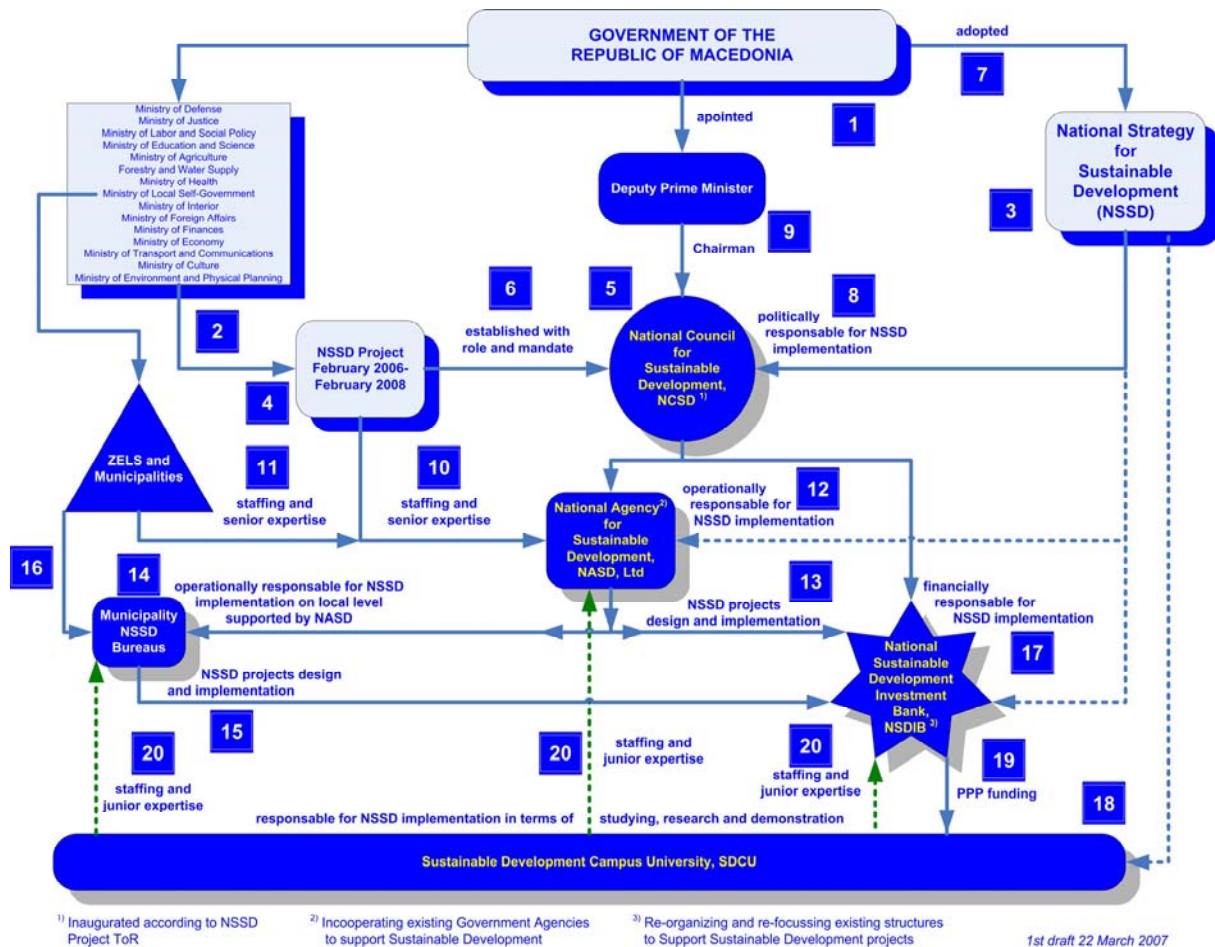
Solidly based on the comprehensive elaborations in the 11 Assessment and Analysis Reports and on the Sustainable Development Framework as presented by the NSSD Project Team, in the latter in particular referring to the building block of

##### **the Implementation Capacity, Chapter 4.2 Institutional and Organisational Capacity,**

it was concluded that the institutional and organisational capacity for introducing, applying and enforcing laws, by-laws and regulations is weak. The public sector does not seem to have the necessary capacity in terms of both, manpower, knowledge and systems, and procedures for a qualified and timely way of processing and approving projects and activities in relation to Sustainable Development. Having in mind the complexity and multi-sectoral nature of Sustainable Development projects in general and the need for applying a new cross-cutting and more strategic oriented way of thinking also towards investments (SD Framework Chapter 3.4 *The Need for a Conducive and Supporting Sustainable Development Investment*), the NSSD Project Team proposes the following Institutional Set-up to support the Implementation of Sustainable Development in the Republic of Macedonia.

#### **V Proposal for Institutional Set-up to Support the Implementation of Sustainable Development in the Republic of Macedonia**

In March 2004, the Government of the Republic of Macedonia (1) has appointed the Ministry of Environment and Physical Planning (MoEPP) (2) to be co-ordinator of activities for development of the National Strategy for Sustainable Development (3). In August 2004, MoEPP officially requested Swedish International Development Cooperation Agency (Sida) to support the preparation of a National Strategy for Sustainable Development.



<sup>1)</sup> Inaugurated according to NSSD Project ToR

<sup>2)</sup> Incorporating existing Government Agencies to support Sustainable Development

<sup>3)</sup> Re-organizing and re-focusing existing structures to Support Sustainable Development projects

1st draft 22 March 2007

The project: ‘Support to the Preparation of a National Strategy for Sustainable Development (NSSD) in the Republic of Macedonia’ funded by Sida and implemented by the international consortium led by Niras AB, Sweden commenced on 15 February 2006 (4).

According to the NSSD project’s ToR, the Government of the Republic of Macedonia, on the initiative of MoEPP shall establish the **National Council for Sustainable Development (NCSD)** (5). A proposal for the role and mandate of the NCSD was already drafted during the Inception Period of the NSSD project (6). As soon as the NSSD document is approved by the Government of the Republic of Macedonia (7), the NCSD shall be politically responsible for the NSSD implementation (8).

The NCSD shall be chaired by the Deputy Prime Minister (9) responsible for economic issues and include ministers of key government ministries. The NCSD shall serve as an open forum for all Macedonian stakeholders to present their views. The NCSD shall debate the central policy issues related to the NSSD process and serve as a driving force for awareness raising as well as for ensuring transparency and commitment building. The NCSD shall include a balanced spectre of competent and prominent representatives from the public and private sectors and from the civil society.





**Beyond the NSSD project's ToR** and based on experiences of NSSD implementation around Europe, the implementation of the NSSD in the Republic of Macedonia shall be safeguarded by an additional institutional set-up as outlined below:

1. The National Agency for Sustainable Development (NASD) Ltd.,
2. The National Sustainable Development Investment Bank (NSDIB), and
3. The Sustainable Development Campus University (SDCU).

The first two mentioned institutions, NASD and NSDIB, shall be established by pooling the best available knowledge, experience and committed human resources from already existing Government Agencies to support sustainable development in the country in an efficient, rationalized and streamlined manner. To a limited extend staffing and senior expertise of NASD could be recruited from experienced members of the NSSD project team (10) as well as from ZELS and pro-active Municipality institutions (e.g. Sectors for Local Economic Development) (11).

The **National Agency for Sustainable Development (NASD)** (12) shall be established as a Limited Company (Ltd.) with shares held by the Government of the Republic of Macedonia and pro-active Municipalities<sup>1</sup>. The NASD Ltd. shall be operationally responsible for SD implementation based on the National Strategy for Sustainable Development document as adopted by the Government of the Republic of Macedonia. It is supervised by the NCSD, which in fact acts as a supervisor board.

The NASD Ltd. shall regularly report to the NCSD on the progress of the NSSD implementation (every year) and update the NSSD (every 2 years). Its major task shall be the design and implementation of sustainable development projects (13) according to the objectives of the NSSD and strictly following the overarching objectives of the EU Strategy for Sustainable Development and its regular revision. The NASD Ltd. shall insure that available funding from international institutions (e.g. EPA funds) is utilized to a maximum benefit of the Republic of Macedonia.

The NASD Ltd., operating on national level, closely cooperates with NSSD Bureaus on a Municipality level (14). Likewise the NASD Ltd. on a national level, it shall be the NSSD Bureaus major task to design and implement sustainable development projects (15). NSSD Bureaus are backed up by the communication network and support provided by the Association of the Units of the Local Self-Government of the Republic of Macedonia (ZELS) (16).

Both, NASD Ltd. and NSSD Bureaus, are connected to the **National Sustainable Development Investment Bank (NSDIB)** (17), through which all operations relevant for sustainable development project and investments shall be canalized. The National Sustainable Development Investment Bank (NSDIB) shall be financially responsible for the SD implementation based on the National Strategy for Sustainable Development document as adopted by the Government of the Republic of Macedonia. In particular NSDIB shall be responsible for all funding transactions in

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<sup>1</sup> There are different steps conceivable that finally lead to the constitution of a Limited Company. A very first step might be a network of experts. The NASD Ltd. model is near to the German Gesellschaft für Technische Zusammenarbeit GmbH.



relation to international institutions and donors (e.g. EPA funds). Again, NSDIB shall be established by re-organizing and refocusing existing structures to support sustainable development in the Republic of Macedonia. Thus, no additional funding is needed to found the NSDIB.

The proposed institutional set-up to support the implementation of Sustainable Development in the Republic of Macedonia is solidly based on the **Sustainable Development Campus University (SDCU)** (18), which is responsible for SD implementation in terms of studying, research and demonstration based on the National Strategy for Sustainable Development document as adopted by the Government of the Republic of Macedonia. SDCU shall be founded and constructed as a new Campus University outside of Skopje, thus acting as a driving engine for regional development and innovations as well as a 'Place to Enjoy New Ways of Thinking, Inventing and Living'. It is envisaged that the SDCU is founded, constructed and operated by Public-Private-Partnership (PPP) funding (19). Having in mind the attractiveness of investing in higher education worldwide, the Sustainable Development Campus University in the Republic of Macedonia shall benefit from the commitment to sustainable development by private investors.

The immediate target group of the SDCU is first of all motivated, proactive and innovative students of Macedonia who are committed to the vision of sustainable development in general. These students shall provide the staffing and junior expertise for NASD Ltd., Municipality NSSD Bureaus and NSDIB (20) and shall insure the mid- and long-term implementation of both, the vision of sustainable development and its practical project implementation.

In a second step SDCU shall be attractive also for international students to study and live sustainable development. The overall beneficiary of this kind of visionary SDCU, which is realized yet neither in Europe nor in the world, is far beyond the Republic of Macedonia. **Thus, the SDCU is a living commitment and outstanding brand of modern and forward-looking Sustainable Development Macedonia in Europe and the world in large.**

**The NSSD Project Team proposes the new Institutional Set-up to support the Implementation of Sustainable Development in the Republic of Macedonia to be financed as one of the most fundamental and urgent SD Pilot Project (see Annex No. 3 Sustainable Development Framework Report, SDFR).**



**Annex No. 6:**

**Sustainable Development  
Pilot Projects Catalogue  
as of February 2008**



With support of the Swedish Embassy, this *SD Pilot Projects Catalogue* shall be presented to the international donor community in the period February-May 2008 in order to create additional awareness that the Republic of Macedonia is committed to Sustainable Development and takes actions, as expressed by the Chairman of the NSSD Project Steering Committee, H.E. Zoran Stavreski, Deputy President of the Government of the Republic of Macedonia, on 10 July 2007. Furthermore, *SD Pilot Projects* shall bridge the natural gap between preparing the National Strategy for Sustainable Development Document and its full implementation. It is envisaged that the funding support provided by the international donor community gives a strong signal to the banking sector as well as to private investors, both foreign and domestic, to invest in SD projects.

- Part I: Legal and Regulatory Sustainable Development Projects.
- Part II: Institutional and Capacity Building Sustainable Development Projects.
- Part III: Sustainable Development and Information System Projects.
- Part IV: Sustainable Development and Public Participation Project.
- Part V: Ecosystems Management and Eco-Remediation Projects.
- Part VI: Renewable Energy and Infrastructure Projects.
- Part VII: Renewable Energy and Rural Development Projects.
- Part VIII: Rural Infrastructure and Sustainable Development Tourism Projects.
- Part IX: Organic Farming and Rural Sustainable Development Projects.
- Part X: Development of Business Models for SD SMiLEs.
- Part XI: Development of Educational Curricula/Modules for SD at all ISCED Levels.

<b>Part I: Legal and Regulatory Sustainable Development Projects</b>	
I 1:	Clean Macedonia: Urban Solid Waste Regulatory Framework and Municipality Prosperity
I 2:	A New Tax System mainly based on Consumed Resources ( <i>natural-resource-user-pays</i> concept) to support Sustainable Development in the Republic of Macedonia

<b>Part II: Institutional and Capacity Building Sustainable Development Projects</b>	
II 1:	Institutional Set-up to Support the Implementation of the National Strategy for Sustainable Development in the Republic of Macedonia
II 2:	Support to the EU-Accession Process and the Implementation of the National Strategy for Sustainable Development in the Republic of Macedonia
II 3:	Learning from Strumica: Innovative, Participatory and Sustainable Development Industrial Zone Management in Macedonia
II 4:	Macedonian Sustainable Development Entrepreneurship Awards
II 5:	Favourable Bank Credits for Sustainable Development Investments
II 6:	Preparation of SD Educational Package for Certification of Public Servants

<b>Part III: Sustainable Development and Information System Projects</b>	
III 1:	GIS-based Urban Development Plan to support Professional Decision Making for Sustainable Development of Urban Communities



III 2:	Sustainable Development Educational Library and Electronic INFO SD Centre
III 3:	Elaboration of a 'Sustainable Development Key Performance Indicators' (SD-KPIs) Methodology for assessing Enterprises and Investors in the Republic of Macedonia

#### Part IV: Sustainable Development and Public Participation Projects

IV 1:	Eurodesk Co-operation Partner for Young Macedonian Sustains®
IV 2:	Participatory Rural Sustainable Development in Stenje, Lake Prespa
IV 3:	Sustainable Development Campus University (SDCU): A Place to Enjoy New Ways of Thinking, Inventing and Living
IV 4:	Regional Sustainable Development Concept to support Sustainable Rural Development in Tikvesh Wine Region
IV 5:	The UN Decade on Education for Sustainable Development I: Summer School for Macedonian Students on Sustainable Development and Agenda 21
IV 6:	Sustainable Development Awards Competition for Young Macedonian Sustains®
IV 7:	EURODYSSEE programme of the Assembly of European Regions: Professional experience and best practise exchange with Europe for Young Macedonian Sustains®

#### Part V: Ecosystems Management and Eco-Remediation Projects

V 1:	Low Cost Constructed Wetlands based Waste Water Treatment Plants for Rural Tourism Villages in Prespa Region
V 2:	Low Cost Constructed Wetlands based Waste Water Treatment Plants for Rehabilitation of polluted Industrial Zone Veles
V 3:	Developing of River Basement Management Plan for Crna Reka Watershed
V 4:	Solid Waste Management and Recycling in Skopje organized by Roma Communities
V 5:	Monitoring Air Pollution during the Peak Season of Lake Ohrid Region Summer Tourism
V 6:	Assessment of the Capacities of the Non-Wood Products in Macedonia
V 7:	Preparation of a Sustainable Development Forest Management Plan for the Region of Kavadarci
V 8:	Fire Tracks for Forest Fires Suppression and Training of Fire Fighters
V 9:	Design of an Early Warning Forest Fires Detection System in Macedonia
V 10:	Improving the Forest Road Network in Kicevo Region
V 11:	Preparation of a Ten-Years-Plan for the Development of Hunting Tourism in Macedonia
V 12:	Afforestation of 1000 ha bared land in Macedonia

#### Part VI: Renewable Energy and Infrastructure Projects

VI 1:	Energy Saving and Added Value for Macedonian Real Estates: Renovation, Thermal Energy House Insulation and Utilization of Solar Energy in the Municipality of Aerodrom
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VI 2:	Innovative Macedonian Houses: Programme for Thermal Energy House Insulation and Low Energy Consumption
VI 3:	100,000 Macedonian Solar Roofs: Solar Energy Utilization Offensive to promote Innovative SMEs for Innovative Citizens
VI 4:	Macedonian Geothermal & Spa Potential Assessment: Geothermal Energy, Wellness and Rural Sustainable Development
VI 5:	Photovoltaic Electricity Production for Independent Northern Industrial Zone Strumica
VI 6:	Eco-Efficiency by Utilization of Photovoltaic Electricity Production for Conservation of Dojran Lake

#### Part VII: Renewable Energy and Rural Development Projects

VII 1:	Macedonian Energy Farmers I: Biomass Power Plant in Strumica Region
VII 2:	Macedonian Energy Farmers II: Bio Diesel Production in Rural Macedonia
VII 3:	Forestry supporting Sustainable Development: Pellet Production for Warm Macedonian Homes
VII 4:	Support to the Organization of Farmers to organize themselves for Bio Fuel Production in Gevgelija, Bogdanci and Dojran Region

#### Part VIII: Rural Infrastructure and Sustainable Development Tourism Projects

VIII 1:	Renovation of Historical Macedonian Stone Houses for Individual-Oriented and High Quality Rural Tourism
VIII 2:	The UN Decade on Education for Sustainable Development II: Summer School for Macedonian Students on Individual-Oriented and High Quality Rural Tourism
VIII 3:	Rejuvenating Traditional Crafts to Support Macedonian Tourist Attraction
VIII 4:	Tourist Signalization Network in Macedonia (with published guide or handbook)
VIII 5:	Regional, Interregional and Cross-border Tourist Trails in Macedonia
VIII 6:	Information and Ecological Education Centres in Macedonian National Parks
VIII 7:	Bicycle Track Network in Macedonian National Parks

#### Part IX: Organic Farming and Rural Sustainable Development Projects

IX 1:	Organic Farming Macedonia I: Promoting Healthy Food Production in Rural Macedonia
IX 2:	Organic Farming Macedonia II: Promoting Healthy Baby Food Production in Rural Macedonia

#### Part X: Development of Business Models for SD SMiLEs

X 1:	Managerial Economy for SD of Micro Business
X 2:	Managerial Economy for SD of Small Business
X 3:	Integrated Management (Corporate Social Responsibility and SD) of Large Companies



<b>Part XI: Development of Educational Curricula/Modules for SD at all ISCED levels</b>	
XI 1:	Syllabus for SD in Primary and Lower Medium Education
XI 2:	Syllabus for SD in Secondary Education
XI 3:	Syllabus for SD in Higher Education



# **Annex No. 8:**

## **Examples of Sustainable Development Project Design**





The NSSD Project reached the objective

**To lead a participatory process of developing a National Strategy for Sustainable Development, meeting the requirements of EU-accession for the Republic of Macedonia.**

Having prepared this National Strategy for Sustainable Development (NSSD) in the Republic of Macedonia firmly based on this project objective, we are well aware of the fact that only the first step is done to build *Sustainable Development Macedonia* by 2030. Now, we need to **shift our focus towards the implementation of the NSSD, and by this we safeguard the country's EU-accession process.**

Many strategies prepared before lack the participatory approach of preparation and even more strategies were prepared for the book shelf only. Keeping this in mind and having learned lessons from other strategic planning processes, we are convinced that we need to keep on moving ! This is why the NSSD Project Team **with purpose does not** combine its hierarchy of objectives (Chapter 4.2) with a *Plan of Action*. We rather propose *Strategic Measures*, which are understood as immediate Government and other stakeholder actions to reach the outlined objectives in the Objective Trees (Annex 2) and Chapter 6. It is our perception that other strategies indeed failed to be implemented, because it was the understanding of decision makers that 'everything is finalized'.

The implementation of this NSSD is a stepwise process of addressing the various objectives and results. Each result might define a project of its own – starting from the Root Objectives/Results and consequently working upward in the Objective Tree; or it is a set of results in a certain component, which naturally defines a project. However, and not having any funding on-hand for the time being, it is too early to prepare an Plan of Action, which by necessity needs to reflect the available financial and human resources in order to be realistic.

Nevertheless, the NSSD Project Team in this strategy offers **two paths in parallel to motivate in-time implementation. First, there are 'SD Pilot Projects'** (Annex 6) that shall bridge the natural gap between the strategy preparation and its implementation, and it is envisaged that these projects in their majority serve as 'touchable' demonstrations for creating awareness of what is envisaged in the NSSD as a whole. Secondly, and this is what is described in detail below, we propose a **NSSD implementation following three essential steps:**

- 1. Starting point: Consolidated definition of the results and timeline;**
- 2. Overall list of projects;**
- 3. Project proposals addressing short-term results (and its financial sources).**

**It is in step 2 and 3 to formulate target-orientated actions, and finally a *Plan of Action*.**

With this approach we ensure that the implementation process keeps up the participatory planning process momentum gained during the past two project years, and at the same time is viable, realistic, appropriate and operational.



## Example: Energy

### 1. Starting point: Consolidated definition of the results and timeline

(see also Objective Tree in Annex 2 and Chapter 6)

Overall Objectives (OO)		
EN OO 1	To reduce the dependence on energy import	Long term
EN OO 2	To ensure reliable energy supply for all citizens	Long term
EN OO 3	To reduce energy-related environmental pollution (global and local)	Long term
Objectives/Results		
EN 1	Improved efficiency in energy production	Mid term
EN 1.1	Fuel mix improved	Mid term
EN 1.1.1	Share of other fuels (gas and renewables) in the fuel mix increased	Mid term
EN 1.2	Advanced energy production technologies applied	Mid term
EN 1.2.1	Investments for rehabilitation and maintenance provided	Short term
EN 1.2.2	Combined heat and power and clean coal technologies used	Mid term
EN 1.3	Energy system expanded	Mid term
EN 1.3.1	Investments in new production facilities provided	Short term
EN 1.3.2	Wise and transparent privatization of energy plants conducted	Short term
EN 1.3.3	Capacities for strategic planning improved	Short term
EN 1.3.4	Investments for supportive infrastructure provided	Short term
EN 1.3.4.1	Interconnections newly built/improved	Short term
EN 1.3.4.2	Gas pipeline utilization improved	Short term
EN 2	Improved efficiency of energy use	Mid term
EN 2.1	Improved energy efficiency in industry	Mid term
EN 2.1.1	Planning and decision-making improved	Short term
EN 2.1.1.1	Decision makers/planners with knowledge and vision involved	Short term
EN 2.1.1.2	The political impact on decision-making reduced/removed	Short term
EN 2.1.1.3	Environmental concerns enhanced	Short term
EN 2.1.1.4	Environmental aspects taken into consideration in further privatization of industrial plants	Short term
EN 2.1.2	Best Available Technologies/practices applied	Short term
EN 2.1.2.1	Electricity-heat conversion reduced	Short term
EN 2.1.2.1.1	Electricity price rationalized	Short term
EN 2.1.2.1.2	Gas distribution network built	Short term
EN 2.1.2.2	Energy efficiency intervention undertaken	Short term
EN 2.1.2.2.1	Social and environmental interest respected	Short term
EN 2.1.2.3	Investments in new technologies provided	Short term
EN 2.1.2.3.1	Implementation of legislation improved	Short term
EN 2.1.2.3.1.1	Efficiency of judiciary improved	Short term
EN 2.1.2.3.1.2	Adequate penalties introduced	Short term



EN 2.1.2.3.1.3	Monitoring system fully established	Short term
EN 2.1.2.3.1.4	External costs internalized (tax for polluters introduced)	Short term
EN 2.2	Improved energy efficiency in households and public sector	Short term
EN 2.2.1	Reduced electricity used for heating	Short term
EN 2.2.1.1	Electricity price rationalized	Short term
EN 2.2.1.2	Gas distribution networks built	Short term
EN 2.2.2	Secondary legislation completed	Short term
EN 2.2.2.1	Legislation/regulation for building codes adopted	Short term
EN 2.2.2.2	Legislation/regulation for labelling adopted	Short term
EN 2.2.3	Awareness improved	Short term
EN 2.2.3.1	Energy saving habits established	Short term
EN 2.2.3.1.1	Electricity price rationalized	Short term
EN 2.2.3.1.2	Campaigns organized	Short term
EN 2.2.3.1.3	Basic educational programs developed	Short term
EN 2.2.3.2	Decision-making improved	Short term
EN 2.2.3.2.1	Social and environmental interest respected	Short term
EN 2.3	Improved energy efficiency in transport	Mid term
EN 2.3.1	Quality of fuels improved	Short term
EN 2.3.1.1	New standards adopted	Short term
EN 2.3.2	Vehicle fleet renewed	Short term
EN 2.3.3	Adequate economic instruments provided	Short term
EN 2.3.4	Public transport improved	Mid term
<b>EN 3</b>	<b>Increased utilization of RES</b>	Mid term
EN 3.1	Investments provided	Mid term
EN 3.1.1	National funding provided	Short term
EN 3.1.1.1	Institutional capacity built	Short term
EN 3.1.1.2	Legislation/regulation developed and adopted	Short term
EN 3.1.1.3	Administration reduced and made efficient	Short term
EN 3.1.2	Potential for attracting foreign investments increased	Short term
EN 3.1.2.1	Institutional capacity built	Short term
EN 3.1.2.2	Legislation/regulation developed and adopted	Short term
EN 3.1.2.3	Administration reduced and made efficient	Short term
EN 3.2	Decision-making improved	Short term
EN 3.2.1	Awareness for RES application increased	Short term
EN 3.2.2	Social and environmental criteria respected	Short term
EN 3.2.3	Information disseminated	Short term
EN 3.2.4	Pilot projects undertaken	Short term



## 2. Overall list of projects

No	Project	Result(s)
<b>General</b>		
1	Development and adoption of a comprehensive long term Energy Strategy	EN OO 1; EN OO 2; EN OO 3; EN 1; EN 1.1; EN 1.2; EN 1.3; EN 2; EN 2.1; EN 2.2; EN 2.3; EN 3; EN 3.1; EN 3.2
<b>Polices, Legislation</b>		
2	Definition of Action Plans with clear deadlines and quantitative goals for the priority areas (in the field of EE and RES)	EN 1; EN 1.1; EN 1.2; EN 1.3; EN 2; EN 2.1; EN 2.2; EN 2.3; EN 3
3	Adoption of relevant secondary legislation and technical regulation	EN 2.1.2.3.1.2; EN 2.1.2.3.1.4; EN 2.2.2; EN 2.2.2.1; EN 2.2.2.2; EN 2.3.1.1; EN 3.1.1.2
4	Introduction of cost-reflective energy prices; Pricing structures to eliminate cross-subsidies and to integrate formulae that promote EE and RES and to take care of vulnerable customers	EN 2.1.2.1.1; EN 2.1.2.3.1.4; EN 2.2.1.1; EN 2.2.3.1.1; EN 2.2.3.2.1; EN 3.2.2
5	Incorporation of EE considerations and RES in the national and local policies and plans in the area of transport, agriculture, forestry	EN 2.3; EN 2.3.1; EN 2.3.1.1 EN 2.3.2; EN 2.3.3; EN 2.3.4; EN 3.2.4
<b>Institutional Framework</b>		
6	Strengthening the mandate and capacity of the Ministry of Economy	EN 1.3.2; EN 1.3.3; EN 2.1.1; EN 2.1.1.1; EN 2.1.1.2; EN 2.1.1.3; EN 2.1.1.4; EN 2.2.3.2; EN 3.1.1 EN 3.1.1.1; EN 3.1.1.3 EN 3.1.2; EN 3.1.2.1
7	Allocation of adequate and sufficient resources to Energy Agency	EN 1.3.2; EN 1.3.3; EN 2.1.1; EN 2.1.1.1; EN 2.1.1.2; EN 2.1.1.3; EN 2.1.1.4; EN 2.2.3.2; EN 3.1.1 EN 3.1.1.1; EN 3.1.1.3 EN 3.1.2; EN 3.1.2.1
<b>Financing</b>		
8	Investment in large energy production facilities	EN 1.1; EN 1.1.1; EN 1.2; EN 1.2.1; EN 1.2.2; EN 1.3; EN 1.3.1; EN 1.3.2
9	Investment in energy infrastructure	EN 1.3.4; EN 1.3.4.1; EN 1.3.4.2; EN 2.1.2.1.2
10	Strengthening and further wide promotion of SEFF (loan/guarantee facility)	EN 2.1.2; EN 2.1.2.2; EN 2.1.2.3; EN 2.3.3; EN 3.1; EN 3.1.1; EN 3.1.2; EN 3.2.4
11	Strengthening and further wide promotion of ESCO business	EN 2.1.2; EN 2.1.2.2; EN 2.1.2.3; EN 2.3.3; EN 3.1; EN 3.1.1; EN 3.1.2; EN 3.2.4
12	Financing EE and RES projects through the Clean Development Mechanism (CDM) under the Kyoto Protocol	EN 2.1.2; EN 2.1.2.2; EN 2.1.2.3; EN 2.3.3; EN 3.1; EN 3.1.1; EN 3.1.2; EN 3.2.4
13	Promotion and pipelining of Programmatic CDM projects	EN 2.1.2; EN 2.1.2.2; EN 2.1.2.3; EN 2.3.3;
<b>Specific areas</b>		
<b>a) Promotion of natural gas</b>		



No	Project	Result(s)
14	Gas fuelled CHP plant(s)	EN 1.1; EN 1.1.1; EN 1.2; EN 1.2.2
15	Gas pipeline ring around Skopje	EN 1.3.4.2
16	Expansion of the natural gas pipeline	EN 1.3.4.2
17	Gasification of selected municipalities (distributive networks)	EN 2.2.1.2
<b>b) District heating</b>		
18	Expansion of the district heating systems	EN 1.2.1;
19	Diversification of fuels and generation technologies and improvement of efficiency in the supply side of the DH system of Skopje	EN 1.1; EN 1.2; EN 1.3.4;
<b>c) Buildings energy efficiency</b>		
20	Establishing/improving the coordination between different governmental bodies (central and local), responsible for different aspects and levels of construction regulations and buildings management	EN 2.2
21	Review, revision and strengthening of the building codes, as well as of the approval and inspection procedures	EN 2.2; EN 2.2.2.1
22	Building and retrofitting according to high standards in governmental buildings as leading examples	EN 2.2
<b>d) Electricity use for heating</b>		
23	Launching a highly publicised Action Plan including thermal retrofit of buildings, with public sector playing an exemplary role; assessment of heating alternatives; developing incentives for switching to alternative heat sources.	EN 2.2; EN 2.2.1.2; EN 2.1.2 EN 2.1.2.1
24	Supporting low-income and vulnerable groups of the population to switch from electricity to other types of heating and to implement retrofit measures.	EN 2.2; EN 2.2.1.2;
<b>e) RES</b>		
25	Promotion of additional RES (biomass, combustible renewable waste and methane recovery)	EN 3.2.4
26	Promotion on RES based agricultural practices in rural regions	EN 3.2.4
<b>f) Local Authorities</b>		
27	Capacity building for municipalities enabling them to take on energy responsibilities, particularly those related to EE and RES	EN 2; EN 3; EN 3.2.4
28	Training of local energy managers (to be included as a component in national and donor programmes for supporting the decentralisation process and local authorities)	EN 2; EN 3; EN 3.2.4
<b>g) Information and Awareness</b>		
29	Launching of targeted public awareness raising programmes that can play an important role in the implementation of EE and RES activities	EN 2.2.3; EN 2.2.3.1; EN 2.2.3.1.2; EN 3.2.1; EN 3.2.2; EN 3.2.3
30	Properly accredited training on EE and RES (ensuring that the trained energy experts can practice in governmental programmes)	EN 2; EN 3; EN 3.2.4
31	Developing relevant educational programs	EN 2.2.3.1.3; EN 3.2.2; EN 3.2.3

### 3. Project proposals addressing some short-term results



Project	Result	Brief explanation	Estimated finances (millions EURO)	Possible financial sources
<b>Strategic Documents</b>				
National Energy Strategy	<ul style="list-style-type: none"> <li>– Clearly defined national priorities in the energy sector and developmental lines</li> </ul>	<p>Macedonia should actively promote its interests in the future energy projects in the frame of the common South European Energy market and in the wider European energy market. There is an urgent need for Macedonia to define the national priority energy projects and to include them in the new Energy Strategy. The prioritization must always favour projects based on lower carbon intensive fuels, technologies, practices</p> <p><i>Ongoing tender</i></p>	0.2	<ul style="list-style-type: none"> <li>– Central Budget</li> <li>– IFI assistance (World Bank)</li> </ul>
National Strategy for Renewable Energy Sources	<ul style="list-style-type: none"> <li>– Intensified RES implementation;</li> <li>– Transposition of the European Directives on RES in national legislation</li> </ul>	<p>Definition of the national targets regarding renewable energy sources; Dynamical plan for target implementation, as well as the associated institutional, regulatory and economic aspects (terms of concessions, grid connection rules, standards, taxes, and others rules and regulations); Relevant programs (action plans) including specific measures with specified roles of the institutions, timing and financing;</p> <p><i>Ongoing tender</i></p>	0.1	<ul style="list-style-type: none"> <li>– Central Budget</li> <li>– Swiss Compensation Fund</li> </ul>
<b>Energy Production</b>				
Large Hydro Power Plant Cebren	<ul style="list-style-type: none"> <li>– New energy production facility;</li> <li>– RES</li> </ul>	<i>Ongoing tender</i>	338.381	<ul style="list-style-type: none"> <li>– Private investment</li> </ul>



Project	Result	Brief explanation	Estimated finances (millions EURO)	Possible financial sources
	implementation			
Large Hydro Power Plant Galiste	<ul style="list-style-type: none"> <li>- New energy production facility;</li> <li>- RES implementation</li> </ul>	<i>Ongoing tender</i>	200.241	- Private investment
Large Hydro Power Plant Boskov Most	<ul style="list-style-type: none"> <li>- New energy production facility;</li> <li>- RES implementation</li> </ul>	<i>Ongoing tender</i>	70.000	- Private investment
TETO – CHP Power Plant	<ul style="list-style-type: none"> <li>- New energy production facility;</li> <li>- Introduction of gas</li> <li>- Utilization of advanced technology</li> </ul>	Preparatory activities finalized.  <i>National Strategy on CDM</i>	131.875	<ul style="list-style-type: none"> <li>- Private investment</li> <li>- Possible CDM financing</li> </ul>
Rehabilitation of Bitola Power Plant	<ul style="list-style-type: none"> <li>- Improved efficiency of energy production</li> <li>- Additional domestic production capacity</li> </ul>	The project activity involves an upgrade of the turbines from the Bitola coal fired power plants which have a total installed capacity of 675 MW (3 units x 225 MW). As a result of the upgrade, each unit will have an increased capacity of 7.2 MW  <i>PIP 2007-2009, Project 04 023</i>	23.030	- ELEM (Central budget)
New layers of the existing Lignite Mines	<ul style="list-style-type: none"> <li>- Domestic energy sources</li> </ul>	<i>PIP 2007-2009, Project 04 015</i>	25.200	- Central budget
<b>Energy Infrastructure</b>				
Transmission Line -Serbia		<i>PIP 2007-2009, Project 04 010</i>	8.880	- MEPSO (Central budget)
Transmission Line -Albania		<i>PIP 2007-2009, Project 04 022</i>	12.000	- MEPSO (Central budget)
Gas pipeline ring around Skopje		<i>PIP 2007-2009, Project 04 121</i>	6.000	<ul style="list-style-type: none"> <li>- Central budget</li> <li>- Municipality's budgets</li> </ul>
Extension of the gas pipeline Klechovce-Veles-Negotino-Kavadarci		<i>PIP 2007-2009, Project 04 018</i>	20.000	<ul style="list-style-type: none"> <li>- Central budget</li> <li>- Municipality's budgets</li> </ul>
Extension of the gas pipeline SK-TE-GV-Kicevo + side line to Debar-Struga-OH		<i>PIP 2007-2009, Project 04 118</i>	21.000	<ul style="list-style-type: none"> <li>- Central budget</li> <li>- Municipality's budgets</li> </ul>
Gasification of the cities of Kumanovo, Kriva Palnka,		<i>PIP 2007-2009, Project 04 013</i>	18.200	- Municipality's budgets



Project	Result	Brief explanation	Estimated finances (millions EURO)	Possible financial sources
Kratovo				
<b>RES and EE Projects</b>				

**Pipelines of projects eligible either for CDM or for sustainable energy financing:**

- The Italian Portfolio of potential CDM projects, compiled under the international cooperation between Italian Ministry of Environment, Territory and Sea and MoEPP (available at <http://www.moepp.gov.mk/default-MK.asp> )
- List of CDM Projects (including estimation of country's CDM potential) compiled by UNDP (available at <http://www.moepp.gov.mk/WBStorage/Files/CDM%20Potential%20of%20Macedonia.%200UNDP.ppt> )
- List of CDM Projects compiled by the World Bank (available at <http://www.moepp.gov.mk/WBStorage/Files/World%20Bank.%20CDM%20potential.pdf> )
- Database of projects developed under the Project Development Assistance Facility (PDAF) Component of the GEF Sustainable Energy Project (PDAF database) (available from the Ministry of Economy and from the Energy Agency)

## Example: Agriculture and Rural Development

### 1. Starting point: Consolidated definition of the results and timeline

(see also Objective Tree in Annex 2 and Chapter 6)

Overall Objectives (OO)		
<b>A&amp;RD 001.</b>	To improve agriculture and rural economy of the Republic of Macedonia	Long term
<b>A&amp;RD 002.</b>	To improve agriculture and to develop rural regions in the Republic of Macedonia socially balanced	Long term
<b>A&amp;RD 003.</b>	To improve agriculture and to develop rural regions in the Republic of Macedonia environmentally balanced	Long term
Objectives/Results		
<b>A&amp;RD 1.</b>	<b>Good organization in the sector implemented<sup>2</sup></b>	Mid term
A&RD 1.1.	The level of organization and planning of production improved <sup>2</sup>	Mid term
A&RD 1.1.1.	Existing and strong Export Promotion Agency supported <sup>1</sup>	Short term
A&RD 1.1.2.	Supportive insurance policy for agricultural holdings provided <sup>2</sup>	Mid term
A&RD 1.1.3.	Existing and strong Market Information System (MIS) support <sup>1</sup>	Short term
A&RD 1.1.4.	The optimal number of PPP (private-public-partnership) introduced <sup>2</sup>	Mid term
A&RD 1.2.	Vertical integration of the supply chain completed <sup>2</sup>	Mid term
A&RD 1.3.	Strong self organization of the Macedonian farmers supported <sup>1</sup>	Short term
A&RD 1.3.1.	Proper optimization of agricultural input conducted <sup>1</sup>	Short term
A&RD 1.4.	Proper and effective communication among stakeholders and strong interconnection in the sector initiated <sup>2</sup>	Mid term
A&RD 1.5.	Proper and effective farm register system completed <sup>1</sup>	Short term
<b>A&amp;RD 2.</b>	<b>Proper agriculture and rural development policy ensured<sup>2</sup></b>	Mid term
A&RD 2.1.	High level of strategy implementation provided <sup>2</sup>	Mid term
A&RD 2.1.1.	The reforms in the agriculture and food sector according EU&CAP supported <sup>1</sup>	Short term
A&RD 2.1.2.	Well formulation and high implementation of national politic for the agriculture provided <sup>1</sup>	Short term
A&RD 2.1.3.	Consist politic of prices - Internal market regulations according EU introduced <sup>2</sup>	Mid term
A&RD 2.2.	Clear division of competences among Ministries identified and	Mid term





	completed <sup>2</sup>	
A&RD 2.2.1.	The legal framework completed <sup>1</sup>	Short term
A&RD 2.2.2.	The consistency of administration (no changes with each Government) guaranteed <sup>2</sup>	Mid term
A&RD 2.2.3.	Strong capacity of the Extension Agency as a public service provided <sup>1</sup> .	Short term
A&RD 2.3.	Precise strategies and run existing one provided <sup>2</sup>	Mid term
A&RD 2.3.1.	The strategy for agricultural and rural development adopted <sup>1</sup>	Short term
A&RD 2.3.2.	High level of mainstreaming of environment issues in the agriculture Introduced <sup>1</sup>	Short term
A&RD 2.3.3.	High level of awareness in the MOEPP and other stakeholder about agriculture and rural development Introduced <sup>1</sup>	Short term
A&RD 2.4.	The proper data management started <sup>1</sup>	Short term
A&RD 2.5.	Available and accurate statistical data provided <sup>1</sup>	Short term
<b>A&amp;RD 3.</b>	<b>Strong institutional capacity of the sector implemented<sup>2</sup></b>	Mid term
A&RD 3.1.	Strong institutional and organization support of the sector provided <sup>2</sup>	Mid term
A&RD 3.1.1.	Institutional framework for sustainable development of the society / sector established <sup>1</sup>	Short term
A&RD 3.1.2.	Proper financial instruments for sustainable development implementation introduced <sup>1</sup>	Short term
A&RD 3.1.3.	The implementing agencies / PPP, LABS, TEST supported and regularly controlled <sup>1</sup>	Short term
A&RD 3.1.4.	The clear competences among MAEWE and Ministry of Economy and Ministry of Environment, Ministry of Health, Ministry of Finance and other Ministries identified <sup>1</sup>	Short term
A&RD 3.2.	The strong institutional capacities of MAFWE completed <sup>1</sup>	Short term
A&RD 3.3.	Fast and proper decision making in the Ministry of Agriculture conducted <sup>1</sup>	Short term
A&RD 3.3.1.	The high level of Strategy document implementation provided <sup>2</sup>	Mid term
A&RD 3.3.2.	The Council/ board for Agriculture like interdisciplinary body established <sup>1</sup>	Short term
A&RD 3.3.3.	The high transparency of information provided <sup>2</sup>	Mid term
A&RD 3.3.4.	Strong inter-institutional coordination/cooperation supported <sup>2</sup>	Mid term
A&RD 3.3.5.	Optimal institutional management ensued <sup>2</sup>	Mid term
A&RD 3.3.5.1.	Strong capacity of administrative personnel ensued <sup>2</sup>	Mid term
A&RD 3.3.5.1.1.	Proper institutional set up ensued <sup>2</sup>	Mid term
A&RD 3.3.5.1.2.	Proper payment of the administrative staff ensued <sup>2</sup>	Mid term
A&RD 3.3.5.1.3.	Abuse of the administrative system prevented <sup>2</sup>	Mid term
A&RD 3.3.5.1.4.	Employment of professionals and trained young people ensued <sup>1</sup>	Short term
A&RD 3.3.5.1.5.	Optimal utilization of present institutional capacities ensued <sup>2</sup>	Mid term
A&RD 3.3.5.2.	Consistency in institutional memory provided <sup>2</sup>	Mid term
A&RD 3.3.5.2.1.	The risk that the long term jobs in administration are not jeopardized by political changes prevented <sup>2</sup>	Mid term
A&RD 3.3.5.2.2.	Interference of politics into institutional activities avoided <sup>2</sup>	Mid term
A&RD 3.3.6.	Proper communication and procedures in the institutions insured <sup>1</sup>	Short term
A&RD 3.3.7.	Web- oriented presentation of public domain institutions provided <sup>1</sup>	Short term
<b>A&amp;RD 4.</b>	<b>Human resources in the line with Sustainable Development improved<sup>2</sup></b>	Mid term



A&RD 4.1.	The agriculture sector as instrument to keep the young people in the agriculture and in the rural areas treated <sup>2</sup>	Mid term
A&RD 4.1.1.	Optimal number of back yard production and part time farmers identified and supported <sup>1</sup>	Short term
A&RD 4.1.2.	The agricultural sector attraction for possible employment increased <sup>2</sup>	Mid term
A&RD 4.1.3.	Favourable age and gender structure in rural areas and rest in the sector provided <sup>2</sup>	Mid term
A&RD 4.1.4.	Optimal utilization of educated labour force offered <sup>2</sup>	Mid term
A&RD 4.1.5.	Optimal number of professional commercial farmers identified and supported <sup>2</sup>	Mid term
A&RD 4.2.	The sufficient motivation for changes and improvements in the sector introduced and supported <sup>2</sup>	Mid term
A&RD 4.3.	The high education of direct producers offered <sup>1</sup>	Short term
A&RD 4.3.1.	The strong management skills of producers and processors provided and supported <sup>1</sup>	Short term
A&RD 4.3.2.	The sufficient human resources for EU integration local level provided and supported <sup>1</sup>	Short term
A&RD 4.3.3.	The sufficient human resources for EU integration on the state level provided and supported <sup>1</sup>	Short term
A&RD 4.4.	The higher level of investment in education and research related with agriculture sector provided and supported <sup>1</sup>	Short term
A&RD 4.4.1.	High capacities of consultancy skills and knowledge supported <sup>1</sup>	Short term
A&RD 4.4.2.	The formal education (reformed education) improved <sup>1</sup>	Short term
A&RD 4.4.3.	Corresponding curricula in the formal education adopted and supported <sup>1</sup>	Short term
A&RD 4.4.4.	The vocational training in the sector provided <sup>1</sup>	Short term
A&RD 4.4.5.	The life long learning and adult learning methodologies provided <sup>1</sup>	Short term
A&RD 4.4.6.	The certification schemes for training and consultancy introduced <sup>1</sup>	Short term
A&RD 4.5.	The target groups for education and training defined <sup>1</sup>	Short term
A&RD 4.6.	The good reputation of the agricultural sector provided and supported <sup>2</sup>	Mid term
A&RD 4.7.	The historical neglect of the rural and agricultural areas reduced / avoided <sup>2</sup>	Mid term
<b>A&amp;RD 5.</b>	<b>Business environment for sustainable agriculture development encouraged<sup>2</sup></b>	Mid term
A&RD 5.1.	Optimal number of adequate brand promotion and sales completed <sup>2</sup>	Mid term
A&RD 5.1.1.	The strong inflow of direct domestic and foreign investments support <sup>2</sup>	Mid term
A&RD 5.1.2.	The proper and existent guarantee funds organised <sup>1</sup>	Short term
A&RD 5.1.3.	The banks offer - the credit lines for start up businesses in agriculture encouraged <sup>1</sup>	Short term
A&RD 5.1.4.	The companies to starts investments in agriculture encouraged <sup>1</sup>	Short term
A&RD 5.2.	High flow of market information provided <sup>1</sup>	Short term
A&RD 5.3.	Strong support and development of the sector provided <sup>1</sup>	Short term
A&RD 5.3.1.	Good business environment (no administrative barriers) provided <sup>1</sup>	Short term
A&RD 5.3.2.	Sufficient number of PPP started <sup>2</sup>	Mid term
A&RD 5.3.3.	Coordinated inspection services at border terminals and internal markets conducted <sup>1</sup>	Short term
A&RD 5.3.4.	Proper customs documentation required for import-export introduced and provided <sup>1</sup>	Short term
A&RD 5.3.5.	Short and easy administrative procedures introduced and provided <sup>1</sup>	Short term
A&RD 5.3.6.	The grey economy decreased <sup>2</sup>	Mid term
A&RD 5.3.7.	Good condition of existing legal system offered <sup>2</sup>	Mid term
A&RD 5.4.	The high absorption capacity for grants and investment funds offered <sup>1</sup>	Short term
A&RD 5.5.	The proper diversity of income in rural areas generated <sup>2</sup>	Mid term
A&RD 5.5.1.	Optimal number of consulting companies provided <sup>1</sup>	Short term
A&RD 5.5.2.	Good coordination between science and practice introduced and	Short term



	supported <sup>1</sup>	
A&RD 5.5.3.	Good practice of corporate governance introduced and supported <sup>2</sup>	Mid term
A&RD 5.6.	The adequately trained managers in the Agriculture entrepreneurs supported <sup>1</sup>	Short term
A&RD 5.7.	Various assortment of agriculture products introduced and promoted <sup>2</sup>	Mid term
A&RD 5.8.	The awareness process for forthcoming EU requirements of the sector supported <sup>1</sup>	Short term
<b>A&amp;RD 6.</b>	<b>Implementation of appropriate agriculture practices ensured<sup>3</sup></b>	Long term
A&RD 6.1.	The optimal number of agro-environmental practices conducted <sup>3</sup>	Long term
A&RD 6.1.1.	The optimal number of environment friendly practice created and carried <sup>3</sup>	Long term
A&RD 6.1.2.	The optimal number of sustainable production practices created and carried <sup>3</sup>	Long term
A&RD 6.1.3.	The optimal number of brand-oriented production practices (regional/local...) created and carried <sup>3</sup>	Long term
A&RD 6.1.3.1.	The optimal number of origin-oriented production practices created and carried <sup>3</sup>	Long term
A&RD 6.1.3.2.	The adequate implementation of "code of conduct" in GAP supported <sup>1</sup>	Short term
A&RD 6.1.4.	The minimal standards for healthily production fulfilled <sup>1</sup>	Short term
A&RD 6.1.5.	Proper use of fertilizers and pesticides and water irrigation guaranteed <sup>2</sup>	Mid term
A&RD 6.1.5.1.	The presents of comprehensive waste management in agriculture and livestock production offered <sup>2</sup>	Mid term
A&RD 6.1.5.2.	The functional machinery rings (for GAs, cooperatives, producer organizations) Provided or/and supported <sup>2</sup>	Mid term
A&RD 6.1.6.	The optimal number of good agriculture practice for protection of water, air, land created and carried <sup>3</sup>	Long term
A&RD 6.1.6.1.	Spatial land management improved <sup>3</sup>	Long term
A&RD 6.1.6.2.	The presents of carbon sequestration practice provided <sup>2</sup>	Mid term
A&RD 6.2.	The optimal number of developing technologies for use of alternative energy sources from agriculture provided and promoted <sup>1</sup>	Short term
A&RD 6.2.1.	The high level of EU standard "Energy Farming" provided <sup>2</sup>	Mid term
A&RD 6.2.2.	The "Energy Farming" on the national level awareness increased <sup>1</sup>	Short term
A&RD 6.2.3.	The "Energy Farming" on the local level awareness increased <sup>1</sup>	Short term
A&RD 6.2.4.	The pilot projects for "Energy Farming" on the national level introduced and supported <sup>1</sup>	Short term
A&RD 6.2.5.	The pilot projects for "Energy Farming" on the local level introduced and supported <sup>1</sup>	Short term
A&RD 6.2.6.	The investigations and development of new technologies for use of alternative energy and material sources from agriculture strongly supported <sup>1</sup>	Short term
A&RD 6.3.	The optimal number of food safety practices conducted <sup>3</sup>	Long term
A&RD 6.3.1.	Traceability of animal and crop products established <sup>3</sup>	Long term
A&RD 6.3.2.	The normal relation food safety- final product (quality) supported and controlled <sup>3</sup>	Long term
A&RD 6.3.3.	The high implementation of system of production practices provided <sup>2</sup>	Mid term
A&RD 6.3.4.	The rules of GAP followed <sup>2</sup>	Mid term
A&RD 6.3.4.1.	The proper use of water, fertilizers and pesticides established <sup>2</sup>	Mid term
A&RD 6.3.4.2.	The high application of standards during production established <sup>3</sup>	Long term
A&RD 6.3.4.3.	The expertise and application of post harvesting technologies established <sup>2</sup>	Mid term



A&RD 6.3.4.4	The proper use of veterinary medicine & additives established <sup>2</sup>	Mid term
A&RD 6.3.5	The National legislation in order with EU (GAP protocols) completed <sup>1</sup>	Short term
A&RD 6.3.5.1	The Government support in implementation of advisory packages provided <sup>1</sup>	Short term
A&RD 6.3.5.2	The optimal number of advisors (HASSP, EUREPGAP) provided <sup>1</sup>	Short term
A&RD 6.3.5.3.	Implementations certification system (HASSP, EUREPGAP) established <sup>1</sup>	Short term
A&RD 6.4.	The available information for market demand (quality requirements) provided <sup>1</sup>	Short term
A&RD 6.5.	Proper knowledge/basic capacities for advisory services (improve advisory services) provided <sup>2</sup>	Mid term
A&RD 6.6.	Strong support of media, NGOs, associations, consulting companies of the sector provided <sup>1</sup>	Short term
A&RD 6.7.	The new equipment and mechanization (appropriate machinery) introduced and supported <sup>2</sup>	Mid term
A&RD 6.8.	The higher education of direct producers offered and supported <sup>1</sup>	Short term

## 2. Overall list of projects

No	Project	Result(s)
<b>General</b>		
1	Strengthening of Macedonian agricultural sector for better organization and effective integration	A&RD 1.; A&RD 1.3.; A&RD 3.3.7.; A&RD 1.1.; A&RD 1.2. A&RD 1.4.; A&RD 2.1.
2	Strengthening of agricultural sector institutional capacity	A&RD 3.; A&RD 3.1.; A&RD 3.3.1.; A&RD 3.3.3.
3	Reformation of Macedonian formal education and university curricula according basic SD principles	A&RD 4.4.2.; A&RD 4.4.3.
4	Encouraging business environment for sustainable agriculture development	A&RD 5.; A&RD 5.2.; A&RD 5.3.; A&RD 5.3.1.; A&RD 5.3.3. A&RD 5.3.4.; A&RD 5.3.5. A&RD 5.1.1.; A&RD 5.3.6.
<b>Polices, Legislation</b>		
5	Support on execution of proper and effective agricultural policy and rural development in the Republic of Macedonia	A&RD 2.; A&RD 2.3.1.; A&RD 2.1.1.; A&RD 2.1.2.; A&RD 2.2.1.; A&RD 2.3.2.; A&RD 4.1.1.; A&RD 6.3.5; A&RD 1.1.2.; A&RD 2.1.3.; A&RD 2.3. A&RD 3.3.5.2.2.; A&RD 4.1.; A&RD 4.1.2.; A&RD 4.1.3.; A&RD 4.1.4.; A&RD 5.3.7.
<b>Institutional Framework</b>		
6	Support on establishing of proper and effective institutional framework of Macedonian agricultural sector	A&RD 1.1.1.; A&RD 1.1.3.; A&RD 1.5.; A&RD 2.2.3.; A&RD 2.3.3.; A&RD 3.1.1.;



No	Project	Result(s)
		A&RD 3.1.3.; A&RD 3.1.4.; A&RD 3.2. A&RD 3.3.; A&RD 3.3.2.; A&RD 3.3.6.; A&RD 1.1.4.; A&RD 2.2. A&RD 2.2.2.; A&RD 3.3.4.; A&RD 3.3.5.; A&RD 3.3.5.1.; A&RD 3.3.5.1.1.; A&RD 3.3.5.1.3.; A&RD 3.3.5.1.5. A&RD 3.3.5.2.; A&RD 3.3.5.2.1. A&RD 5.5.1.; A&RD 5.3.2.; A&RD 5.5.3.
7	Strengthening of Macedonian organizations directly involved in Agricultural sector monitoring, control, certification for proper implementation of necessary standards and SD principles	A&RD 6.1.3.2.; A&RD 6.1.4.; A&RD 6.3.5.2.; A&RD 6.3.5.3.; A&RD 6.1.5.; A&RD 6.1.5.1.; A&RD 6.3.4.1.; A&RD 6.3.4.4
<b>Financing</b>		
8	Support on establishing of proper and effective data management of Macedonian agricultural sector	A&RD 2.4.; A&RD 2.5.
9	Introduction of proper financial instruments for sustainable development implementation	A&RD 3.1.2.; A&RD 3.3.5.1.4.; A&RD 4.4.; A&RD 3.3.5.1.2.
10	Establishing of mechanisms of proper and effective financial support of the Macedonian agricultural sector	A&RD 5.1.2.; A&RD 5.1.3.; A&RD 5.1.4.
11	Support and promotion of developing technologies for use of alternative energy sources from agriculture - "Energy farming"	A&RD 6.2.; A&RD 6.2.4.; A&RD 6.2.5.; A&RD 6.2.6.
12	Support in introduction of new equipment/mechanization and implementation of new advisory packages for more competitive Macedonian agriculture	A&RD 6.7.; A&RD 6.3.5.1
<b>Specific areas</b>		
13	Improvement of Macedonian human resources in the process of national sustainable development of the Macedonian agricultural sector	A&RD 4.; A&RD 4.3.; A&RD 4.3.1.; A&RD 4.3.2.; A&RD 4.3.3.; A&RD 4.4.1.; A&RD 4.4.4.; A&RD 4.4.5.; A&RD 4.4.6.; A&RD 4.5.; A&RD 5.4.; A&RD 5.5.2.; A&RD 6.8.; A&RD 5.6.; A&RD 5.8.; A&RD 4.1.5.; A&RD 4.2.; A&RD 4.6.; A&RD 4.7.



No	Project	Result(s)
14	Diversification of Income in Rural Regions via Sustainable Development Challenges	A&RD 6.2.2.; A&RD 6.2.3.; A&RD 6.4.; A&RD 6.6.; A&RD 5.1.; A&RD 5.5.; A&RD 5.7.; A&RD 6.2.1.; A&RD 6.1.5.2.; A&RD 6.1.2.; A&RD 6.1.3.; A&RD 6.1.3.1.; A&RD 6.1.6.1.
15	Implementation of appropriate agriculture practices in Republic of Macedonia	A&RD 6.; A&RD 1.3.1.; A&RD 6.1.6.2.; A&RD 6.3.3.; A&RD 6.3.4.; A&RD 6.3.4.3.; A&RD 6.5.; A&RD 6.1.; A&RD 6.1.1. A&RD 6.1.6.; A&RD 6.3.; A&RD 6.3.1.; A&RD 6.3.2.; A&RD 6.3.4.2.
16	Strengthening of Macedonian Agricultural sector and Rural Development via Macedonian media	A&RD 6.2.2.; A&RD 6.2.3.; A&RD 6.4.; A&RD 4.2.; A&RD 4.6.; A&RD 4.7.; A&RD 5.5.2. A&RD 6.3.5.1.; A&RD 5.1.4.; A&RD 2.3.3.; A&RD 1.1.3.; A&RD 1.1.1.; A&RD 2.3.2.; A&RD 2.1.1.; A&RD 5.1.1.; A&RD 5.2.; A&RD 3.3.3.; A&RD 1.2.; A&RD 1.4.; A&RD 3.3.7.; A&RD 1.1.

### 3. Project proposals addressing some short-term results

Project	Result	Brief explanation	Estimated finances (millions EURO)	Possible financial sources
<b>Project No 1</b>				
Strengthening of agricultural sector for better organization and effective integration (first phase)	A&RD 1.3.	Strong self organization of the Macedonian farmers supported <sup>1</sup>		Donors & Government programs
	A&RD 3.3.7.	Web-oriented presentation of public domain institutions provided <sup>1</sup>		Donors & Government programs
<b>Project No 3</b>				
Reformation of Macedonian formal education and university curricula and according basic principles of SD (complete project)	A&RD 4.4.2.	The formal education (reformed education) improved <sup>1</sup>		Donors & Government programs
	A&RD 4.4.3.	Corresponding curricula in the formal education adopted and supported <sup>1</sup>		Donors & Government programs
<b>Project No 4</b>				
Encouraging	A&RD 5.2.	High flow of market		Government programs



Project	Result	Brief explanation	Estimated finances (millions EURO)	Possible financial sources
business environment for sustainable agriculture development (first phase)		information provided <sup>1</sup>		
	A&RD 5.3.	Strong support and development of the sector provided <sup>1</sup>		Donors & Government programs
	A&RD 5.3.1.	Good business environment (no administrative barriers) provided <sup>1</sup>		Government programs
	A&RD 5.3.3.	Coordinated inspection services at border terminals and internal markets conducted <sup>1</sup>		Government programs
	A&RD 5.3.4.	Proper customs documentation required for import-export introduced and provided <sup>1</sup>		Government programs
	A&RD 5.3.5.	Short and easy administrative procedures introduced and provided <sup>1</sup>		Government programs
<b>Project No 5</b>				
Support on execution of proper and effective agricultural policy and rural development in the Republic of Macedonia (first phase)	A&RD 2.3.1.	The strategy for agricultural and rural development adopted <sup>1</sup>		Government programs
	A&RD 2.1.1.	The reforms in the agriculture and food sector according EU&CAP supported <sup>1</sup>		Donors & Government programs
	A&RD 2.1.2.	Well formulation and high implementation of national politic for the agriculture provided <sup>1</sup>		Donors & Government programs
	A&RD 2.2.1.	The legal framework completed <sup>1</sup>		Donors & Government programs
	A&RD 2.3.2.	High level of mainstreaming of environment issues in the agriculture Introduced <sup>1</sup>		Donors & Government programs
	A&RD 4.1.1.	Optimal number of back yard production and part time farmers identified and supported <sup>1</sup>		Government programs
	A&RD 6.3.5	The National legislation in order with EU (GAP protocols) completed <sup>1</sup>		Donors & Government programs
<b>Project No 6</b>				



Project	Result	Brief explanation	Estimated finances (millions EURO)	Possible financial sources
Support on establishing of proper and effective institutional framework of Macedonian agricultural sector (first phase)	A&RD 1.1.1.	Existing and strong Export Promotion Agency supported <sup>1</sup>		Donors & Government programs
	A&RD 1.1.3.	Existing and strong Market Information System (MIS) support <sup>1</sup>		Donors & Government programs
	A&RD 1.5.	Proper and effective farm register system completed <sup>1</sup>		Government programs
	A&RD 2.2.3.	Strong capacity of the Extension Agency as a public service provided <sup>1</sup>		Donors & Government programs
	A&RD 2.3.3.	High level of awareness in the MOEPP and other stakeholder about agriculture and rural development Introduced <sup>1</sup>		Donors & Government programs
	A&RD 3.1.1.	Institutional framework for sustainable development of the society / sector established <sup>1</sup>		Government programs
	A&RD 3.1.3.	The implementing agencies / PPP, LABS, TEST supported and regularly controlled <sup>1</sup>		Donors & Government programs
	A&RD 3.1.4.	The clear competences among MAEWE and Ministry of Economy and Ministry of Environment, Ministry of Health, Ministry of Finance and other Ministries identified <sup>1</sup>		Government programs
	A&RD 3.2.	The strong institutional capacities of MAFWE completed <sup>1</sup>		Donors & Government programs
	A&RD 3.3.	Fast and proper decision making in the Ministry of Agriculture conducted <sup>1</sup>		Government programs
	A&RD 3.3.2.	The Council/ board for Agriculture like interdisciplinary body established <sup>1</sup>		Government programs
	A&RD 3.3.6.	Proper communication and procedures in the institutions insured <sup>1</sup>		Government programs





Project	Result	Brief explanation	Estimated finances (millions EURO)	Possible financial sources
	A&RD 5.5.1.	Optimal number of consulting companies provided <sup>1</sup>		Donors & Government programs
<b>Project No 7</b>				
Strengthening of Macedonian organizations directly involved in Agricultural sector monitoring, control, certification for proper implementation of necessary standards and SD principles (first phase)	A&RD 6.1.3.2.	The adequate implementation of "code of conduct" in GAP supported <sup>1</sup>		Donors & Government programs
	A&RD 6.1.4.	The minimal standards for healthily production fulfilled <sup>1</sup>		Donors & Government programs
	A&RD 6.3.5.2	The optimal number of advisors (HASSP, EUREPGAP) provided <sup>1</sup>		Donors & Government programs
	A&RD 6.3.5.3.	Implementations certification system (HASSP, EUREPGAP) established <sup>1</sup>		Donors & Government programs
<b>Project No 8</b>				
Support on establishing of proper and effective data management of Macedonian agricultural sector (complete project)	A&RD 2.4.	The proper data management started <sup>1</sup>		Donors & Government programs
	A&RD 2.5.	Available and accurate statistical data provided <sup>1</sup>		Donors & Government programs
<b>Project No 9</b>				
Introduction of proper financial instruments for sustainable development implementation (first phase)	A&RD 3.1.2.	Proper financial instruments for sustainable development implementation introduced <sup>1</sup>		Donors & Government programs
	A&RD 3.3.5.1.4.	Employment of professionals and trained young people ensued <sup>1</sup>		Donors & Government programs
	A&RD 4.4.	The higher level of investment in education and research related with agriculture sector provided and supported <sup>1</sup>		Donors & Government programs
<b>Project No 10</b>				
Establishing of mechanisms of proper and effective financial support of the Macedonian	A&RD 5.1.2.	The proper and existent guarantee funds organised <sup>1</sup>		Donors & Government programs
	A&RD 5.1.3.	The banks offer - the credit lines for start up businesses in agriculture		Donors & Government programs



Project	Result	Brief explanation	Estimated finances (millions EURO)	Possible financial sources
agricultural sector (complete project)		encouraged <sup>1</sup>		
	A&RD 5.1.4.	The companies to starts investments in agriculture encouraged <sup>1</sup>		Donors & Government programs
<b>Project No 11</b>				
Support and promotion of developing technologies for use of alternative energy sources from agriculture - "Energy farming" (complete project)	A&RD 6.2.	The optimal number of developing technologies for use of alternative energy sources from agriculture provided and promoted <sup>1</sup>		Donors & Government programs
	A&RD 6.2.4.	The pilot projects for "Energy Farming" on the national level introduced and supported <sup>1</sup>		Donors & Government programs
	A&RD 6.2.5.	The pilot projects for "Energy Farming" on the local level introduced and supported <sup>1</sup>		Donors & Government programs
	A&RD 6.2.6.	The investigations and development of new technologies for use of alternative energy and material sources from agriculture strongly supported <sup>1</sup>		Donors & Government programs
<b>Project No 12</b>				
Support in introduction of new equipment/mechanization and implementation of new advisory packages for more competitive Macedonian agriculture (first phase)	A&RD 6.3.5.1	The Government support in implementation of advisory packages provided <sup>1</sup>		Government programs
<b>Project No 13</b>				
Improvement of Macedonian human resources in the process of national sustainable development of the Macedonian agricultural	A&RD 4.3.	The high education of direct producers offered <sup>1</sup>		Government programs
	A&RD 4.3.1.	The strong management skills of producers and processors provided and supported <sup>1</sup>		Donors & Government programs
	A&RD 4.3.2.	The sufficient human resources		Donors & Government programs



Project	Result	Brief explanation	Estimated finances (millions EURO)	Possible financial sources
sector (first phase)		for EU integration local level provided and supported <sup>1</sup>		
	A&RD 4.3.3.	The sufficient human resources for EU integration on the state level provided and supported <sup>1</sup>		Donors & Government programs
	A&RD 4.4.1.	High capacities of consultancy skills and knowledge supported <sup>1</sup>		Donors & Government programs
	A&RD 4.4.4.	The vocational training in the sector provided <sup>1</sup>		Donors & Government programs
	A&RD 4.4.5.	The life long learning and adult learning methodologies provided <sup>1</sup>		Donors & Government programs
	A&RD 4.4.6.	The certification schemes for training and consultancy introduced <sup>1</sup>		Donors & Government programs
	A&RD 4.5.	The target groups for education and training defined <sup>1</sup>		Donors & Government programs
	A&RD 5.4.	The high absorption capacity for grants and investment funds offered <sup>1</sup>		Donors & Government programs
	A&RD 5.5.2.	Good coordination between science and practice introduced and supported <sup>1</sup>		Donors & Government programs
	A&RD 6.8.	The higher education of direct producers offered and supported <sup>1</sup>		Donors & Government programs
	A&RD 5.6.	The adequately trained managers in the Agriculture entrepreneurs supported <sup>1</sup>		Donors & Government programs
	A&RD 5.8.	The awareness process for forthcoming EU requirements of the sector supported <sup>1</sup>		Donors & Government programs
<b>Project No 14</b>				
Diversification of Income in Rural Regions via Sustainable Development Challenges (first phase)	A&RD 6.2.2.	The "Energy Farming" on the national level awareness increased <sup>1</sup>		Donors & Government programs
	A&RD 6.2.3.	The "Energy Farming" on the local level		Donors & Government programs



Project	Result	Brief explanation	Estimated finances (millions EURO)	Possible financial sources
		awareness increased <sup>1</sup>		
	A&RD 6.4.	The available information for market demand (quality requirements) provided <sup>1</sup>		Donors & Government programs
	A&RD 6.6.	Strong support of media, NGOs, associations, consulting companies of the sector provided <sup>1</sup>		Donors & Government programs
<b>Project No 15</b>				
Implementation of appropriate agriculture practices in Republic of Macedonia (first phase)	A&RD 1.3.1.	Proper optimization of agricultural input conducted <sup>1</sup>		Donors & Government programs
<b>Project No 16</b>				
Strengthening of Macedonian Agricultural sector and Rural Development via Macedonian media (first phase)	A&RD 6.2.2.	The "Energy Farming" on the national level awareness increased <sup>1</sup>		Donors & Government programs
	A&RD 6.2.3.	The "Energy Farming" on the local level awareness increased <sup>1</sup>		Donors & Government programs
	A&RD 6.4.	The available information for market demand (quality requirements) provided <sup>1</sup>		Donors & Government programs
	A&RD 5.5.2.	Good coordination between science and practice introduced and supported <sup>1</sup>		Donors & Government programs
	A&RD 6.3.5.1	The Government support in implementation of advisory packages provided <sup>1</sup>		Donors & Government programs
	A&RD 5.1.4.	The companies to starts investments in agriculture encouraged <sup>1</sup>		Donors & Government programs
	A&RD 2.3.3.	High level of awareness in the MOEPP and other stakeholder about agriculture and rural development Introduced <sup>1</sup>		Donors & Government programs



Project	Result	Brief explanation	Estimated finances (millions EURO)	Possible financial sources
	A&RD 1.1.3.	Existing and strong Market Information System (MIS) support <sup>1</sup>		Donors & Government programs
	A&RD 1.1.1.	Existing and strong Export Promotion Agency supported <sup>1</sup>		Donors & Government programs
	A&RD 2.3.2.	High level of mainstreaming of environment issues in the agriculture Introduced <sup>1</sup>		Donors & Government programs
	A&RD 2.1.1.	The reforms in the agriculture and food sector according EU&CAP supported <sup>1</sup>		Donors & Government programs
	A&RD 5.2.	High flow of market information provided <sup>1</sup>		Donors & Government programs
	A&RD 3.3.7.	Web- oriented presentation of public domain institutions provided <sup>1</sup>		Donors & Government programs

## Example: Forestry and Rural Development

### 1. Starting point: Consolidated definition of the results and timeline

(see also Objective Tree in Annex 2 and Chapter 6)

Overall Objectives (OO)		
F&RD OO 1	To improve forestry and rural economy of the Republic of Macedonia	Long term
F&RD OO 2	To improve forestry and to develop rural regions in the Republic of Macedonian socially balanced	Long term
F&RD OO 3	To improve forestry and to develop rural regions in the Republic of Macedonian environmentally balanced	Long term
Objectives/Results		
F&RD 1	Proper organized and managed forestry	Mid term
F&RD 1.1	The organization of the sector improved	Short term
F&RD 1.2	The conflict of interests (on individual level) among the responsible personnel in PE "Makedonski Sumi" avoided	Short term
F&RD 1.3	Adequate bodies for management setup	Short term
F&RD 1.3.1	Proper organization of Public Enterprise "Makedonski Sumi" Setup	Short term
F&RD 1.3.2	Finishing of the Cadastre supported	Mid term
F&RD 1.4	Professional working of the forestry (without influence of the politic) secured	Short term
F&RD 1.5	Government informed for the role of the forestry in the economy, rural development and ecology	Short term



<b>F&amp;RD 2</b>	<b>Implemented strong/efficient administrative institutional capacity of the sector</b>	Mid term
F&RD 2.1	The activities for strengthening of the institutional capacity of the Ministry of Agriculture, Forestry and Water Supply supported	Short term
F&RD 2.2	The activities for strengthening of the Institutional capacity of Public Enterprise "Makedonski Sumi" supported	Short term
F&RD 2.2.1	Employment of professionals and trained young people secured	Mid term
F&RD 2.2.2	Environment where the administrative staff will not be abused secured	Short term
F&RD 2.3	The interference of the politic on the Institutional activities avoided	Short term
F&RD 2.4	Proper setup of the institutions supported	Short term
F&RD 2.5	System for permanent professional improvement of the personnel established	Short term
F&RD 2.6	Optimal utilization of the institutional capacities secured	Mid term
F&RD 2.7	Optimal payment of the administrative staff secured	Mid term
F&RD 2.8	Transparency in the process of employment secured	Short term
F&RD 2.9	Proper and efficient control (by the Government) of the work of institutions for over passing negative factors secured	Short term
F&RD 2.10	The public awareness for the forestry increased	Short term
F&RD 2.11	Government informed for the role of the forestry in the economy, rural development and ecology	Short term
<b>F&amp;RD 3</b>	<b>Ensured application of effective technologies and methodology</b>	Mid term
F&RD 3.1	Application of proper methodologies for planning of the forestry secured	Mid term
F&RD 3.2	The application of modern technologic solutions in the forestry supported	Mid term
F&RD 3.3	The application of appropriate methodologies for determination of capacities for non-woods forestry products secured	Short term
F&RD 3.3.1	Proper methodology for guiding and maintain data base for endangered species introduced	Short term
F&RD 3.4	The public awareness for the forestry increased	Short term
F&RD 3.4.1	Government informed for the role of the forestry in the economy, rural development and ecology	Short term
<b>F&amp;RD 4</b>	<b>Implemented Law regulations</b>	Mid term
F&RD 4.1	The organized crime avoided	Short term
F&RD 4.1.1	The illegal logging avoided	Short term
F&RD 4.1.2	The adherence of the low regulations supported	Short term
F&RD 4.2	National Strategy for forest fire protection prepared	Short term
F&RD 4.2.1	General Management Plan prepared	Short term
F&RD 4.2.2	Forest inventory conducted	Mid term
F&RD 4.3	The overlapping of responsibilities in relation to integral spatial management and natural resources tackled a way	Short term
F&RD 4.4	The establishment of market management supported	Short term
F&RD 4.4.1	The law regulations that witch allows regular and sufficient financial assets secured	Short term
F&RD 4.5	Government informed for the role of the forestry in the economy, rural development and ecology	Short term



## 2. Overall list of projects

No	Project	Result(s)
<b>General</b>		
1	Preparation of General management plan	F&RD 1.1; F&RD 1.3; F&RD 1.3.1; F&RD 1.3.2; F&RD 1.4; F&RD 1.5; F&RD 2.1; F&RD 2.2; F&RD 3.1; F&RD 4.2.1; F&RD 4.2.2; F&RD 4.3
2	Conduction of forest inventory	F&RD 1.1; F&RD 1.3; F&RD 1.3.1; F&RD 4.2.2
<b>Polices, Legislation</b>		
3	Revision of the current laws and regulations, their improvement and adoption of new laws and regulations, which will ensure sustainable forestry	F&RD 1.1; F&RD 1.2; F&RD 1.3; F&RD 1.3.1; F&RD 1.4; F&RD 1.5; F&RD 2.2.2; F&RD 2.3; F&RD 2.4; F&RD 2.5; F&RD 2.6; F&RD 2.7; F&RD 2.8; F&RD 2.9; F&RD 4.1; F&RD 4.1.1; F&RD 4.1.2; F&RD 4.2.1; F&RD 4.3; F&RD 4.4; F&RD 4.4.1
<b>Institutional Framework</b>		
4	Strengthening the institutional capacity of the Ministry of Agriculture, Forestry and Water Economy	F&RD 1.1; F&RD 2.1; F&RD 2.2.1; F&RD 2.2.2; F&RD 2.3; F&RD 2.4; F&RD 2.5; F&RD 2.6; F&RD 2.7; F&RD 2.8; F&RD 2.9; F&RD 2.11;
5	Strengthening the capacity of the relevant institutions	F&RD 2.11;
<b>Financing</b>		
6	Investment in effective technologies and methodology	F&RD 1.5; F&RD 3.1; F&RD 3.2; F&RD 4.4.1
7	Financing of afforestation projects	F&RD 2.10; F&RD 2.11; F&RD 4.4.1
<b>Specific areas</b>		
<b>a) Forest protection</b>		
8	Preparation of National Strategy for forest fire protection	F&RD 4.2
9	Strengthening the capacity of the Reporting-Diagnostic-Prognostic Serves (RDPS)	F&RD 1.1; F&RD 1.4; F&RD 2.1
<b>b) Non woods values of the forest</b>		
10	Evaluation and promotion of non woods values of the forest	F&RD 1.1; F&RD 1.3; F&RD 1.3.1; F&RD 1.4; F&RD 1.5; F&RD 3.3; F&RD 3.3.1; F&RD 4.2.1; F&RD 4.3; F&RD 4.4; F&RD 4.4.1
<b>c) Illegal logging</b>		
11	Strengthening the capacity of the Forest Police	F&RD 2.1; F&RD 2.2.1; F&RD 2.3; F&RD 2.11; F&RD 4.1; F&RD 4.1.1
12	Creating and adopting proper law regulations concerning	F&RD 4.1.2; F&RD 4.5



No	Project	Result(s)
	illegal logging	
<b>d) Tourism</b>		
13	Promoting game tourism	F&RD 1.3.1; F&RD 2.1; F&RD 2.2; F&RD 3.4; F&RD 3.4.1
14	Promoting eco tourism	F&RD 1.3.1; F&RD 2.1; F&RD 2.2; F&RD 3.4; F&RD 3.4.1
<b>e) Local Authorities</b>		
15	Capacity building for municipalities enabling them to take an adequate participation in the forest management	F&RD 3.4; F&RD 3.4.1
<b>f) Information and Awareness</b>		
16	Conducting permanent public awareness raising actions for the role and importance of the forestry in the economy, rural development and environment	F&RD 2.1; F&RD 2.2; F&RD 3.4; F&RD 3.4.1
17	Launching of targeted public awareness raising programmes reading forest fire protection	F&RD 2.1; F&RD 2.2; F&RD 3.4; F&RD 3.4.1
18	Launching of targeted public awareness raising programmes reading illegal logging	F&RD 2.1; F&RD 2.2; F&RD 3.4; F&RD 3.4.1

### 3. Project proposals addressing some short-term results

Project	Result	Brief explanation	Estimated finances (millions EURO)	Possible financial sources
<b>Strategic Documents</b>				
Study on the areas, resource capacities and formulation of criteria for ecologically friendly gathering and using of the non wood forest products	– Elaborated study with description of natural resources, capacities, the quantities, and normative for its sustainable management	At the moment almost all profit in the forestry comes from logging and sailing of wood. The concept of a modern and sustainable forestry means to be used all potentials of forests but on sustainable way. With this study will be defined the areas and resources of the non wood goods. Also will be defined capacities and formulated criteria's for ecologically friendly gathering	0.3	– MAFWE – PEMF – Donation





Project	Result	Brief explanation	Estimated finances (millions EURO)	Possible financial sources
		and using of the non wood forest products and goods.		
National Strategy for forest fires protection	– Prepared National Strategy for prevention and protection of forest fires with analysis on the condition and the rate of risk of forest fires with draft measures for control and suppression	One of the most important factors with significant negative influence on the forestry and forest in Macedonia is forest fire. Only in the last year was burned about 35 000 ha forest and forest land and the amount of economic loses in the forestry were estimated on 30,000,000 Euro. With this Strategy will be defined the organization of the relevant institutions and the main short term end long term measures for prevention and protection of forest fires	0.3	– FAO – Central budget (MAFWE)
General Development Plan for forest management	– General forest management plan is developed and approved	Beside the National strategy for sustainable development of forestry the General plan for forest management is the second most important document. It contains very precise data for the forest management in the certain country.	0.4	– FAO - Central budget (MAFWE) – Other donors
<b>Institutional capacity</b>				



Project	Result	Brief explanation	Estimated finances (millions EURO)	Possible financial sources
Development of program for permanent professional improvement of the personnel in the relevant institutions (MAFWE, JPMF...)	-Developed long-life learning program	This program will secure attending of the news in the World and European forestry important for our country	0.3	<ul style="list-style-type: none"> <li>- Central budget (MAFWE)</li> <li>- Other donors</li> </ul>
Technical and material equipment acquisition for the Forest police	<ul style="list-style-type: none"> <li>- Forest guarding is improved and illegal activities in forest are decreased.</li> <li>- The Forest police is equipped</li> </ul>	The forest guarding is precondition for sustainable forestry. With avoiding of illegal logging and other illegal activities in the forest we will ensure environment for establishment and functioning of sustainable forestry in Macedonia. Also, it will be significant contribution in the forest protection, improvement of its quality and health.	1	<ul style="list-style-type: none"> <li>-FOA</li> <li>-Central budget (MAFWE)</li> <li>- Other donors</li> </ul>
<b>Effective technologies and methodology</b>				
Application of modern technologic solutions in the forestry	<ul style="list-style-type: none"> <li>- Started application of modern technologic solutions in the forestry</li> <li>- Increased efficiency of the forestry, its input in GDP</li> <li>- Increased protection of the environment</li> </ul>	The sustainable forestry understood using of modern technologic solutions in order to achieve better efficiency but in agreement with the environment.	2	<ul style="list-style-type: none"> <li>- PEMF</li> <li>- Private investments</li> <li>- Donors</li> </ul>
<b>Information and Awareness</b>				
Organizing of arising public awareness campaign for the role and importance of the	- Raised public awareness regarding for the role and importance of the forestry in the society especially in the rural	One of the very important parts of the sustainable forestry is the active participation of the community in the	0.3	<ul style="list-style-type: none"> <li>- Central budget (MAFWE)</li> <li>- Donors</li> </ul>



Project	Result	Brief explanation	Estimated finances (millions EURO)	Possible financial sources
forestry in the society, especially in the rural development	development	forest management (forest protection, using of non wood goods and products etc).		

## Example: Environment

### 1. Starting point: Consolidated definition of the results and timeline

(see also Objective Tree in Annex 2 and Chapter 6)

Overall Objectives (OO)		
ENV OO 1	<b>To establish healthy ecosystems with rich biodiversity potential and preserved natural resources for future generations.</b>	Long term
ENV OO 2	<b>To facilitate economic progress through new job opportunities devoted to environment protection and improvement.</b>	Long term
ENV OO 3	<b>To support social prosperity of rural municipalities via recognizing and utilizing the potentials of healthy ecosystems' values.</b>	Long term
Objectives/Results		
ENV 1	<b>Proper Monitoring System of the Environment and National Program for Environmental Monitoring established.</b>	Mid term
ENV 1.1	National Systems Completed: - Environmental Info System - Spatial Plan Info System	Short term
ENV 1.2	Obtained Reliable Monitoring Data for Environment in RM made available	Short term
ENV 1.3	Regular Monitoring in all Environmental Media prepared and implemented	Short term
ENV 1.4	National Set of Indicators for Environment Prepared	Short term
ENV 1.5	Reconstruction the Environmental monitoring system by including relevant scientific research institutions in Macedonia and establishing the supervision by relevant EU scientific institutions implemented	Short term
ENV 2	<b>Environment as a Priority in the Government of RM officially recognized.</b>	Short term
ENV 2.1	Eco-tourism development forced	Short term
ENV 2.2	Citizens' responsibility for environmental damage increased	Short term
ENV 2.3	Healthy food production forced	Short term
ENV 2.4	Implementation of eco-remediation systems introduced and highly supported	Short term
ENV 2.5	Public awareness on Environmental Protection and Sustainable Development concept increased	Short term
ENV 2.6	Additional financial mechanisms and sources for environment enabled	Short term
ENV 2.7	Budget allocation to environmental investments increased	Short term
ENV 2.8	Adequate split of competences among the governmental sectors regarding environment forced	Short term



ENV 2.8.1	Cooperation with MoEPP increased	Short term
ENV 2.8.2	Inter-sectoral coordination and cooperation in the Government regarding Environment increased	Short term
ENV 2.8.3	Budget allocation for Environment increased	Short term
<b>ENV 3</b>	<b>High level of implementation of Laws on Environment achieved.</b>	Short term
ENV 3.1	Penalties for damages to environment significantly increased	Short term
ENV 3.2	High Administration efficiency on Environment and Functional eco-police force established	Short term
ENV 3.3	Central and Local Capacities for implementation of passed Laws increased	Short term
ENV 3.3.1	Institutional and Administration capacity on Environment at municipality level increased	Short term
ENV 3.3.1.1	Institutional framework of Ministry of Environment and Physical Planning and relevant National environmental institutions finished	Short term
ENV 3.4	EU <i>acquis</i> transposition into the National legislation finished	Short term
ENV 3.4.1	Preparation and adoption of needed by-laws, plans and programs finished	Short term
ENV 3.4.1.1	All relevant Environmental laws adopted	Short term
<b>ENV 4</b>	<b>Full Efficiency of the Ministry of Environment and Physical Planning and the relevant National environmental institutions achieved.</b>	Short term
ENV 4.1	Public participation in decision making process in environment protection strongly increased	Short term
ENV 4.2	Information flow on state and trends on Environment in RM highly increased	Short term
ENV 4.3	Legislation on Environment efficiently implemented	Short term
ENV 4.4	Necessary changes for achieving the appropriate human and financial resource organization set-up within the MoEPP done	Short term
ENV 4.4.1	Corruption in MoEPP prevented	Short term
ENV 4.4.1.1	Partization in MoEPP prevented	Short term
ENV 4.4.1.2	Responsibility of the Minister and Head of sectors in MoEPP for not efficient Ministry and the errors or not taking actions in prevention of the deterioration of the environment in RM enforced	Short term
ENV 4.4.2	Independence of the foreign investments achieved	Mid term
ENV 4.4.2.1	Alternative sources of funding developed	Short term
ENV 4.4.2.2	Appropriate budget allocation for Environment established	Short term
ENV 4.4.3	Properly educated cadre produced	Mid term
ENV 4.4.3.1	Environmental curricula at universities included	Short term
ENV 4.4.3.2	Public awareness on SD increased	Short term
ENV 4.5	Priority in Environmental protection in the RM Government recognized	Short term

## 2. Overall list of projects

No	Project	Result(s)
<b>General</b>		
1	Development of river basement management plan for Crna Reka River	ENV OO1; ENV OO2; ENV OO3
<b>Polices, Legislation</b>		
2	Preparation and adoption of needed by-laws, plans and programs for environment in RM	ENV 3; ENV 3.1.; ENV 3.4.1



<b>Institutional Framework</b>		
3	Strengthening the capacity of the Ministry of Environment and Physical Planning	ENV 4; ENV 4.4; ENV 4.4.1; ENV 4.4.1.1; 4.4.1.2
4	Strengthening the capacity of the relevant National environmental institutions	EN 3; ENV 3.3; ENV 3.3.1
<b>Financing</b>		
5	Increasing the budget allocation for environment	ENV 2; ENV 2.7; ENV 2.8; ENV 2.8.1; ENV 2.8.2; ENV 2.8.3
6	Promotion and pipelining of the additional financial mechanisms and sources for environment	ENV 2; ENV 2.6; ENV 3; ENV 3.1; ENV 4; ENV 4.4.2; ENV 4.4.2.1
<b>Specific areas</b>		
<b>a) Eco-remediation</b>		
7	Promotion and implementation of eco-remediation systems in degraded environmental media	ENV 2; ENV 2.4
<b>b) Eco-tourism</b>		
8	Promotion and implementation of eco-tourism in village Stenje, Lake Prespa	ENV 2; ENV 2.1; ENV 2.2; ENV 2.3; ENV 2.4; ENV 2.5
<b>c) Monitoring system</b>		
8	Establishing of Environmental and Spatial Plan GIS based Info systems	ENV 1; ENV 1.1; ENV 1.2; ENV 1.3; ENV 1.4; ENV 1.5
<b>d) Information and Awareness</b>		
9	Launching of targeted public awareness raising programmes on the role of environment in SD	ENV 2; ENV 2.2; ENV 4; ENV 4.1; ENV 4.2; ENV 4.4.3; ENV 4.4.3.2; ENV 4.5
10	Developing relevant educational programs	ENV 2; ENV 2.2; ENV 2.5; ENV 4.1



### 3. Project proposals addressing some short-term results

Project	Result	Brief explanation	Estimated finances (millions EURO)	Possible financial sources
<b>ENVIRONMENTAL HOT SPOTS</b>				
Construction and upgrading of sewerage system and waste water treatment situation in the city of Skopje	Sewage system upgrade and wastewater treatment plant construction	Study on Wastewater management in Skopje - feasibility study under preparation by JICA, 2007-2008. Content of FS: -Development of plan for wastewater management -Development of FS for sewerage facilities including sewerage treatment plant -Development of action plan for institutional and financial system improvement -Development of action plan for industrial wastewater management and water quality monitoring of wastewater (550- 600.000 inh).	will be determined with the preparation of the Study (≈ 90)	IPA
Rehabilitation of the wastewater treatment plant at organic-chemical industry, AD OHIS, Skopje	Industrial WWTP rehabilitation	- Industrial chemical pollution; - Pre-feasibility study exists; - Project implementation will have a significant health impact.	11,415	Ref: PIP ( co-financing)
Wastewater Treatment Plant and sewerage for the City of Veles	Sewage system upgrade and wastewater treatment plant construction	Construction and reconstruction of the sewerage network, construction of main collectors and WWTP for 100.000 p.e. feasibility study prepared in 2000 – should be revised/updated	14,5	IPA Ref: PIP (co-financing)
Wastewater Treatment Plant for the town of Prilep	Sewage system upgrade and wastewater treatment plant construction	On going Project: "Municipal Waste Water Management, FYR Macedonia". Scope: The overall objective is to	13,00	IPA Ref: PIP (co-financing)



Project	Result	Brief explanation	Estimated finances (millions EURO)	Possible financial sources
		<p>enhance the Environmental. Management by improving national capacities to implement sustainable WW management projects. Specific objectives are:</p> <ul style="list-style-type: none"> <li>• To prepare a municipal wastewater collection and treatment project pilot study for Prilep, with all background studies, reports and recommendations to the standard required to accompany an application for IPA donor funding;</li> <li>• To increase the local capacity for project preparation. FS is under preparation, and will be finalized in May 2008.</li> </ul>		
Treatment of HCH waste from former lindane production plant in organo-chemical industry, AD OHIS, Skopje	Industrial waste treatment	Waste incineration. Pre-feasibility study exists. Population benefiting from project implementation - 50,000.	6,5	WB
Wastewater Treatment Plant for the City of Bitola	Sewage system upgrade and wastewater treatment plant construction	WWTP, extension and reconstruction of sewerage network, construction of separate collection system (storm water collection) for 100.000 p.e. Feasibility study prepared in 1997 – should be revised/updated	≈ 13	IPA
Air Desulphurization in TTP Oslomej/Kicevo	Industrial air emission and pollution treatment	Semi Dry Scrubber Installation for the REK "Oslomej" Power Plant. Population benefiting from project: 50,000	≈ 9	



Project	Result	Brief explanation	Estimated finances (millions EURO)	Possible financial sources
		inhabitants.		
Hydro-melioration System "Konsko", City of Gevgelija	Irrigation system improvement	Part of the project: Dorjan Lake Protection. The project includes a dam on River Konska, drinking water supply system, irrigation system, and water supply system pipeline for Dojran Lake.	≈ 91	
Construction of hydro-system Orizarska Reka, Eastern Macedonia		Project implementation starts with the water supplying phase - Water Treatment Plant is built and starts operation in June 2005. Considering irrigation system, the entire irrigation network is built - it needs minimum activities to direct the water into the existing network. There is a shortage of funds for: 1) Project implementation for construction of the dam with total accumulative capacity of 23.000.000 m <sup>3</sup> water and 2) building of hydro-energetic assets.	42,5	
Reclamation, enlargement and recultivation of electrostatic precipitator ashes landfill - Oslomej TPP	Eco-remediation	Remediation and recultivation of the ash dumping sides	0,775	
<b>PUBLIC INVESTMENT PROGRAMME 2007 - 2009 (ENVIRONMENT)</b>				
<b>WASTE WATER COLLECTION AND TREATMENT</b>				
Debar Sustainable water resources management project	Water management	a. rehabilitation and upgrade of the deteriorated water distribution network b. extension of the water supply service to new customers c. upgrade of the	6,034	PIP





Project	Result	Brief explanation	Estimated finances (millions EURO)	Possible financial sources
		overall system performance and operational efficiency (SCADA) d. Extension of the wastewater collection coverage e. wastewater treatment 18.000 inh. Feasibility study prepared in 2006		
Construction of WWTP in Gevgelija	Sewage system upgrade and wastewater treatment plant construction	Construction of waste water treatment plan in Gevgelija (25000 inh.) Feasibility study and technical documentation is ready for tendering procedure (2 mil. eur already allocated from Greek government)	6	PIP
Tetovo drinking water supply, urban waste water collection and treatment project	Water management	a. rehabilitation and upgrade of the deteriorated water distribution network b. extension of the water supply service to new customers c. upgrade of the overall system performance and operational efficiency (SCADA) d. Extension and rehabilitation of the sewerage network e. construction of WWTP 145.000 population equivalent p.e. Feasibility study prepared in 2004	75	PIP
Strumica water supply, urban waste water collection and treatment project	Water management	Construction of potable water supply and urban waste water collection and treatment system for 72.000 p.e. Feasibility study prepared in 2000 should be revised/updated	10	PIP
<b>WASTE MANAGEMENT</b>				
Upgrading of solid	SD waste	Upgrading/ or	10	PIP



Project	Result	Brief explanation	Estimated finances (millions EURO)	Possible financial sources
waste collection infrastructure in the city of Skopje, including improvement of infrastructure for separate collection, recycling and / or composting	management	construction of solid waste collection infrastructure in Skopje * JICA, feasibility study under development(2007/2008) * The Project budget will be clarified after preparation of feasibility study		
Solid waste management in South West region of Republic of Macedonia	SD waste management	Construction of solid waste collection infrastructure in South West region of Republic of Macedonia (including facilities for separate collection, recycling and / or composting) * feasibility study was prepared in 2004 – should be revised/updated * This is an indicative budget of the overall amount of the project according to FS * implementation of the project depends on its readiness for implementation, available co-financing and IPA allocation for env. within the period 2010-2013	20	PIP
Solid waste management in Polog region of Republic of Macedonia	SD waste management	Construction of solid waste collection infrastructure in Polog region of Republic of Macedonia (including facilities for separate collection, recycling and / or composting) * Feasibility study under preparation (2007-2008) * This is an	7,5	PIP



Project	Result	Brief explanation	Estimated finances (millions EURO)	Possible financial sources
		indicative budget of the overall amount of the project according to FS		
Solid waste collection infrastructure in North-East region of Republic of Macedonia	SD waste management	Construction of solid waste collection infrastructure in North-East region of Republic of Macedonia (including facilities for separate collection, recycling and / or composting). Feasibility study is prepared 2004 – should be revised/updated *This is an indicative budget of the overall amount of the project according to FS *implementation of the project depends on its readiness for implementation, available co-financing and IPA allocation for environment within the period 2010-2013	7,2	PIP
Solid waste collection infrastructure in Central-East region of Republic of Macedonia	SD waste management	Construction of solid waste collection infrastructure in Central-East region of Republic of Macedonia (including facilities for separate collection, recycling and / or composting). Feasibility study is prepared 2004 – should be revised/updated *This is an indicative budget of the overall amount of the project according to FS *implementation of the project depends on its readiness for implementation,	7,67	PIP



Project	Result	Brief explanation	Estimated finances (millions EURO)	Possible financial sources
		available co-financing and IPA allocation for environment within the period 2010-2013		
<b>BIODIVERSITY</b>				
Improvement of protected areas system management	Improvement of protected areas system management	*Develop a spatial planning database -spatial and urban planning as it relates to protected areas *Prepare management plans for protected areas according to accepted international methodologies	>1	RM Budget; WB; donors (Biodiversity Strategy and Action Plan of the Republic of Macedonia)
Establishment of a network of protected areas	Protected areas network in line with EU directives	*Evaluate the values and perform a review of the existing categories of protected areas *Establish a coherent eco-network of regions with specific natural values in accordance with European criteria		RM Budget; WB; donors (Biodiversity Strategy and Action Plan of the Republic of Macedonia)
Restoration of protected areas	Restoration	*Restore natural lakes *Restore marshes *Restore rivers *Restore forests	>100	RM Budget; WB; donors (Biodiversity Strategy and Action Plan of the Republic of Macedonia)
Revitalization and In - Situ conservation outside of protected areas	Studies and restoration of key ecosystems	*Perform study to evaluate the current level of degradation in key ecosystems *Restore and conserve different segments of key ecosystems	>100	RM Budget; WB; donors (Biodiversity Strategy and Action Plan of the Republic of Macedonia)
Conservation of species	Status of the species	*Conserve the most threatened species *Prepare Red Data Lists *Prepare Red Data Books *Prepare Action Plans regarding the attended species	>10	RM Budget; WB; donors (Biodiversity Strategy and Action Plan of the Republic of Macedonia)
Improvement of	Conservation of	*Prepare	>100	RM Budget; WB; donors



Project	Result	Brief explanation	Estimated finances (millions EURO)	Possible financial sources
mechanisms for Ex-Situ conservation	species and gene pool outside protected areas	methodologies for the re-introduction of extinct species *Establish national centres for ex-situ conservation of plant and animal species		(Biodiversity Strategy and Action Plan of the Republic of Macedonia)
Assessment and determination of limits for use of biological resources	Sustainable protection and utilization of resources	*Qualitative and quantitative assessment of bio-resources in the Republic of Macedonia *Determine economically valuable wild species *Determine limits for the use of biological resources	>1	RM Budget; WB; donors (Biodiversity Strategy and Action Plan of the Republic of Macedonia)
Promotion of traditional use of biodiversity and eco - tourism	Rural development and eco-tourism promotion	*Prepare studies concerning traditional uses of biodiversity	>2	RM Budget; WB; donors (Biodiversity Strategy and Action Plan of the Republic of Macedonia)
Research projects	Scientific projects	*Prepare vegetation map *Prepare study on endemic and relict flora and fauna *Prepare study on the threatened species and their natural habitats *Prepare study on endangered habitats *Study to evaluate the levels of the threats to wetland habitats *Study to evaluate the levels of threats to dry land/grass land and mountain ecosystems *Prepare study regarding development of a national strategy for protection against fire in natural areas	>100	RM Budget; WB; donors (Biodiversity Strategy and Action Plan of the Republic of Macedonia)



Project	Result	Brief explanation	Estimated finances (millions EURO)	Possible financial sources
Monitoring activities	Monitoring according to EU directives	*Identification and monitoring of priority and threatened species, communities and ecosystems *Monitor Ohrid Lake *Monitor Doyran Lake *Monitor Prespa Lake *Monitor Vardar River *Monitor threatened wild plant species present in national and international trade (included in the CITES convention) *Monitor the influence of climate changes on biodiversity	>100	RM Budget; WB; donors (Biodiversity Strategy and Action Plan of the Republic of Macedonia)
Development of data bases	Establishing of data base and environmental info system	*Develop data base for biodiversity (excluding agro-biodiversity)	1	RM Budget; WB; donors (Biodiversity Strategy and Action Plan of the Republic of Macedonia)

## Example: Policy and Legal Issues

### 1. Starting point: Consolidated definition of the results and timeline

(see also Objective Tree in Annex 2 and Chapter 6)

Overall Objectives (OO)		
P&LI OO 1	To develop sound institutional and legal system for SD, supported by integrated policy approach towards SD and harmonised legislation with EU acquis	Mid term
Objectives/Results		
P&LI 1	Developed policy and institutional system for SD	Mid term
P&LI 1.1	Sound SD policy, with respect to the three SD pillars (economics, environmental, social) created	Mid term
P&LI 1.1.1	Strategic documents for SD elaborated	Mid term
P&LI 1.1.1.1	Cross-cutting of the sectors' strategies (and policies) completed	Mid term
P&LI 1.1.1.2	Principles for SD formulated	Short term
P&LI 1.1.1.3	Participatory approach in SD policy-making developed	Short term
P&LI 1.1.1.4	Inter-ministerial cooperation among policy-makers strengthened	Short term
P&LI 1.1.1.5	SD synergies among sectors identified	Short term
P&LI 1.1.2	Set institutional structure for SD policy making and implementation	Mid term



P&LI 1.1.2.1	New or adjusted existing institutions for SD policy created	Mid term
P&LI 1.1.2.2	Responsibilities among the SD policy makers clarified	Short term
P&LI 1.1.2.3	Institutions for SD policy making and implementation identified	Short term
P&LI 1.1.2.4	SD dimension from sectors' perspective identified	Short term
<b>P&amp;LI 1.2</b>	<b>Sound sector's policies with SD dimension created/ revised</b>	Mid term
<b>P&amp;LI 1.2.1</b>	<b>Sectors' policies with SD dimension formulated/ revised</b>	Mid term
P&LI 1.2.1.1	Sectors' policies with SD dimension related to SD pillars drafted	Mid term
P&LI 1.2.1.2	Cross-cutting of sectors' policies, from SD perspective completed	Mid term
P&LI 1.2.1.3	Inter-ministerial cooperation in formulating sectors' policies strengthened	Short term
P&LI 1.2.1.4	Need for introduction/revision of SD dimension in sectors' policies identified	Short term
<b>P&amp;LI 1.2.2</b>	<b>Sectors' strategic documents, with respect to SD dimension elaborated/ revised</b>	Mid term
P&LI 1.2.2.1	Sectors' strategic documents, with respect to SD dimension drafted	Mid term
P&LI 1.2.2.2	Revision of the existing sectors' strategic documents, from perspective of SD completed	Mid term
P&LI 1.2.2.3	Inter-ministerial cooperation in drafting sectors' strategic documents strengthened	Short term
P&LI 1.2.2.4	Need for elaboration of sectors' strategic documents identified	Short term
<b>P&amp;LI 1.3</b>	<b>Sectors' legislation with EU acquis harmonised, with respect to SD</b>	Mid term
<b>P&amp;LI 1.3.1</b>	<b>Sectors' legislation with respect to SD adopted/ amended</b>	Mid term
P&LI 1.3.1.1	Sectors' legislation drafted/ revised	Mid term
P&LI 1.3.1.2	Inter-ministerial cooperation in drafting SD cross-cutting aspects of legislation strengthened	Short term
P&LI 1.3.1.3	Harmonization of the sectors' legislation with respect to SD scheduled	Short term
P&LI 1.3.1.4	Responsibilities of institutions in drafting SD cross-cutting aspects of legislation clarified	Short term
P&LI 1.3.1.5	Level of SD harmonization needed in sectors legislation identified	Short term
<b>P&amp;LI 1.3.2</b>	<b>Institutional capacity for harmonization of SD aspects of sectors' legislation strengthened</b>	Mid term
P&LI 1.3.2.1	Assistance for drafting of SD aspects of sectors' legislation (from EU and other donors) provided	Short term
P&LI 1.3.2.2	Means for institutional capacity building identified	Short term
P&LI 1.3.2.3	Needs for institutional capacity building for harmonization of SD aspects of sectors' legislation identified	Short term
<b>P&amp;LI 1.4</b>	<b>Mechanisms for implementation of SD policy and legislation created</b>	Mid term
<b>P&amp;LI 1.4.1</b>	<b>Mechanisms for implementation of SD policy created</b>	Mid term
P&LI 1.4.1.1	Cross-cutting of the sectors' instruments for implementation of SD policy completed	Mid term
P&LI 1.4.1.2	Sectors' instruments for implementation of SD policy identified	Short term
P&LI 1.4.1.3	Inter-ministerial cooperation for creation of instruments for implementation of SD policy strengthened	Short term
P&LI 1.4.1.4	Responsibilities of policy-makers in implementation of SD policy clarified	Short term
P&LI 1.4.1.5	Institutional set-up needed for implementation of SD policy identified	Short term
<b>P&amp;LI 1.4.2</b>	<b>Mechanisms for implementation of SD aspects of legislation</b>	Mid term



	<b>created</b>	
P&LI 1.4.2.1	Cross-cutting of the sectors' instruments for implementation of SD aspects of legislation making and implementation completed	Mid term
P&LI 1.4.2.2	Sectors' instruments for implementation of SD legislation identified	Short term
P&LI 1.4.2.3	Inter-ministerial cooperation for creation of instruments for SD strengthened	Short term
P&LI 1.4.2.4	Responsibilities of sectors' institutions in implementation of SD legislation clarified	Short term
P&LI 1.4.2.5	Institutional set-up needed for implementation of SD legislation identified	Short term

## 2. Overall list of projects

No	Project	Result(s)
<b>General</b>		
1.	Awareness raising for sustainable development	P&LI 1.1; P&LI 1.1.1.3; P&LI 1.2; P&LI 1.4
<b>Polices, Legislation</b>		
2	Technical assistance for support of integral SD policy approach and SD implementation, by policy area	P&LI 1; P&LI 1.1; P&LI 1.1.1; P&LI 1.1.1.1; P&LI 1.1.1.2; P&LI 1.1.1.3; P&LI 1.1.1.5; P&LI 1.2; P&LI 1.2.1; P&LI 1.2.1.1; P&LI 1.2.1.2; P&LI 1.2.1.4; P&LI 1.2.2; P&LI 1.2.2.1; P&LI 1.2.2.4; P&LI 1.4.1; P&LI 1.4.1.1; P&LI 1.4.1.2;
3	Technical assistance for harmonization and implementation of the sectors' legislation with the EU acquis, with respect to the SD	P&LI 1.3; P&LI 1.3.1; P&LI 1.3.1.1; P&LI 1.3.1.2; P&LI 1.3.1.3; P&LI 1.3.1.4; P&LI 1.3.1.5; P&LI 1.3.2.1; P&LI 1.4.2; P&LI 1.4.2.1; P&LI 1.4.2.2;
<b>Institutional Framework</b>		
3	Set-up of the institutional framework for sustainable development	P&LI 1.1.2; P&LI 1.1.2.1; P&LI 1.1.2.2; P&LI 1.1.2.3; P&LI 1.1.2.4; P&LI 1.3.2; P&LI 1.4.1.5; P&LI 1.4.2.5
4	Capacity building for SD in the relevant institutions	P&LI 1.3.2; P&LI 1.3.2.1; P&LI 1.3.2.2; P&LI 1.3.2.3; P&LI 1.4;
5	Strengthening of the cooperation among relevant institutions for SD policy creation and implementation	P&LI 1.1.1.4; P&LI 1.1.2.2; P&LI 1.1.2.4; P&LI 1.2.1.3; P&LI 1.2.2.3; P&LI 1.4.1.3; P&LI 1.4.1.4; P&LI 1.4.2.3; P&LI 1.4.2.4

## 3. Project proposals addressing some short-term results





Project	Result	Brief explanation	Estimated finances (millions EURO)	Possible financial sources
Awareness raising for sustainable development	Increased awareness of the concept, policy and mechanisms for SD	Campaign about SD aiming to increase the understanding about the SD concept, policy and mechanisms of the public authorities, business entities, citizens and NGO sector		Budget Bilateral assistance
Set-up of the institutional framework for sustainable development	Established operational institutions for SD policy making and legislation	Identification of the need for establishment of new or adjustment of the existing institutions (within the line ministries) for SD; Set-up of the institutions and their operationalisation (premises, staffing, equipment, training, etc.)		Budget IPA Bilateral assistance
Capacity building for SD in the relevant institutions	Trained people for SD in the public administration institutions capable to efficiently implement NSSD and spread the SD concept to the grass-roots level.	SD Train the Trainers programme for the staff in the public administration institutions, by policy areas (covering the economic, socio-cultural and environmental perspectives); SD tailored training for staff in relevant institutions with regards to specific issues		Budget EC Programmes Bilateral Assistance
Strengthening of the cooperation among relevant institutions for SD policy creation and implementation	Strong cooperation among the relevant institution supporting integral SD policy approach	Clarification of the responsibilities of the sectors' institutions with regards to SD; identification of SD synergies among sectors and mechanisms for cooperation; development of the system of effective and efficient communication among the institutions, including joint projects		Budget Bilateral Assistance



## Example: SMiLEs

### 1. Starting point: Consolidated definition of the results and timeline

(see also Objective Tree in Annex 2 and Chapter 6)

Overall Objectives (OO)		
<b>SMILES OO 1</b>	To provide and enforce <b>environmental friendly SMILES</b> (cost-effective energy use, utilization of renewable energy sources, environmental management system (EMS), pollution abatement)	Long term
<b>SMILES OO 2</b>	To enforce <b>economic prosperous SMILES</b> (competitive, productive, innovative, new added value, establishment of new and growth of existing SMILES, vertical/horizontal networking)	Long term
<b>SMILES OO 3</b>	<b>To foster social cohesive SMILES</b> (good working conditions, social care for the employees, education and career development, social welfare of the local/national community. HRD)	Long term
Objectives/Results		
<b>SMILES 1</b>	<b>Favourable SMILES' environment Enforced</b>	Short term
SMILES 1.1	Strong institutional capacity completed	Short term
SMILES 1.1.1	Sufficient capacity and organization of public administration for providing services to SMILES established	Short term
SMILES 1.1.1.1	Institutionalization of the SMILES forum/dialogue between economy and government developed	Short term
SMILES 1.1.1.1.1	Confidence between SMILES and government prepared	Short term
SMILES 1.1.1.2	Efficient three-parties social dialogue (government, entrepreneurs, workers) enabled	Short term
SMILES 1.1.1.3	Efficient Inspection services (labour, market, environment, sanitary, construction, SMILES) established	Short term
SMILES 1.1.1.4	Sufficient auditing institutions and practice in the state administration established	Short term
SMILES 1.1.1.5	Sufficient number of certified bodies for implementing standards established	Short term
SMILES 1.1.1.6	Sufficient Coordination of state administration enabled	Short term
SMILES 1.1.1.7	High transparency of institutions enabled	Short term
SMILES 1.1.1.8	Stability of HRM of administration staff at central and local level after each election enabled	Short term
SMILES 1.1.1.9	Strong capacity (knowledge) of the administration at central and local level in the implementation of the SD reforms completed	Short term
SMILES 1.1.1.10	Sufficient HR in the Public Administration for providing services to SMILES enabled	Short term
SMILES 1.1.1.11	Appropriate measures to fight Corruption designed and implemented	Short term
SMILES 1.1.2	Efficient Legal and judiciary system created	Short term
SMILES 1.1.2.1	Institutions for ownership relations secured	Short term
SMILES 1.1.2.1.1	Efficient judiciary system established	Short term



SMILES 1.1.2.1.1.1	Stable changes for construction planned	Short term
SMILES 1.1.2.1.1.2	Stable changes of physical planning planned	Short term
SMILES 1.1.2.1.1.3	Good cadastre evidence designed	Short term
SMILES 1.1.2.1.1.4	Stable changes in the legal regulations planned	Short term
SMILES 1.1.2.1.1.5	Compliance with legal regulations enabled	Short term
SMILES 1.1.2.1.1.6	Created Legislation enforced	Short term
SMILES 1.1.2.1.2	Appropriate measures to fight Corruption designed and implemented	Short term
SMILES 1.2	Legal environment prepared	Short term
SMILES 1.2.1	Regulations for statistical bases for SMILES defined	Short term
SMILES 1.2.2	Law for SMEs enacted	Short term
SMILES 1.2.2.1	Law for renewable energies enacted	Short term
SMILES 1.2.2.2	Sufficient legal regulations for facilitating the start up of new SMEs prepared	Short term
SMILES 1.2.2.3	Law for performing activities of small size enacted	Short term
SMILES 1.2.3	Administrative procedures in implementing legal regulations downsized	Short term
SMILES 1.2.4	Classification of SMEs with EU regulations harmonized	Short term
SMILES 1.3	Efficient business structure and information flow provided	Short term
SMILES 1.3.1	Transport infrastructure developed	Short term
SMILES 1.3.2	Sufficient sector connection of SMILES established	Short term
SMILES 1.3.2.1	Suitable business structure created	Short term
SMILES 1.3.2.1.1	Strong capacity of information/ consulting centres established	Short term
SMILES 1.3.2.1.2	Fully operational TIRZ established	Short term
SMILES 1.3.3	Information system of SMILES at state administration level enforced	Short term
SMILES 1.3.4	Campaign at state level for entrepreneurship and SD of SMILES (especially among youth and women) enacted	Short term
SMILES 1.3.5	Sufficient Information flows and raise Awareness on SMILES' SD established	Short term
<b>SMILES 2</b>	<b>Strong production factors Developed</b>	Mid term
SMILES 2.1	High level technology and equipment implemented	Mid term
SMILES 2.1.1	Technical and technological superiority prepared	Short term
SMILES 2.1.1.1	Standardized packing implemented	Short term
SMILES	Macedonian products to fulfil EU standards prepared	Short term



2.1.1.2		
SMILES 2.1.1.3	Contemporary equipment analysed and implemented	Short term
SMILES 2.1.1.4	Contemporary technology analysed and implemented	Short term
SMILES 2.3	Proper raw materials produced	Mid term
SMILES 2.3.1	Low dependence from the imports enabled	Short term
SMILES 2.3.2	Effective use of chip and low quality raw materials enabled	Short term
SMILES 2.3.3	Sufficient basic production enabled	Short term
SMILES 2.3.2	Vehicle fleet renewed	Short term
SMILES 2.3.3	Adequate economic instruments provided	Short term
<b>SMILES 3</b>	<b>Sufficient financial support Provided</b>	Short term
SMILES 3.1	Capital market completed	Short term
SMILES 3.1.1	Systems for micro finance developed	Short term
SMILES 3.1.1.X	Sufficient knowledge on share trading and capital investment provided (x - for 3.1.1 till 3.1.4)	Short term
SMILES 3.1.2	Guarantee funds for SD investments in SMILES provided	Short term
SMILES 3.1.3	Stock-share institutions established	Short term
SMILES 3.1.4	Sufficient knowledge on share trading and capital investment provided	Short term
SMILES 3.1.5	Affordable financial instruments provided	Short term
SMILES 3.1.5.y	Sufficient bank competition completed (y - for 3.1.5 till 3.1.8)	Short term
SMILES 3.1.6	Banking programs for innovative and new businesses developed	Short term
SMILES 3.1.7	Affordable banking credits provided	Short term
SMILES 3.1.8	Various types of financial products developed	Short term
SMILES 3.1.9	Unlimited access to financial markets prepared	Short term
SMILES 3.1.10	High interest of foreign investors triggered	Short term
SMILES 3.1.10.1	Access to sufficient number of business angels provided	Short term
SMILES 3.1.10.2	Sufficient foreign direct investments (FDI) provided	Short term
SMILES 3.2	Sufficient working capital provided	Short term
SMILES 3.2.1	High financial capability of SMILES developed	Short term
SMILES 3.2.2	Sufficient budget for SD provided	Short term
SMILES 3.2.3	Financial funds established	Short term
<b>SMILES 4</b>	<b>Human Resources in SMILES Improved</b>	Mid term



SMILES 4.1	High level technology development conducted	Mid term
SMILES 4.1.1	Need for quality management acknowledged	Short term
SMILES 4.1.1.x	Long-term vision for development enabled (x for 4.1.1 till 4.1.3)	Short term
SMILES 4.1.1.x.1	Cooperation between SMILES & Science developed	Short term
SMILES 4.1.1.x.1.y	Environment for vision driven entrepreneurs provided (y for 4.1.1.x.1 till 4.1.1.x.4)	Short term
SMILES 4.1.1.x.1.z	Quality education for SMILES' managers provided (z for 4.1.1.x.1 till 4.1.1.x.4)	Short term
SMILES 4.1.1.x.1.w	Contemporary managers for SMILES developed (w for 4.1.1.x.1 till 4.1.1.x.4)	Short term
SMILES 4.1.1.x.2	Entrepreneurial & management knowledge and skills provided	Short term
SMILES 4.1.1.x.3	Awareness for companies' restructuring need developed	Short term
SMILES 4.1.1.x.4	Sufficient international cooperation for TT provided	Short term
SMILES 4.1.2	Clear concept and strategy for support identified	Short term
SMILES 4.1.3	Readiness for changes acceptance developed	Short term
SMILES 4.1.4	Sufficient information on tenders enabled	Short term
SMILES 4.2	High productive and motivated workforce provided	Mid term
SMILES 4.2.1	Labour market developed	Short term
SMILES 4.2.1.1	Workforce mobility provided	Short term
SMILES 4.2.1.1.1	Active support to changes provided	Short term
SMILES 4.2.1.1.1.1	Managers obsessed with future SD developed	Short term
SMILES 4.2.1.1.1.1.u	Favourable age structure of the labour force provided (u for 4.2.1.1.1.1 till 4.2.1.1.1.3)	Short term
SMILES 4.2.1.1.1.2	European mentality enforced	Short term
SMILES 4.2.1.1.1.3	Readiness for acceptance of changes developed	Short term
SMILES 4.2.1.1.2	Sufficient contemporary knowledge and qualification of labour force provided	Short term
SMILES 4.2.1.1.2.1	Updated education system (connected with labour market) provided	Short term
SMILES 4.2.1.1.2.2	Motivational system for support to the learning of the workforce designed	Short term
SMILES 4.2.1.1.2.3	Formal system for knowledge validation (LLL) established	Short term
<b>SMILES 5</b>	<b>Marketing Improved</b>	Mid term
SMILES 5.1	Promotion of Macedonian products in the country & international conducted	Mid term
SMILES 5.1.1	Sufficient research of new markets carried out	Short term
SMILES 5.1.2	Promotional strategy for Macedonian SMILES' products/ services developed	Short term



SMILES 5.2	Promotion for Macedonian potentials for sustainable products (healthy, environmental friendly, renewable energy sources etc.) conducted	Mid term
<b>SMILES 6</b>	<b>Pollution Reduced</b>	Mid term
SMILES 6.1	Proper Waste Management provided	Mid term
SMILES 6.2	Natural and Renewable Energy Sources used	Mid term
SMILES 6.3	Contemporary Equipment for Pollution Abatement provided	Mid term

## 2. Overall list of projects

No	Project	Result(s)
<b>General</b>		
1	Development and adoption of a comprehensive long term Strategy for SMILES (Industry and SMEs); emphasizing the strategic directions, fields of needed knowledge and supporting technologies	SMILES OO 1; SMILES OO 2; SMILES OO 3; SMILES 1; SMILES 2; SMILES 3; SMILES 4; SMILES 5; SMILES 6
<b>Policies, Legislation</b>		
2	Development of a Program/Action Plans from the Strategy with defined goal system (content, measures, time horizon), responsibilities and resources (especially because/when many ministries and sectors are involved and the harmonization of their different activities is necessary)	SMILES OO 1; SMILES OO 2; SMILES OO 3; SMILES 1; SMILES 2; SMILES 3; SMILES 4; SMILES 5; SMILES 6
3	Adoption of relevant secondary legislation and technical regulation	SMILES 1.1.1.6; SMILES 1.1.1.7; SMILES 1.1.1.8; SMILES 1.1.1.11; SMILES 1.1.2; SMILES 1.1.2.1; SMILES 1.1.2.1.1; SMILES 1.1.2.1.1.1; SMILES 1.1.2.1.1.2; SMILES 1.1.2.1.1.3; SMILES 1.1.2.1.1.4; SMILES 1.1.2.1.1.5; SMILES 1.1.2.1.1.6; SMILES 1.2; SMILES 1.2.1; SMILES 1.2.2; SMILES 1.2.2.1; SMILES 1.2.2.2; SMILES 1.2.2.3; SMILES 1.2.3; SMILES 1.2.4
<b>Institutional Framework</b>		
4	Strengthening the capacity of the Ministry of Economy, Ministry of Education and Science, Ministry of Local-Self Government, Ministry of Labour and Social Relations, Ministry of Environment and Physical Planning, Ministry of Agriculture, Ministry of Transport and Communications, Ministry of Health, Ministry of Finance	<b>SMILES 1;</b> SMILES 1.1; SMILES 1.1.1; SMILES 1.1.1.1; SMILES 1.1.1.1.1; SMILES 1.1.1.2; SMILES 1.1.1.9; SMILES 1.1.1.10; SMILES 1.3.3
5	Strengthening the capacity of the governmental agencies: Agency for Direct Investments, Agency for Promotion of the Entrepreneurship of R. Macedonia, Agency for Inspection of Food, Sanitary inspection, Market inspection, and establishment of the Agency for Sustainable Development	SMILES 1.1.1.3; SMILES 1.1.1.4; SMILES 1.1.1.5; SMILES 1.1.1.9; SMILES 1.1.1.10; SMILES 1.3.3



6	Establishing of accredited certification bodies and certified bodies for implementing standards	SMILES 1.1.1.5
7	Establishing a network of innovation-research centres for supporting SMILES	SMILES 1.3.2.1.1
<b>Financing</b>		
8	Establishing of an appropriate capital market	<b>SMILES 3;</b> SMILES 3.1; SMILES 3.1.1; SMILES 3.1.1.X; SMILES 3.1.2; SMILES 3.1.3; SMILES 3.1.4; SMILES 3.1.5; SMILES 3.1.5.y; SMILES 3.1.6
9	Establishing access to different financial markets	SMILES 3.1.7; SMILES 3.1.8; SMILES 3.1.9; SMILES 3.1.10; SMILES 3.1.10.1; SMILES 3.1.10.2; SMILES 3.2; SMILES 3.2.1; SMILES 3.2.2; SMILES 3.2.3
<b>Specific areas</b>		
<b>a) Efficient business structure</b>		
10	Establishing and operating of SMILES Clusters: options for their organization, activities, stakeholders	SMILES 1.3; SMILES 1.3.2; SMILES 1.3.2.1; SMILES 1.3.2.1.1; SMILES 1.3.2.1.2; SMILES 1.3.1
11	Match-making between Macedonian SMILES and advanced foreign companies	SMILES 1.3; SMILES 1.3.2
<b>b) Production factors</b>		
12	Promotion of high level technology and equipment (technology transfer, innovations, R&D)	SMILES 2; SMILES 2.1; SMILES 2.1.1; SMILES 2.1.1.1; SMILES 2.1.1.2; SMILES 2.1.1.3; SMILES 2.1.1.4; SMILES 2.3; SMILES 2.3.1
<b>c) Human resources</b>		
13	Training in Quality management and implementation of Quality management systems	SMILES 1.1.1.5; SMILES 2.1.1.2; SMILES 4.1.1.x.1
14	Vardar Silicon Valley – Creation of educational infrastructure and systems for development of the Knowledge society	SMILES 4
15	Improvement of the formal education - Developing Entrepreneurial programs	SMILES 4.1.1
16	Establishing of R&D Excellence Centers for Productivity, Quality, Improvements	<b>SMILES 4;</b> SMILES 4.1; SMILES 4.1.1; SMILES 4.1.1.x; SMILES 4.1.1.x.1; SMILES 4.2
17	Theory-practice collaboration: establishing mechanisms for collaboration between educational institutions and the pools of companies	<b>SMILES 4;</b> SMILES 4.1; SMILES 4.1.1; SMILES 4.1.1.x; SMILES 4.1.1.x.1
18	Enterprise restructuring/improvement - program and carrying out (for 100 enterprises)	<b>SMILES 4;</b> SMILES 4.1; SMILES 4.1.1; SMILES 4.1.1.x; SMILES 4.1.1.x.1
19	Establishing Technology Parks	<b>SMILES 4;</b> SMILES 4.1; SMILES 4.1.1; SMILES 4.1.1.x; SMILES 4.1.1.x.1



<b>d) Marketing</b>		
20	Establishing Marketing centers of excellence for Sustainable development	SMILES 5
21	Program and training in Marketing	SMILES 5
<b>e) Pollution</b>		
22	Establishment of Centres of excellence for waste treatment	SMILES 6.1
23	Establishment of research centres for natural and RES utilization	SMILES 6.2
<b>f) Local Authorities</b>		
24	Capacity building at municipalities enabling them to take responsibilities on the Sustainable development (economic, environmental and social)	SMILES 1; SMILES 2; SMILES 3; SMILES 4; SMILES 5; SMILES 6
25	Training of local managers in productivity, quality, costs, improvemnets	SMILES 1; SMILES 2; SMILES 3; SMILES 4; SMILES 5; SMILES 6
<b>g) Information and Awareness</b>		
26	Campaign at state level for entrepreneurship and SD of SMILES (especially among youth and women)	SMILES 1.3.4; SMILES 1.3.5

### 3. Project proposals addressing some short-term results

Project		Result	Brief explanation	Estimated finances (EURO)	Possible financial sources
1.	Industry Excellence Cluster	1.3.2	It should be a generic project that should encompass all the needs of the possible investors (not only the ground, water, electricity, etc.) and encourage them. A follow-up, specific (for different branches) projects may be necessary afterwards. But, if there are recognized specific needs for a certain cluster – it could be a specific, particular project.	This amount depends on the number of Clusters we want to be established in the country (that could range from 1 to n); however, this amount should be covered by the interested companies - investors	There are more possible sources (for the project preparation): <ul style="list-style-type: none"> <li>- CIP (from EU),</li> <li>- agencies from some developed countries (like GTZ, SIDA, ADA, JICA, ...)</li> <li>- IPA funds</li> </ul> As mentioned in the previous column, for the physical carrying out of the project, there should be interested companies that invest in the facilities and equipment
2.	Match-making	1.3.2	Establishing links between companies for a possible cooperation (mainly domestic companies with advanced foreign ones) and enforcement of cooperation between small and medium enterprises, between companies that can benefit	There are expenses after finishing of the project, but they should be covered by the interested companies	(Sources given above)





Project		Result	Brief explanation	Estimated finances (EURO)	Possible financial sources
			from such collaboration.		
3.	Awareness rising campaign on SD	1.3.4	Road show (youth and female festivals, multi media campaigns in local communities for SD)	300.000	- Budget - Donor/grant programs
4.	Defining and Promotion of high level technology and equipment	2.	Development of high level technology is one of the basic factors for increasing the competitiveness of the SMILES in all sectors	500,000	EU funds
5.	Establishing of an appropriate capital market	3.	Establishing of an appropriate capital market with all possible stakeholders that should enable a wide range of different and not expensive financial instruments/ products	1.000.000	EU funds
6.	Establishment of saving-cooperatives on sector/ territory level	3.1.1	Mobilization and utilization of available financial resources on territorial basis (personal, business, local, regional etc.)	500.000	- Financial institutions - Budgetary support - Business community
7.	Enforcement of BSO for consulting/training in capital budgeting	3.1.4	Development of training and consulting services for capital budgeting within the BSO's	100.000	- APPRM - Donor/grant programs
8.	Establishment of BA (business angels) network	3.1.10.1 Access to sufficient number of business angels provided	Legislation development, incentives provision for BA' investment, recruitment of BA	50.000	- Business community - Business associations
9.	Vardar Silicon Valley	RM 4. Contemporary IT Education	Creation of educational infrastructure and systems necessary for development of the knowledge society (HE in IT, SD)	136.000.000	- Donor/grant programs - Budget Business community
10.	Centers of excellence – education/research on TQM	4.1 High level technology development conducted	Enforcement of University research centres, dispersion (in business community) and networking	3.000.000	- Business community - FP7, - Donor/grant development programs GTZ, SIDA, ADA, JICA, MEDF etc.



Project		Result	Brief explanation	Estimated finances (EURO)	Possible financial sources
					- Budget
11.	Formal education improved - Entrepreneurial learning programs developed	4.1.1 Need for quality management acknowledged	Developed EL curricula for all educational levels, established network (business & education networks)	500.000	- TEMPUS, VET Donor/grants
12.	Enterprise Restructuring/ Improvement	4.1.1.x (one part of it)	There is a big need for such a project in R. Macedonia (even in the developed countries!) where some subsystems or the whole systems (companies) should be improved/restructured.  Such a project could be an independent project, but it would be better if it is in the frame of the two above projects (as a sub-project).	1.100.000 (in case without small financial support of the improved companies)  1.600.000 (in case with financial support)	EU funds
13.	Observatory for Sustainable Development Indicators	(Follow up project: monitoring of the sustainability)	Establishment of an observatory for monitoring and evaluation of SDI (gathering, analysis, dispatching, the measures/ indicators etc.), as a part of the SD-Network.	500.000	EU funds
14.	Quality Management in R. Macedonia	4.1.1.x.1  2.1.1.2  1.1.1.5	It could be a very complex project that includes:  - seminars for different quality standards (for training and certification of quality managers as consultants in the companies),  - implementation of QMS in the organizations,  - establishing a national certification body (for those QMS that do not exist yet)	150.000  500.000  100.000	- EU funds, - developed countries (like Germany, ...)  - Ministry of economy  - EU funds,  - developed countries (like Germany, ...)



Project		Result	Brief explanation	Estimated finances (EURO)	Possible financial sources
15.	Theory-Practice connection	4.2.1.1.2.1	<p>Establishing collaboration between educational institutions and pool of companies for:</p> <ul style="list-style-type: none"> <li>- common analysis of the labor market and needs for the education,</li> <li>- common analysis of the university curricula and teaching programs,</li> <li>- student's practice in companies (mentorship, practical work for diploma and seminar work, applied and research projects etc.)</li> </ul>	200.000	(above given sources)
16.	R&D Excellence Centers (stand alone but also as parts of TTCs)	4.1.1.x.1	<ul style="list-style-type: none"> <li>- Determination of the content of the activities,</li> <li>- determination of the organizational chart</li> <li>- Establishing of the centers in defined regions</li> </ul>	1.000.000 (per center)	(above given sources)
17.	Technology Parks	4.1.1.x.1	R&D, Consulting, Manufacturing, Incubator, Logistic, possible brand companies involvement	5.000.000 (per Technology park)	<ul style="list-style-type: none"> <li>- above given sources,</li> <li>- interested companies</li> </ul>
18.	Marketing centers of excellence for SD established	5.	Developed marketing strategy and organized marketing campaigns for awareness rising about SD	500.000	<ul style="list-style-type: none"> <li>- Budget</li> <li>- Donor/Grants</li> </ul>
19.	Marketing - training	5.	Cycles of seminars for training of the marketing-managers	100.000	Ministry of economy
20.	Establishment of centers of excellence for waste treatment	6.1	Permanent education programs developed, built infrastructure	30.000.000	<ul style="list-style-type: none"> <li>- Central and municipal budgets</li> <li>- business community</li> <li>- Donor/grants</li> </ul>



Project		Result	Brief explanation	Estimated finances (EURO)	Possible financial sources
21.	Establishment of research centers for natural and RES utilization	6.2 Natural and Renewable Energy Sources used	Established infrastructure for R&D for RES	3.000.000	- Budget - Donor/grants - Businesses
22.	Capacity building at municipalities enabling them to take responsibilities for the Sustainable development issues at local (economic, environmental and social) level	1., 2., 3., 4., 5., 6.	Training activities for dissemination of the SD' knowledge and experiences among the members of the Association of the Municipalities (ZELS)	200,000	EU funds



## Example: Tourism

### 1. Starting point: Consolidated definition of the results and timeline

(see also Objective Tree in Annex 2 and Chapter 6)

Overall Objectives (OO)		
T OO 1	<b>To plan and manage tourism towards sustainability by giving the priority of the quality of the environment, its protection and rational use of natural resources.</b>	Long term
T OO 2	<b>To contribute to economic prosperity and enhancing job creation by tourism.</b>	Long term
T OO 3	<b>To increase the quality of life by respecting the culture and tradition of local communities, their environment and economy.</b>	Long term
Objectives/Results		
<b>T 1</b>	<b>Competitive tourist offer properly defined</b>	Mid term
T 1.1	Created competitive tourist products	Mid term
T 1.1.1.	Competitive prices of tourist products	Short term
T 1.1.2.	Increased innovation and variety in tourist offer	Short term
T 1.1.2.1.	Increased/improved entertainment management, facilities, programs and professionals	Short term
T 1.1.2.2.	Higher development of cultural, congress, rural, spa and other competitive types of tourism	Mid term
T 1.1.2.3.	Improved promotion of typical rural products and traditional cuisine	Short term
T 1.1.3.	Higher orientation towards incoming and domestic tourism	Short term
T 1.1.4.	Increased specialized incoming agencies	Mid term
T 1.1.5.	Created and established tourist branded products	Short term
T 1.1.6.	Attracted hotel brand names	Mid term
T 1.2.	Improved promotion of current and potential types of tourism	Short term
T 1.3.	Appropriate consideration of potential tourist products by the competent authorities	Short term
T1.3.1.	Increased awareness for tourism potentials at local and central level	Short term
T1.3.2.	Proper investments in the potential	Short term
T1.3.3.	Increased number of studies & research for potentials and carrying capacities	Short term
T1.3.4.	Conflicts of interests in the physical planning overcome	Short term
<b>T 2</b>	<b>Organizational structure in tourism sector established and function properly</b>	Mid term
T 2.1	Improved cooperation between SME's, local self-gov., national & foreign institutions, agencies & companies	Mid term
T 2.1.1	Properly coordinated programs & donations	Short term
T2.1.2	Properly channelled financial assets	Short term
T 2.2	Properly organized and planned tourism	Mid term
T 2.2.1	Improved inventory and categorization of accommodation	Short term
T 2.2.2	Coordinated and correct data	Short term
T 2.2.3	Developed database/IS for accommodation capacities	Short term
T 2.2.4	Appropriate human resources	Short term
T 2.2.5	Increased awareness for sustainable tourism development among stakeholders	Short term



T 2.3	Defined directions for tourism development	Mid term
T 2.3.1	Adopted tourism strategy	Short term
T2.3.2	Compliance of tourism development with the Physical Plans	Short term
T 2.3.3	Laws for cultural heritage & environmental protection in local urban plans respected	Short term
<b>T 3</b>	<b>Human Resources for tourism improved</b>	Mid term
T 3.1.	Appropriately educated and trained tourism professionals	Mid term
T 3.1.1.	Established programs (high & higher education) in compliance with EU programs	Short term
T 3.1.2.	Increased number of students with internship	Short term
T 3.1.3.	Strengthened interdisciplinary correlations between faculties	Short term
T 3.1.4	Strengthened correlations between education and business sector	Short term
T3.1.5.	Established/developed lifelong learning programs	Short term
T 3.1.6.	Increased number of professional tourist guides	Short term
T3.1.7	Established/developed professional craft programs (woodcarving, knitting, traditional cooking)	Short term
T3.1.8	Established/developed professional programs for entertainment	Short term
T3.2	Increased number of properly educated managers	Mid term
T3.2.1	Educated and trained managers for their job positions	Short term
<b>T 4</b>	<b>Infrastructure and capacities for tourism improved</b>	Mid term
T 4.1.	Improved and developed infrastructure	Mid term
T 4.1.1.	Improved quality of road and rail network	Mid term
T 4.1.1.1.	Increased number of well equipped rest areas	Short term
T 4.1.1.2.	Developed new rail lines towards tourist destinations	Mid term
T 4.1.2.	Improved air connections	Short term
T 4.1.2.1	Competitive air prices in the region	Short term
T 4.1.3.	Improved water, electricity and waste management in tourist destinations	Mid term
T 4.2.	Accessibility problems to tourist destinations overcame	Short term
T 4.2.1	Increased and improved signalization	Short term
T4.2.2.	Established info centres & tourist bureaus	Short term
T4.2.2.1.	Increased number of info points	Short term
T4.2.3	Improved organized public transport	Short term
T4.3.	Increased number of modern accommodation capacities	Mid term
T4.3.1.	Improved quality of accommodation capacities	Mid term
T4.3.2.	Increased number of accommodation capacities for certain types of tourism (rural, mountain, monastery, etc.)	Short term
T4.3.3.	Defined carrying capacities	Short term

## 2. Overall list of projects according to all results

No	Project	Result(s)
<b>General</b>		
1	Development and adoption of a comprehensive long term	T OO1; T OO2; T OO3;



No	Project	Result(s)
	Strategy for sustainable development of tourism	T 1; T 2; T 3; T 4;
2.	Macedonia - escape heaven for visitors	T1.1; T1.1.1; T1.1.2; T1.1.2.1; T1.1.2.2; T1.1.2.3; T1.2; T4.2.1; T4.2.2; T4.3; T4.3.1; T4.3.2;
<b>Polices, Legislation</b>		
3.	Preparation and adoption of regional plans for tourism development with respect to natural and cultural heritage, physical planning, and defined priorities.	T 1.3; T 1.3.1; T 1.3.4; T2.2; T 2.3; T 2.3.1; T 2.3.2; T 2.3.3;
<b>Institutional Framework</b>		
4.	Capacity building of the Ministry of Economy (tourism and hospitality department)	T1.1.6; T1.3; T1.3.1; T1.3.2; T2.1.1; T2.1.2; T2.2; T2.2.1 ; T2.2.4; T2.2.5; T2.3 ; T2.3.1 ; T3.1; T3.1.6; T3.1.7 ; T4.2 ;
5.	Increased quality in tourism education	T3.1; T3.1.1; T3.1.2; T3.1.3; T3.1.4; T3.1.5; T3.1.6; T3.1.7; T3.1.8; T3.2; T3.2.1;
<b>Financing</b>		
6.	Strengthen promotion of Macedonian tourism abroad	T1.1.; T1.1.2; T1.1.2.3; T1.1.3; T1.1.4; T1.1.5; T1.2; T1.3; T2.1; T2.2.
7.	Investment in tourism infrastructure	T4.1; T4.1.1; T4.1.1.; T4.1.1.2; T4.1.2; T4.1.2.1; T4.1.3; T4.2; T4.2.1; T4.2.2; T4.2.2.1; T4.2.3; T4.3; T4.3.1; T4.3.2; T4.3.3;
<b>Specific areas</b>		
<b>a) Tourism promotion and competitiveness</b>		
8.	Identifying and establishing Macedonian competitive tourist products	T1.1; T1.1.1; T1.1.2.2; T1.1.2.3;
9.	Creating Macedonian tourist brand	T1.1; T1.1.2; T1.1.2.2; T1.1.5; T1.1.6; T1.3.1;
<b>b) Tourism sector organization</b>		
10.	Establishing productive cooperation among tourism stakeholders through and creating tourism stakeholders networking	T2.1; T2.1.1; T2.1.2
11.	Establishing Information sector for tourism programs, projects, investments and potentials	T2.1; T2.1.1; T2.1.2; T2.2;
<b>c) Human resources</b>		
12.	Establishing and developing life-long learning programs for tourism and hospitality	T3.1.5, T3.2; T3.2.1; T3.1.7;
13.	Establishing and developing education-business correlations	T3.1.4;
14.	Capacity improvement of human resources in tourism	T3.1.1; T3.1.2; T3.1.3; T3.1.4; T3.1.5; T3.1.6; T3.1.7; T3.1.8; T3.2.1;
<b>d) Tourism infrastructure and capacities</b>		
15.	Creating and establishing regional tourism signalization networks	T4.2.1; T4.2.2; T4.2.2.1;
16.	Creating and establishing national tourism signalization network	T4.2.1; T4.2.2; T4.2.2.1;

### 3. Project proposals addressing the short-term results



Project	Result	Brief explanation	Estimated finances (millions Euro)	Possible funding sources
Tourist offer innovation - a trend or necessity for Macedonian tourism?	Increased innovation and variety in tourist offer	Entertainment management modules, development of programs		Ministry of economy Municipality's budgets Donors
Towards the paths of tourism sustainability	Improved promotion of current and potential types of tourism	Selection of certain types of tourism (current and potential) and their "packaging" for promotion		Ministry of economy Municipality's budgets Private investment Donors
Rural tourism for rural development	Higher development of rural tourism as competitive one	Improved development of rural areas by developing rural tourism and improved promotion of typical rural products, rural life and traditional cuisine		Donors, PPP, Municipality's budgets IPA Funds
The potentials of tourism in Macedonia	Appropriate consideration of potential tourist products by the competent authorities	Increased awareness programs (targeted particularly on local authorities)		Ministry of economy Municipality's budgets Donors
"Tourism channels" for programs and donations	Properly coordinated programs & donations	As a result of lack and gaps in information about different programs, donors etc.		Ministry of economy Municipality's budgets Donors
Improvement of inventory and categorization of accommodation	Improved inventory and categorization of accommodation	Because of the differences in grading and classifying of accommodation capacities		Ministry of economy Municipality's budgets Donors
Modern IS for modern accommodation capacities	Developed database/IS for accommodation capacities	As a result of lack of coordinated, channelled and displayed data		Municipality's budget Ministry of economy Private Investments Donors
Awareness raising campaign for sustainable development of tourism	Increased awareness for sustainable tourism development among stakeholders	Since the level of awareness of sustainable development of tourism is on a very low scale, even it might be said on the very beginning		Ministry of Economy, MoEPP, WB, Donors, EU Funds
Students mobility in tourism education	Increased number of students with internship	In order to improve "readiness" of graduated students for their job positions and responsibilities		Ministry of education and science EU Community Programmes Donors
Together for better education	Strengthened interdisciplinary correlations between faculties	For the purpose of broadening cooperation between faculties and establishing joint curricula, internship, projects etc.		Ministry of education and science EU Community Programmes Donors
Tourism education-business partnership	Strengthened correlations between education and business sector	For the purpose of increasing and improving cooperation between this "two sides"		Ministry of education and science, Chamber of Commerce, Donors,
Professionalism and tourism	Increased number of professional tourist guides	Improved the quality of tourist guides and increased control of their		Ministry of education and science, Chamber of





Project	Result	Brief explanation	Estimated finances (millions Euro)	Possible funding sources
		"appropriateness"		Commerce, Ministry of Economy
Revitalization of traditional crafts and skills for tourism purposes	Established/developed professional craft programs (woodcarving, knitting, traditional cooking)	For the purpose of job creation and increasing variety and quality of tourist offer		PPP, Donors, EU Community Programs,
Appropriate professionals-appropriate job positions	Educated and trained managers for their job positions	For the purpose of improving educational and professional structure of managers		Ministry of education and science, Chamber of Commerce, Ministry of Economy, PPP, Donors, EU Community Programs,
Rest in rest areas	Increased number of well equipped rest areas	Improve the quality of services in rest areas along the road network		Ministry of Transport and Infrastructure, Private investments, PPP, Donors,
Roads, signs and tourist destinations	Accessibility problems to tourist destinations overcame	Identifying and overcoming access problems to tourist destinations		Ministry of Culture, Ministry of Economy, Ministry of Transport and Communications, Donors
Visitors and information	Established info centers & tourist bureaus	Needs Identification and establishing info centers and tourist bureaus		Ministry of Culture, MoEPP, Ministry of Economy, Municipalities' budgets, PPP, Donors
Info points network	Increased number of info points	Needs Identification and establishing info points. (it is started project within the Ministry of Culture together with Ministry of Economy and selected 9 Municipalities. It should be finished in 2009)		Ministry of Culture, MoEPP, Ministry of Economy, Municipalities' budgets, PPP, Donors
Public transport –public wealth for tourist destinations	Improved organized public transport	Establishing well organized and improving public transport towards and within tourist destinations		Ministry of Transport and Communications, Municipalities' budgets, Donors
Increase and adjustment of accommodation capacities for monastery, rural and mountain tourism.	Increased number of accommodation capacities for certain types of tourism (rural, mountain, monastery, etc.)	Listing, identification of most appropriate, adjusting and building capacities.		Private Investments, PPP, Ministry of Culture, MoEPP, Donors, Municipality's Budgets
What capacities for tourism development?	Defined carrying capacities	Defining of carrying capacities for tourism development according to level and type of development		Ministry of Culture, MoEPP< Ministry of Economy, Municipality's budgets, Donors



## Example: Human Settlements

### 1. Starting point: Consolidated definition of the results and timeline

(see also Objective Tree in Annex 2 and Chapter 6)

Overall Objectives (OO)		
T&I 00 0	To improve the social, economic and environmental quality of human settlements and the living and working environments of all people, in particular the urban and rural poor	Long term
T&I 00 4	To ensure the provision of adequate infrastructure facilities (water supply, drainage, waste water treatment, waste disposal and irrigation)	Long term
Objectives/Results		
<b>T&amp;I 2</b>	<b>Improved traffic condition</b>	<b>Long term</b>
T&I 2.1	Traffic signalization and equipment are according to EU standards	Mid term
T&I 2.1.1	New legislation is prepared and implement	Short term
T&I 2.2	The quality of existing public transport is improved	Mid term
T&I 2.2.1	Promoted different modes of public transport	Mid term
T&I 2.2.2	Increased efficiency of public transport entities	Short term
T&I 2.2.3	Promoted environmentally friendly vehicles for public transport	Short term
T&I 2.3	Improved urban transport	Long term
T&I 2.3.2	Reduced point of "bottlenecks"	Mid term
T&I 2.3.2	Traffic jams are reduced	Mid term
T&I 2.3.3	Installed equipment for traffic flow and control	Short term
T&I 2.3.4	Proper and efficient management of traffic flows	Short term
T&I 00 4.0	Improved communal infrastructure	Long term
T&I 4	Improved infrastructure for collection and treatment of waste water	Long term
T&I 4.1	Improved waste water treatment	Long term
T&I 4.1.1	Waste water treatment in existing plants meet environmental standards	Short term
T&I 4.1.2	Constructed waste water treatment plants for all agglomeration above 2000 p.e.	Long term
T&I 4.2.	Constructed collectors and finished sewages	Long term
T&I 4.2.1	Increased number of sewages systems in rural areas and in non urbanized and not legal parts of towns	Mid term



T&I 4. 2.2	Increased number of households are connected to sewerage systems	Mid term
T&I 5.	Improved water supply infrastructure	Long term
T&I 5.1	Increased number of water supply systems in rural areas	Mid term
T&I 5.1.1	Increased capital investments	Short term
T&I 5.1.2	Improved economic condition of local public entities	Short term
T&I 5.2	Minimization of water wastages (leakage)	Long term
T&I 5.2.1	Old water supply systems are rehabilitated	Long term
T&I 5.2.2.	Good investment maintenance is provided	Short term
T&I 5.2.3	Unauthorized connection to network are reduced	Short term
T&I 6.	Improved infrastructure for irrigation and drainage	Long term
T&I 6.1	Increasing coverage of agricultural land with systems for irrigation	Mid term
T&I 6.1.1	Increased capital investments	Short term
T&I 6.1.2	Improved economic condition of regional water supply enterprises	Short term
T&I 6.2	Decreased losses of water	Mid term
T&I 6.2.1	Improved maintenance	Short term
T&I 6.2.2	Responsible handling of infrastructure and equipment	Short term
T&I 6.2.3	Improved control of irrigation systems	Short term
T&I 7.	Established Integrated water management	Mid term
T&I 7.1	New law for water is implemented	Short term
T&I 7.2	Eliminated political influence	Short term
T&I 7.3	New regulation for waste water discharge is prepared and implement	Short term
T&I 8.	Improved waste disposal infrastructure	Long term
T&I 8.1	Integrated solid waste management are implemented	Long term
T&I 8.2	Improved implementation of legislation	Mid term
T&I 8.3	Increased investments in solid waste infrastructure	Short term



## 2. Overall list of projects

No	Project	Result(s)
<b>Polices, Legislation</b>		
1	Develop a Sustainable Urban Transport Strategy for the largest cities in the country.	T&I 2, T&I 2.2, T&I 2.2.1, T&I 2.2.2, T&I 2.2.3, T&I 2.3, T&I 2.3.1, T&I 2.3.2,
2	National standards for waste water treatment.	T&I 4, T&I 4.1, T&I 4.1.1
3	Regulation for sludge management.	
4	Water strategy for Republic of Macedonia	T&I 7, T&I 7.2
<b>Institutional Framework</b>		
5	Strengthening the capacity of Public Enterprises in transport sector	T&I 1, T&I 1.1, T&I 1.2, T&I 1.3, T&I 1.2.1, T&I 1.3.1, T&I 2, T&I 2.1, T&I 2.1.1
6	Strengthening capacity in Local Public Utilities.	T&I 5, T&I 5.1, T&I 5.1.1
7	Strengthening capacity in Ministry of environment for water management	T&I 7, T&I 7.1
8	Strengthening capacity on local level for water management	
9	Strengthening inspectorate for environment	T&I 7, T&I 7.3
<b>Financing</b>		
10	Investment in urban transport infrastructure	T&I 2, T&I 2.3, T&I 2.3.1, T&I 2.3.2
11	Financial Recovery Program for public transport entities	T&I 2, T&I 2.2, T&I 2.2.1, T&I 2.2.2, T&I 2.2.3, T&I 2.3, T&I 2.3.1, T&I 2.3.2
12	Plan for replace old vehicles, especially in public transport, with fleet that uses improved technologies and have clean engines.	T&I 2, T&I 2.2, T&I 2.2.1, T&I 2.2.2, T&I 2.2.3, T&I 2.3, T&I 2.3.1, T&I 2.3.2
13	Investment in environmentally friendly vehicles for public transport	T&I 2, T&I 2.2, T&I 2.2.3
14	Investment in WWTP and sewage systems	T&I 4, T&I 4.1, T&I 4.1.2, T&I 4.2, T&I 4.2.1, T&I 4.2.2
15	Program for financial consolidation of Local Public Utilities.	T&I 5, T&I 5.1, T&I 5.1.1, T&I 5.1.2
16	Investment in water supply systems	T&I 5, T&I 5.1, T&I 5.1.1, T&I 5.1.2, T&I 5.2, T&I 5.2.1, T&I 5.2.2, T&I 5.2.3
17	Investments in irrigation networks	T&I 6, T&I 6.1, T&I 6.1.1, T&I 6.2, T&I 6.2.1, T&I 6.2.2, T&I 6.2.3



No	Project	Result(s)
18	Investments in solid waste management	T&I 8, T&I 8.1, T&I 8.2, T&I 8.3
<b>Specific areas</b>		
<b>a) Collection and treatment of waste water</b>		
19	Waste water management plans for all watershed in Macedonia	T&I 4, T&I 4.1, T&I 4.1.2
20	Feasibility studies for waste water treatment plants	
21	Construction of WWTP for all agglomerations with more than 2000 e.c.	
22	Construction of sewage systems in rural areas and in non urbanized and not legal parts of towns.	T&I 4, T&I 4.2, T&I 4.2.1
23	Extension of existing and construction of new sewage systems.	T&I 4, T&I 4.2, T&I 4.2.2
24	Rehabilitation of existing sewage systems.	T&I 4, T&I 4.1, T&I 4.2
<b>b) Water supply</b>		
25	Construction of new water supply systems in rural areas	T&I 5, T&I 5.1, T&I 5.1.1
26	Rehabilitation of existing water supply systems	T&I 5, T&I 5.2, T&I 5.2.1, T&I 5.2.2, T&I 5.2.3
<b>c) Infrastructure for irrigation and drainage</b>		
27	Construction in new irrigation and drainage systems	T&I 6, T&I 6.1, T&I 6.1.1, T&I 6.1.2
28	Rehabilitation of existing irrigation and drainage systems	T&I 6, T&I 6.1, T&I 6.1.1, T&I 6.1.2, T&I 6.2, T&I 6.2.1, T&I 6.2.2, T&I 6.2.3
29	Public campaign for reduce steeling of equipment from infrastructure.	T&I 6, T&I 6.2, T&I 6.2.2
<b>d) Waste disposal infrastructure</b>		
30	Construction of new solid waste disposal facilities	T&I 8, T&I 8.3
31	Remediation of old solid waste damp fields	T&I 8, T&I 8.2
<b>e) Local Authorities</b>		
32	Strengthening the capacity of the local authorities responsible for urban infrastructure	T&I 2, T&I 2.2, T&I 2.2.1, T&I 2.2.2, T&I 2.2.3, T&I 2.3, T&I 2.3.1, T&I 2.3.2, T&I 4, T&I 5, T&I 7, T&I 8
33	Preparing the guidelines for development of the urban transportation system.	T&I 2, T&I 2.2, T&I 2.2.1, T&I 2.2.2, T&I 2.2.3, T&I 2.3, T&I 2.3.1, T&I 2.3.2
34	Develop a Sustainable Strategy for the largest cities in the country – Local Agenda 21	T&I 2, T&I 4, T&I 5, T&I 7, T&I 8
35	Training of local public transport and/or utilities managers	T&I 2, T&I 4, T&I 5, T&I 7, T&I 8



No	Project	Result(s)
<b>f) Information and Awareness</b>		
36	Launching of targeted public awareness raising programmes for meaning of sustainable urban transport	T&I 2
37	Launching of targeted public awareness raising programmes that can play an important role in the improving behavior of all citizens of SHS	T&I 2, T&I 4, T&I 5, T&I 7, T&I 8
38	Developing relevant educational programs for sustainable human settlements	T&I 2, T&I 4, T&I 5, T&I 7, T&I 8

### 3. Project proposals addressing some short-term results

Project	Result	Brief explanation	Estimated finances (million EURO)	Possible financial sources
Project for urban rail transport in Skopje centre	New mode of urban transport	The old railway line between the new railway station and Gyorche Petrov has been covered with asphalt by the construction of new roads. This line perfectly links the city centre with north-west part of Skopje, creating the rail circle around the city. The other lines forming the circle are in very good condition (speeds up to 100 km/h) and can be used for urban transport instead of buses. The length of this particular line is around 7km. With relatively small investment that would repay itself quickly after operations starts, Skopje can have the most unique and practical urban transport	14	Central Budget Private investment Donors EU pre-accession assistance (IPA & EU Community Programmes) IFI assistance (World Bank, OECD, EBRD, etc.)
Project for urban rail transport to the Skopje Airport	New mode of urban transport. Decreasing transport flow.	Construction of new rail line to the Airport will solve the problem with the urban transport to and from the airport. If this line is constructed (2.5-3 km needed), one would be able to reach the city centre in less than 15mi.	3.0	
Public transportation	Decreasing transport flow.	Currently there is no public transport to and from the	/	



Project	Result	Brief explanation	Estimated finances (million EURO)	Possible financial sources
system (buses) to and from the airports with the main cities served by them.		Skopje airport, except taxi services. With establishing public transportation system, will bring decreased use of private cars.		
Plan for replace old vehicles, especially in public transport, with fleet that uses improved technologies and have clean engines.	Decreasing air pollution. Increasing efficiency of transport.	This plan will determine approach for solving the problems with existing old fleet and will determine measures for implementation.	/	
Develop a Sustainable Urban Transport Strategy for the largest cities in the country.	Strategy for improving urban transport.	Each town in Macedonia have deferent situation in the area of the urban transport. Implementation of sustainable transport concept is possible only with preparation and implementation of Sustainable Urban Transport Strategy.	0.2 – 0.6	Central Budget Municipality's budgets Private investments Donors
Projects for improving existing and building new bike and pedestrian paths and shortcuts in largest cities in the country.	Improving existing and building new Infrastructure. Decreasing air pollution and traffic flows.	Providing the adequate infrastructure for pedestrians and bikers is crucial for reducing the use of private cars. The promotion of alternative transport modes, with an accent on bicycle riding and walking, is an important action led by the Municipality in the field of sustainable mobility. The authorities have to be focused first on the establishment of appropriate conditions that support the use of bicycles by all categories of users.	/	Central Budget Municipality's budgets Donors EU pre-accession assistance (IPA & EU Community Programmes) IFI assistance (World Bank, OECD, EBRD, etc.)
Waste water management plan for: river	Waste Water management	The waste water management	3	Central Budget Donors



Project	Result	Brief explanation	Estimated finances (million EURO)	Possible financial sources
Drim watershed, river Struma watershed and river Vardar watershed	plans	plan for each watershed in Macedonia is a long term plan for management of waste water and development adequate approach in waste water treatments. These plans will give us recommendation for protecting water resources and waste water effluent discharge monitoring; introducing standards for industrial and households waste water effluent discharges and what kind of technology and number of waste water treatment facilities for municipalities and industry.		EU pre-accession assistance (IPA & EU Community Programmes) IFI assistance (World Bank, OECD, EBRD, etc.)
Feasibility studies for waste water treatment plan for: Tetovo, Bitola, Veles and Strumica.	Studies for waste water treatment plan	Construction of WWTP is not possible without feasibility study for it. With these studies the technology for waste water treatment will be determinate.	1.6	Central Budget Municipality's budgets Private investments Donors Central Budget Municipality's budgets Donors
Construction of WWTP for: Skopje, Debar, Veles, Tetovo and Bitola	New communal infrastructure Better quality of rivers water	NDP 2007-2009	115	EU pre-accession assistance (IPA & EU Community Programmes) IFI assistance (World Bank, OECD, EBRD, etc.)
Study for possible Public Private Partnership in water supply, waste water and solid waste infrastructure.	Studies for increasing investments in water supply, waste water and solid waste infrastructure.	Low level of investment in water supply, waste water and solid waste infrastructure is one of the main obstacles for providing adequate communal services. This study will determine all possibilities for private investments in communal infrastructure. With it we can expect increasing of investment in this area.	50.000	





Project	Result	Brief explanation	Estimated finances (million EURO)	Possible financial sources
Rehabilitation of existing irrigation networks.	Improvement of existing infrastructure.	Currently there are a lot of water losses in existing irrigation networks. This project is in line to decreasing of water losses during transportation.	/	
Water strategy for Republic of Macedonia	Strategy for integrated water management.	Water strategy is a strategy which will give us recommendation for the sustainable and rational utilization, protection, conservation and management of water resources based on community needs and priorities within the framework of national economic development policy.	800.000	
Feasibility studies for regional waste management systems (8 regions).	Prepared studies	NDP 2007-2009	2	Central Budget Municipality's budgets Private investments Donors
Implementation of integrated solid waste management on regional level in Macedonia-South-East, South-West, Poloshki and Skopski Region.	Adequate solid waste management in some region in Republic of Macedonia	NDP 2007-2009	130	Central Budget Municipality's budgets Donors EU pre-accession assistance (IPA & EU Community Programmes) IFI assistance (World Bank, OECD, EBRD, etc.)



## Example: Transport and Infrastructure

### 1. Starting point: Consolidated definition of the results and timeline

(see also Objective Tree in Annex 2 and Chapter 6)

<b>Overall Objectives (OO)</b>		
<b>T&amp;I 00 1</b>	<b>To provide more efficient, less polluting and safer transport system</b>	<b>Long term</b>
<b>Objectives/Results</b>		
<b>T&amp;I 1</b>	<b>Improved condition in transport infrastructure</b>	<b>Long term</b>
T&I 1.1	Improved maintenance of transport infrastructure	Mid term
T&I 1.1.1	Provided infrastructure safety management	Mid term
T&I 1.1.2	Maintenance market is liberated	Short term
T&I 1.1.3	Strategy for transport infrastructure maintenance is prepared and implement	Short term
T&I 1.2	Local and regional road transport infrastructure is developed	Mid term
T&I 1.2.1	Existing roads are reconstructed and/or upgraded	Mid term
T&I 1.3	Corridors 8 and 10 are constructed	Long term
T&I 1.3.1	Existing railway infrastructure and equipment are rehabilitated	Mid term
T&I 1.4	Provided infrastructure safety management	Mid term
<b>T&amp;I 2</b>	<b>Improved traffic condition</b>	<b>Long term</b>
T&I 2.1	Traffic signalization and equipment are according to EU standards	Mid term
T&I 2.1.1	New legislation is prepared and implement	Short term
T&I 2.2	The quality of existing public transport is improved	Mid term
T&I 2.2.1	Promoted different modes of public transport	Mid term
T&I 2.2.2	Increased efficiency of public transport entities	Short term
T&I 2.2.3	Promoted environmentally friendly vehicles for public transport	Short term
T&I 2.3	Improved urban transport	Long term
T&I 2.3.2	Reduced point of "bottlenecks"	Mid term
T&I 2.3.2	Traffic jams are reduced	Mid term
T&I 2.3.3	Installed equipment for traffic flow and control	Short term
T&I 2.3.4	Proper and efficient management of traffic flows	Short term
<b>T&amp;I 3</b>	<b>3. Improved behavior of all participants in transport</b>	<b>Mid term</b>
T&I 3.1	Increased awareness of stakeholders for SD transport	Short term
T&I 3.2	Improved respect of traffic rules	Short term
T&I 3.2.1	Intensive education of traffic participants	Short term
T&I 3.2.2	Increased traffic control	Mid term
T&I 3.2.3	Improved realization of traffic fines	Mid term
T&I 3.2.3.1	Increased efficiency of judiciary	Short term



## 2. Overall list of projects

No	Project	Result(s)
<b>Polices, Legislation</b>		
1	New legislation for traffic signalization and equipment, including secondary legislation.	T&I 2, T&I 2.1, T&I 2.1.1
2	Definition of Action Plans with clear deadlines and quantitative goals for the priority areas (in the field of railway, urban transport and local road)	T&I 1, T&I 1.1, T&I 1.2, T&I 1.3, T&I 1.2.1, T&I 1.3.1, T&I 2, T&I 2.3, T&I 2.3.1, T&I 2.3.2
3	Develop a Sustainable Urban Transport Strategy for the largest cities in the country.	T&I 2, T&I 2.2, T&I 2.2.1, T&I 2.2.2, T&I 2.2.3, T&I 2.3, T&I 2.3.1, T&I 2.3.2, T&I 3, T&I 3.1, T&I 3.2, T&I 3.2.1
<b>Institutional Framework</b>		
4	Strengthening the mandate and capacity of the Ministry of Transport and communication	T&I 1, T&I 1.1, T&I 1.2, T&I 1.3, T&I 1.2.1, T&I 1.3.1, T&I 2, T&I 2.1, T&I 2.1.1
5	Strengthening the capacity of Public Enterprises in transport sector	T&I 1, T&I 1.1, T&I 1.2, T&I 1.3, T&I 1.2.1, T&I 1.3.1, T&I 2, T&I 2.1, T&I 2.1.1
6	Strengthening the capacity of traffic police.	T&I 3, T&I 3.2, T&I 3.2.2, T&I 3.2.3
<b>Financing</b>		
7	Investment in transport infrastructure	T&I 1, T&I 1.1, T&I 1.2, T&I 1.3, T&I 1.2.1, T&I 1.3.1, T&I 2, T&I 2.3, T&I 2.3.1, T&I 2.3.2
8	Financial Recovery Program for public transport entities.	T&I 2, T&I 2.2, T&I 2.2.1, T&I 2.2.2, T&I 2.2.3, T&I 2.3, T&I 2.3.1, T&I 2.3.2
9	Plan for replace old vehicles, especially in public transport, with fleet that uses improved technologies and have clean engines.	T&I 2, T&I 2.2, T&I 2.2.1, T&I 2.2.2, T&I 2.2.3, T&I 2.3, T&I 2.3.1, T&I 2.3.2, T&I 3, T&I 3.1, T&I 3.2, T&I 3.2.1
10	Investment in environmentally friendly vehicles for public transport	T&I 2, T&I 2.2, T&I 2.2.3



No	Project	Result(s)
<b>Specific areas</b>		
<b>a) Improvement of maintenance of transport infrastructure</b>		
11	Reform of current management of maintenance of transport infrastructure	T&I 1, T&I 1.1, T&I 1.1.1, T&I 1.1.2, T&I 1.1.3
12	Reform of maintenance market.	T&I 1, T&I 1.1, T&I 1.1.1, T&I 1.1.2, T&I 1.1.3
13	Preparation of Strategy for transport infrastructure maintenance.	T&I 1, T&I 1.1, T&I 1.1.1, T&I 1.1.2, T&I 1.1.3
<b>b) Transport network infrastructure</b>		
14	Construction of new local, regional and magistral roads	T&I 1, T&I 1.2, T&I 1.2.1, T&I 1.3, T&I 1.3.1
15	Construction of new railway lines	T&I 1, T&I 1.3, T&I 1.3.1
16	Development of multimodal transport infrastructure( construction of multimodal nodes)	T&I 1, T&I 1.3, T&I 1.3.1
17	Rehabilitation and upgrading of existing local, regional and magistral roads	T&I 1, T&I 1.2, T&I 1.2.1, T&I 1.3, T&I 1.3.1
18	Rehabilitation and upgrading of existing railway lines	T&I 1, T&I 1.3, T&I 1.3.1
19	Reconstruction and modernization of existing airports	T&I 1, T&I 1.3, T&I 1.3.1
<b>c) Traffic conditions</b>		
20	Impact studies on road safety and economical cost of deaths, injured and invalidity resulting from road accidents.	T&I 2, T&I 2.1, T&I 2.1.1
21	Public transportation system (buses) to and from the airports with the main cities served by them.	T&I 2, T&I 2.2, T&I 2.2.1, T&I 2.2.2, T&I 2.2.3
22	Projects for electric vehicles in the public transport fleet	T&I 2, T&I 2.2, T&I 2.2.1, T&I 2.2.2, T&I 2.2.3
23	Projects for opening new pedestrians zones	T&I 2, T&I 2.3, T&I 2.3.1, T&I 2.3.2
24	Projects for improving existing and building new bike and pedestrian paths and shortcuts in largest cities in the country.	T&I 2, T&I 2.3, T&I 2.3.1, T&I 2.3.2, T&I 2.3.3
25	Rehabilitation of existing and construction of new urban transport infrastructure and equipment.	T&I 2, T&I 2.3, T&I 2.3.1, T&I 2.3.2, T&I 2.3.3, T&I 2.3.4
26	Reform of current transport management.	T&I 2, T&I 2.3, T&I 2.3.1, T&I 2.3.2, T&I 2.3.3, T&I 2.3.4
<b>d) Behavior of all participants in transport</b>		
27	Program for prevention measures.	T&I 3, T&I 3.1, T&I 3.2, T&I 3.2.1, T&I



No	Project	Result(s)
		3.2.2, T&I3.2.3, T&I 3.2.3.1
28	Establishing city traffic police.	T&I 3, T&I 3.1, T&I 3.2, T&I 3.2.1, T&I 3.2.2, T&I3.2.3, T&I 3.2.3.1
29	Project for electronic record of traffic fines.	T&I 3, T&I 3.1, T&I 3.2, T&I 3.2.1, T&I 3.2.2, T&I3.2.3, T&I 3.2.3.1
<b>e) Local Authorities</b>		
30	Strengthening the capacity of the local authorities responsible for transport	T&I 2, T&I 2.2, T&I 2.2.1, T&I 2.2.2, T&I 2.2.3, T&I 2.3, T&I 2.3.1, T&I 2.3.2, T&I 3, T&I 3.1, T&I 3.2, T&I 3.2.1
31	Preparing the guidelines for development of the urban transportation system.	T&I 2, T&I 2.2, T&I 2.2.1, T&I 2.2.2, T&I 2.2.3, T&I 2.3, T&I 2.3.1, T&I 2.3.2, T&I 3, T&I 3.1, T&I 3.2, T&I 3.2.1
32	Develop a Sustainable Urban Transport Strategy for the largest cities in the country.	T&I 2, T&I 2.2, T&I 2.2.1, T&I 2.2.2, T&I 2.2.3, T&I 2.3, T&I 2.3.1, T&I 2.3.2, T&I 3, T&I 3.1, T&I 3.2, T&I 3.2.1
33	Training of local public transport managers	T&I 2, T&I 2.2, T&I 2.2.1, T&I 2.2.2, T&I 2.2.3, T&I 2.3, T&I 2.3.1, T&I 2.3.2, T&I 3, T&I 3.1, T&I 3.2, T&I 3.2.1
<b>f) Information and Awareness</b>		
34	Launching of targeted public awareness raising programmes for meaning of sustainable transport	T&I 3, T&I 3.1, T&I 3.2, T&I 3.2.1, T&I 3.2.2, T&I3.2.3, T&I 3.2.3.1
35	Launching of targeted public awareness raising programmes that can play an important role in the improving behavior of all participants in transport	T&I 3, T&I 3.1, T&I 3.2, T&I 3.2.1, T&I 3.2.2, T&I3.2.3, T&I 3.2.3.1
36	Developing relevant educational programs for sustainable transport	T&I 1, T&I 2, T&I 3

### 3. Project proposals addressing some short-term results



Project	Result	Brief explanation	Estimated finances million EURO)	Possible financial sources
Construction of the road Ohrid - Peshtani , with length of 13 km	New transport infrastructure in tourist destination	During the summer period this road is very loaded. On some parts of this road technical elements are not in comply with the standards for this kind of road. This road is connection with Republic of Albania.	41.6	Central Budget Private investment Donors EU pre-accession assistance (IPA & EU Community Programmes) IFI assistance (World Bank, OECD, EBRD, etc.)
Construction of the road Veles-Prilep, with length of 72,6 km	New transport infrastructure	There is a design for this project. PIP 2007-2009	105	
Reconstruction of the road Skopje-Blace	Upgraded transport infrastructure	The trade and transport with UNMIK (Kosovo) are increasing and has demonstrated growth in last few years. This road is recognized as a bottleneck for efficient and adequate transport between Skopje and Prishtina.	40	
Reconstruction of the magistral road Shtip-Kocani, with length of 28 km	Upgraded transport infrastructure	This road is main connection to East region of Macedonia. Even this road is essential for economic development of East part of Macedonia, have been in some way completely ignored and there is in bad condition.	8	
Reconstruction of the magistral	Upgraded transport infrastructure	This road is part of Veles Shtip road,	13.6	



Project	Result	Brief explanation	Estimated finances million EURO)	Possible financial sources
road Kriva Krusha – Kadrifakovo, with length of 17 km		which is main connection to East and south east regions of Macedonia. This road is in bad condition and has to be upgraded.		
Reconstruction of the regional road Udovo – Dojran – Greek Border, with length of 42 km	Upgraded transport infrastructure in tourist destination	Dojran is one of the biggest tourism centers in Macedonia and also Dojran is cross border point with Greece. Existing road connection with the other part of Macedonia is in bad condition.	/	Central Budget Private investment Donors EU pre-accession assistance (IPA & EU Community Programmes) IFI assistance (World Bank, OECD, EBRD, etc.)
Construction of Section Deve Bair-Kriva Palanka	New transport infrastructure	NDP 2007-2009	19	
Reconstruction of Section Bitola-Medzitlija	Upgraded transport infrastructure	NDP 2007-2009	4	
Construction of road deviation Boshkov Most-Debar	New transport infrastructure	NDP 2007-2009	3.5	
Railway: Lines upgrading and capital remount on the following sections: Nogaevci-DemirKapija (38 km) Miravci-Smokvica (12 km.) Bitola –	Upgraded transport infrastructure	These projects are necessary for improvement of existing railways infrastructure. These projects are noticed in PEP 2007-2009 and NDP 2007-2009	15	



Project	Result	Brief explanation	Estimated finances million EURO)	Possible financial sources
Kumanovo – Deljadrovci (2 km new line)				
Finish construction of new railway lines: Beljakovce – Bulgarian Border	New transport infrastructure	Project is noticed in PEP 2007-2009	240	
Reconstruction and Modernization of Skopje /Ohrid Airport	Adequate air transport infrastructure	PEP 2007-2009 and NDP 2007-2009	45	
Adapt the airport to permit the seamless handling of PRM (passengers with reduced mobility);	Increased mobility of all people	Transport strategy	/	Central Budget PE budget Donors IFI assistance (World Bank, OECD, EBRD, etc.)
Adapt ground handling procedures and equipment for PRM	Increased mobility of all people	Transport strategy	/	
Project for urban rail transport in Skopje centre	New mode of urban transport	The old railway line between the new railway station and Gyorche Petrov has been covered with asphalt by the construction of new roads. This line perfectly links the city centre with north-west part of Skopje, creating the rail circle around the city. The other lines	14	Central Budget Municipality's budgets Donors EU pre-accession assistance (IPA & EU Community Programmes) IFI assistance (World Bank, OECD, EBRD, etc.)





Project	Result	Brief explanation	Estimated finances million EURO)	Possible financial sources
		can be used for urban transport instead of buses. The length of this particular line is around 7km. With relatively small investment that would repay itself quickly after operations starts, Skopje can have the most unique and practical urban transport		
Project for urban rail transport to the Skopje Airport	New mode of urban transport. Decreasing transport flow.	Construction of new rail line to the Airport will solve the problem with the urban transport to and from the airport. If this line is constructed (2.5-3 km needed), one would be able to reach the city centre in less than 15 minutes.	3.0	
Public transportation system (buses) to and from the airports with the main cities served by them.	Decreasing transport flow.	Currently there is no public transport to and from the Skopje airport, except taxi services. With establishing public transportation system, will bring decreased use of private cars.	/	Central Budget Municipality's budgets Private investments Donors
Plan for replace old vehicles, especially in public transport, with fleet that uses improved	Decreasing air pollution. Increasing efficiency of transport.	This plan will determine approach for solving the problems with existing old fleet and will determine	/	Central Budget Municipality's budgets Donors EU pre-accession assistance (IPA & EU Community Programmes)



Project	Result	Brief explanation	Estimated finances million EURO)	Possible financial sources
technologies and have clean engines.		measures for implementation.		
Develop a Sustainable Urban Transport Strategy for the largest cities in the country.	Strategy for improving urban transport.	Each town in Macedonia have deferent situation in the area of the urban transport. Implementation of sustainable transport concept is possible only with preparation and implementation of Sustainable Urban Transport Strategy.	0.2 – 0.6	
Projects for improving existing and building new bike and pedestrian paths and shortcuts in largest cities in the country.	Improving existing and building new Infrastructure. Decreasing air pollution and traffic flows.	Providing the adequate infrastructure for pedestrians and bikers is crucial for reducing the use of private cars. The promotion of alternative transport modes, with an accent on bicycle riding and walking, is an important action led by the Municipality in the field of sustainable mobility. The authorities have to be focused first on the establishment of appropriate conditions that support the use of bicycles by all categories of users.	/	IFI assistance (World Bank, OECD, EBRD, etc.)



Support to the Preparation of a National Strategy for Sustainable Development in  
The Republic of Macedonia

**Draft Final National Strategy for Sustainable Development February 2008**

Part II: Strategic background and analysis

## **Annex No. 9:**

# **List of Reviewed Documents**



## List of Reviewed International, National and Sector's Documents related to Sustainable Development

<p><b>Sector Analysis Report Agriculture Vlado Vukovic, Ph.D.</b></p>	<ul style="list-style-type: none"> <li>▪ AGENDA 21;</li> <li>▪ EU strategy for sustainable development;</li> <li>▪ Renewed EU Sustainable development strategy our commitment to sustainable development;</li> <li>▪ NEAP(s) National Environmental Action Plan (s);</li> <li>▪ NEHAP - National environmental health action plan of the R. Macedonia, 1999;</li> <li>▪ Agriculture development strategies of R. Macedonia to 2005 (2001);</li> <li>▪ Macedonian Sector Review, October 2002, WB;</li> <li>▪ Conceptual approach in the Creation and Implementation of the NSSD of the R. Macedonia, 2000;</li> <li>▪ National assessment report on sustainable development, 2002;</li> <li>▪ National Strategy for EU integration of R. Macedonia, 2004;</li> <li>▪ Strategy for approximation of the Macedonian agro-food sector to the CAP, 2004;</li> <li>▪ Questions/Answers toward our application to EU;</li> <li>▪ Livestock's long shadow, Environmental issues and options, 2006;</li> <li>▪ The State of the World's Animal Genetic Resources for Food and Agriculture, 2006;</li> <li>▪ Country study for Biodiversity of the R. Macedonia (First National Report, 2003);</li> <li>▪ Other local documents...still not officially adopted by Government of R. Macedonia;</li> <li>▪ European Commission Progress Report on the Republic of Macedonia 2007.</li> </ul>
<p><b>Sector Analysis Report Environment Svetislav Krstic, Ph.D.</b></p>	<ul style="list-style-type: none"> <li>▪ Conceptual Approach towards Creation and Implementation of the National Strategy for Sustainable Development of RM (2000);</li> <li>▪ National Assessment Report for Sustainable Development (2001-2002);</li> <li>▪ Guide towards Local Agenda 21 (2002);</li> <li>▪ Environmental Performance Reviews Series No.17 UNITED NATIONS New York and Geneva (2002);</li> <li>▪ Research Concept supportive to the creation and implementation of the NATIONAL STRATEGY FOR SUSTAINABLE DEVELOPMENT OF THE REPUBLIC OF MACEDONIA (2003);</li> <li>▪ Vision 2008 - The Roadmap of the Ministry of Environment and Physical Planning (2003);</li> <li>▪ Strengthening the Capacity of the Ministry of Environment and Physical Planning. An EU – funded project managed by the European Agency for Reconstruction. Technical Report: Environmental Awareness Strategy - Project result 14 (November 2003);</li> <li>▪ Strengthening the Capacity of the Ministry of Environment and Physical Planning. An EU – funded project managed by the European Agency for Reconstruction. Technical Report: Data Management Strategy - Project result 16 (June 2004);</li> <li>▪ Strengthening the Capacity of the Ministry of Environment and Physical Planning. An EU – funded project managed by the European Agency for Reconstruction. Technical Report: Environmental Communication Strategy</li> </ul>



	<ul style="list-style-type: none"> <li>- Project result 14 (June 2004);</li> <li>▪ Strengthening the Capacity of the Macedonian Ministry of Environment and Physical Planning an EU – funded project managed by the European Agency for Reconstruction. Technical report: Functional analysis and Institutional Development Plan - Project result 8 (July 2004);</li> <li>▪ Strengthening the Capacity of the Ministry of Environment and Physical Planning. An EU – funded project managed by the European Agency for Reconstruction. Technical Report: Environmental Monitoring Strategy - Project result 15 (July 2004);</li> <li>▪ National Strategy for European Integration of the Republic of Macedonia (September 2004);</li> <li>▪ ANALYTICAL REPORT for the Opinion on the application from the Republic of Macedonia for EU membership (November 2005);</li> <li>▪ Draft National Program for Adopting of the Acquis Communitarian (March 2006);</li> <li>▪ Answer to EU Commission Questionnaire (November 2006) - Chapter 22 ENVIRONMENT;</li> <li>▪ Pre-Accession Economic Program 2007-2009 (November 2006) - Chapter 4.7.5. ENVIRONMENT;</li> <li>▪ National Waste Management Plan, (2006);</li> <li>▪ National Framework for Biosafety, (2005);</li> <li>▪ Environmental Awareness Strategy, (2005);</li> <li>▪ Environmental Communication Strategy, (2005);</li> <li>▪ Environmental Data Management Strategy, (2005);</li> <li>▪ Strategy and Action Plan for the Aarhus Convention Implementation, (2005);</li> <li>▪ National Plan for Reduction and Elimination of Persistent Organic Pollutants in the Republic of Macedonia, (2005);</li> <li>▪ National Capacity Needs Self Assessment for Global Environmental Management, (2005);</li> <li>▪ Vision 2008 (2004);</li> <li>▪ Spatial Plan of the Republic of Macedonia, (2004), (Official Gazette of the Republic of Macedonia No.39/04);</li> <li>▪ National Strategy and Action Plan for Biological Diversity Protection (2004);</li> <li>▪ National Study on Biological Diversity, (2003);</li> <li>▪ First National Communication on Climate Change and Action Plan, (2003);</li> <li>▪ 14. National Environmental Health Action Plan (NEHAP), (1999);</li> <li>▪ National Environmental Action Plan (NEAP), (1996) and the Second National Environmental Action Plan (NEAP 2) (2006);</li> <li>▪ National Programme for Elimination of Ozone Depleting Substances, (1996), and</li> <li>▪ Water Master Plan of the Republic of Macedonia, (1978), whiles the development and adoption of a new Plan is in procedure;</li> <li>▪ European Commission Progress Report on the Republic of Macedonia 2007.</li> </ul>
<p><b>Sector Analysis Report Transport and Infrastructure Denis</b></p>	<ul style="list-style-type: none"> <li>▪ Regional Balkan Infrastructure – study Transport, EAR;</li> <li>▪ Transport and infrastructure regional study TIRS in the Balkans, Louis Berger SA;</li> <li>▪ Transport and energy infrastructure in South-East Europe;</li> <li>▪ Public Investment Program 2006-2008;</li> <li>▪ Railway reform project – World Bank Project;</li> </ul>



<p><b>Zernovski, PhD.</b></p>	<ul style="list-style-type: none"> <li>▪ Priority Projects for the Development of the South East Europe Core Regional Transport Network, 2006 – 2010 (SEETO);</li> <li>▪ Air Traffic infrastructure Regional Study;</li> <li>▪ Transport network management;</li> <li>▪ National strategy for economic development of Macedonia;</li> <li>▪ National waste management plan;</li> <li>▪ NEAP 2;</li> <li>▪ Physical plan of R. Macedonia;</li> <li>▪ Committee for IT program 2003-2007;</li> <li>▪ National strategy for IT sector and action plan;</li> <li>▪ Telecommunications: Country Comparative Report and Country Profile;</li> <li>▪ The study on integrated water resources development and management Master Plan;</li> <li>▪ Water Master Plan;</li> <li>▪ Statistical Year Book 2004;</li> <li>▪ Strategy for Macedonia – EBRD;</li> <li>▪ Law on Road Transport;</li> <li>▪ Law on Public Roads;</li> <li>▪ Law on Carriage of Dangerous Goods;</li> <li>▪ The Law on Road Transport Safety;</li> <li>▪ Law on Mandatory Transport Insurance;</li> <li>▪ Law on Railways;</li> <li>▪ Law on Transformation of the Public Enterprise “Macedonian Railways”- UnLtd Skopje;</li> <li>▪ Law on Aviation;</li> <li>▪ Law for radio diffusion;</li> <li>▪ Law for electronic communications;</li> <li>▪ Law on Energy;</li> <li>▪ Draft Water Law;</li> <li>▪ Law on Environment;</li> <li>▪ Law on Waste Management;</li> <li>▪ European Commission Progress report on the Republic of Macedonia 2007.</li> </ul>
<p><b>Sector Analysis Report Energy Natasa Markovska, D.Sc.</b></p>	<ul style="list-style-type: none"> <li>▪ EC Progress report, 8 November, 2006;</li> <li>▪ Regular Review 2006, under the Energy Charter Protocol on Energy Efficiency and Related Environmental Aspects – PEEREA;</li> <li>▪ Law for Founding Energy Agency (Official Gazette 62/2005);</li> <li>▪ National Environmental Action Plan II;</li> <li>▪ Athens Memorandum: Memorandum of Understanding on the Regional Energy Market in South East Europe and its Integration into the European Community Internal Energy Market;</li> <li>▪ MOEPP Response to Athens Memorandum (the “Athens Memorandum – 2002”, development of a South East Europe Regional Electricity Market (SEEREM));</li> <li>▪ Treaty for Establishing the Energy Community (25 October, 2005);</li> <li>▪ EC Treaty for South East Europe (3 May, 2006);</li> <li>▪ Law on Environment (Official Gazette 53/2005) and relevant secondary legislation ;</li> <li>▪ Energy Efficiency Strategy adopted by the Government in October 2004;</li> <li>▪ European Commission Progress report on the Republic of Macedonia 2007.</li> </ul>



<p><b>Cross-cutting Analysis Report National Policy and Legislation Silvana Mojsovska, Ph.D</b></p>	<ul style="list-style-type: none"><li>▪ National Strategy for Integration of the Republic of Macedonia into the EU, September 2004, Government of the Republic of Macedonia/Secretariat for European Affairs (<a href="http://www.sep.gov.mk">www.sep.gov.mk</a>);</li><li>▪ Council Decision on principles, priorities and conditions of the European partnership with the Republic of Macedonia, December 2005 (<a href="http://www.sep.gov.mk">www.sep.gov.mk</a>);</li><li>▪ Action plan for the European Partnership 2005, Government of the Republic of Macedonia/Secretariat for European Affairs (<a href="http://www.sep.gov.mk">www.sep.gov.mk</a>);</li><li>▪ EU Commission: Analytical Report on the Opinion of the Application of the Republic of Macedonia for EU membership, Brussels, 9 November 2005 (<a href="http://www.sep.gov.mk">www.sep.gov.mk</a>);</li><li>▪ National Programme for the Adoption of the Acquis, Government of the Republic of Macedonia, Secretariat for European Affairs (<a href="http://www.sep.gov.mk">www.sep.gov.mk</a>);</li><li>▪ Conceptual Approach towards Creation and Implementation of the National Strategy for Sustainable Development of RM" (2000);</li><li>▪ National Assessment Report for Sustainable Development" (2001-2002);</li><li>▪ Research Concept supportive to the creation and implementation of the National Strategy for sustainable development of the Republic of Macedonia" (2003);</li><li>▪ Agenda 21, United Nations, 1992 (<a href="http://www.un.org">www.un.org</a>);</li><li>▪ The Millenium Development Goals Report 2006, United Nations;</li><li>▪ Action Plan of the World Summit on Sustainable Development, Johannesburg 2002;</li><li>▪ Terry Willard, Maja Andelkovic (ed.), A Developing Connection: Bridging the Policy Gap between the Information Society and Sustainable Development, International Institute for Sustainable Development 2005 (<a href="http://www.iisd.org">www.iisd.org</a>);</li><li>▪ National Development Plan of the Republic of Macedonia 2007-2009, Government of the Republic of Macedonia (<a href="http://www.finance.gov.mk">www.finance.gov.mk</a>);</li><li>▪ Pre-accession Economic Programme 2007-2009, Government of the Republic of Macedonia (<a href="http://www.finance.gov.mk">www.finance.gov.mk</a>);</li><li>▪ Programme of the Government of the Republic of Macedonia for the period 2006-2010;</li><li>▪ EU Commission Staff Working Document: The Republic of Macedonia 2006 Progress Report (<a href="http://www.sep.gov.mk">www.sep.gov.mk</a>);</li><li>▪ National Restructuring and Conversion Programme in the Steel Industry of the Republic of Macedonia;</li><li>▪ Business Environment Report and Institutional Strengtening Project (BERIS), Ministry of Economy of Republic of Macedonia;</li><li>▪ Action Plan of the World Summit on Sustainable Development 2002</li><li>▪ EU Sustainable Development Strategy;</li><li>▪ Agenda 21;</li><li>▪ European Commission Progress report on the Republic of Macedonia 2007.</li></ul>
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<p><b>Sector Analysis Report Forestry</b> <b>Nikola Nikolov, Ph.D.</b></p>	<ul style="list-style-type: none"> <li>▪ Renewed EU Sustainable Development Strategy, June 9, 2006 – 10117/06;</li> <li>▪ Forestry strategy for the European Union (COM(1998) 649, 03/11/1998);</li> <li>▪ The Opinion of the Economic and Social Committee on ‘The European Union’s Forestry Strategy’ (2000/C 51/23);</li> <li>▪ National strategy for biodiversity and action plan Skopje, 2004;</li> <li>▪ National assessment report on sustainable development, Skopje, 2002;</li> <li>▪ National Strategy for EU integration of R. Macedonia Skopje, 2004;</li> <li>▪ Second National Communication (SNC) to the UNFCCC, Skopje 2006;</li> <li>▪ Second National Ecological Action Plan of Republic of Macedonia Skopje, 2006;</li> <li>▪ Spatial Plan of the Republic of Macedonia Skopje, 2004;</li> <li>▪ Strategy for sustainable development of forestry in the Republic of Macedonia Skopje, 2006;</li> <li>▪ European Commission Progress report on the Republic of Macedonia 2007.</li> </ul>
<p><b>Sub-Sector Analysis Report Local Government</b> <b>Ilija Todorovski, Ph.D.</b></p> <p><b>Sub-Sector Analysis Report Health Care</b> <b>Vladimir Kendrovski, Ph.D.</b></p>	<p><b>Strategies</b></p> <ul style="list-style-type: none"> <li>▪ Strategy for the Reform of the Local Government System in the Republic of Macedonia in 1999;</li> <li>▪ Constitution 1991;</li> <li>▪ Local Government Act (1995);</li> <li>▪ Law on Local Financing in 2004 and the new territorial division in 2004;</li> <li>▪ Program for Performance of the Decentralization Process 2004 - 2007.</li> </ul> <p><b>Studies</b></p> <ul style="list-style-type: none"> <li>▪ Sharing Powers - New Model of Decision Making in the Multicultural Municipalities in the Republic of Macedonia, 2005 (ADI);</li> <li>▪ Functioning of the Local Government System in the Republic of Macedonia. 2004 (ISPP);</li> <li>▪ Decentralization for Human Development, Human Development Report 2004, 2004 (UNDP);</li> <li>▪ Local Self-Government and Decentralization, Friedrich Ebert, 2001-2005;</li> <li>▪ Social Exclusion and Human Insecurity in the Republic of Macedonia, Human Development Report 2001, 2002 (UNDP).</li> </ul> <p><b>Laws</b></p> <ul style="list-style-type: none"> <li>▪ Local Government Act (2002);</li> <li>▪ Law on Financing Local Government Units (2004);</li> <li>▪ Law on Territorial Organization of the Local Government in the Republic of Macedonia (2004);</li> <li>▪ Law on the City of Skopje (2004);</li> <li>▪ Law on Amendments on the Primary Education Act (2004);</li> <li>▪ Law on Amendments on the Secondary Education Act (2004);</li> <li>▪ Law on Amendments on the Social Protection Act (2004);</li> <li>▪ Law on Amendments on the Children’s Protection Act (2004);</li> <li>▪ Law on Amendments on the Health Care Act (2004);</li> <li>▪ Law on Culture (2003);</li> <li>▪ Law on Libraries (2004);</li> <li>▪ Law on Museums (2004).</li> </ul> <p><b>International documents</b></p> <ul style="list-style-type: none"> <li>▪ European Charter of Local Self-Government (Council of Europe);</li> <li>▪ European Framework Convention for Cross-Border Cooperation Between the Territorial Communities and Authorities (Council of</li> </ul>





	<p>Europe);</p> <ul style="list-style-type: none"><li>▪ Framework Convention for Protection of the National Minorities (Council of Europe)</li></ul> <p>Strategies;</p> <ul style="list-style-type: none"><li>▪ Strategy on Advancement of Health Care of the Population in the Republic of Macedonia until 2010. Macedonian Academy of Sciences and Arts and the Ministry of Health, Skopje, 2001;</li><li>▪ Strategy for Continuous Medical Education in Primary Health Care in the Republic of Macedonia, 2000;</li><li>▪ Strategy for Accreditation of Medical Doctors in the Republic of Macedonia, of September 2001;</li><li>▪ Policy of Drugs in the Republic of Macedonia, of October 2001;</li><li>▪ National Strategy on HIV/AIDS for the period 2003-2006, of June 2003;</li><li>▪ National Strategy on Fight against Smoking 2005-2010, of 2004;</li><li>▪ National Strategy and Action Plan on Strengthening the Nursing Profession in the Republic of Macedonia, 2004;</li><li>▪ National Strategy on Job-related Health and Security, of April 2005;</li><li>▪ Strategy on Promotion of Mental Health 2005-2012, of January 2005;</li><li>▪ Strategy on Developing an Integrated Health Information System in the Republic of Macedonia, of April 2006;</li><li>▪ Millennium Development Goals Report in June 2005.</li></ul> <p><b>Action Plans</b></p> <ul style="list-style-type: none"><li>▪ National Environmental Health Action Plan of the Republic of Macedonia, Government of the Republic of Macedonia in June 1999;</li><li>▪ Action Plan on Food and Nutrition of the Republic of Macedonia 2004-2008, World Health Organization;</li><li>▪ National Action Plan for Primary, Secondary and Tertiary Health Care Prevention of the Non-Communicable Disease –Breast Cancer, 2004.</li></ul> <p><b>Projects</b></p> <ul style="list-style-type: none"><li>▪ World Bank. Project appraisal document on a proposed loan in the amount of US\$ 10.00 million to the Former Yugoslav Republic of Macedonia for a Health Sector Management Project. Washington DC, 26 April 2004;</li><li>▪ World Bank. Aide-memoire of the World Bank Supervision Mission, March 17 to April 14, 2005;</li><li>▪ World Bank. Aide-memoire of the World Bank Supervision Mission, 30 June to 8 July, 2005;</li><li>▪ BIS Healthcare Group. Strategy for financing and future organization of primary health care - final report (report no. 21335/3, version 4/7). 2001;</li><li>▪ Bossert T. Report on workshop on health systems and policies in Macedonia: evaluation, recommendations and follow-up. Harvard School of Public Health, 1 December 2003;</li><li>▪ Burchfield K. Health Insurance Fund governance reform component - final report, March 2004 (+ annexes);</li><li>▪ Cercone JA. Component 3: improving service delivery - Executive summary. No date;</li><li>▪ Cercone JA. Health sector reform project - Health services contracting and modernization component, final report. Ministry of Health, 31 March 2004;</li><li>▪ Ernst &amp; Young. HIF Macedonia - Audit of the internal controls. Final</li></ul>
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	<p>report. Luxemburg: 2004;</p> <ul style="list-style-type: none"> <li>▪ Ernst &amp; Young. Action plan for the Health Insurance Fund for the Republic of Macedonia. Final report, January 2005;</li> <li>▪ Ernst &amp; Young. HIF - Transitioning action plan for the health care sector - Short-term addendum to the “final report” (draft for discussion). April 2005;</li> <li>▪ European Observatory on Health Care Systems. The Former Yugoslav Republic of Macedonia - Health systems in transition profile 2006;</li> <li>▪ Institute of Sociological, Political and Juridical Research. Social assessment of the health sector in the Republic of Macedonia. Final report, June 2004;</li> </ul> <p><b>Laws</b></p> <ul style="list-style-type: none"> <li>▪ Law on Health Care (“Official Gazette of the RM ” No. 38/91; Constitutional Court - 73/92; 46/93 and 55/95 and revised text - 17/97 and amendments 2002, 2004, 2005);</li> <li>▪ Law on Health Insurance (Official Gazette of RM No.25/2000);</li> <li>▪ Law on Communicable Diseases Affecting the Country;</li> <li>▪ Law on Records-keeping in the Health Sector;</li> <li>▪ Law on Turnover of Drugs;</li> <li>▪ Law on Food Security and Items in Contact with Food (Official Gazette of RM, No.54/2002).</li> </ul>
<p><b>Sub-Sector Analysis Report Secondary Professional Education</b> <b>Zoran Jovchevski</b></p>	<ul style="list-style-type: none"> <li>▪ Law on Secondary Education;</li> <li>▪ Law on Occupational Education and Training;</li> <li>▪ National Programme for Development of the Education in the Republic of Macedonia (2005-2015);</li> <li>▪ Programme for Development of Secondary and Post-Secondary Education;</li> <li>▪ Programme for Professional Development of Teaching Staff;</li> <li>▪ Programme for Quality Assurance and Quality Control;</li> <li>▪ Programme for Institutional Support to the Reforms in the Education;</li> <li>▪ Programme for Development of Information and Communication Technologies in the Education;</li> <li>▪ Programme for Adult Education in the Republic of Macedonia in the Context of Life-long Learning;</li> <li>▪ Towards the European Framework of Qualifications for Life-long Learning- working documentation;</li> <li>▪ Concept for Continuous Occupational Education and Training.</li> </ul> <p><b>Strategies - Programmes</b></p> <ul style="list-style-type: none"> <li>▪ 2006, a National Programme for Development of the Education in the Republic of Macedonia (2005-2015);</li> <li>▪ Specific programmes: Programme for Development of Secondary and Post-Secondary Education, Programme for Professional Development of Teaching Staff, Programme for Quality Assurance and Quality Control in Education, Programme for Institutional Support to the Reforms in the Educational System, Programme for Development of Information and Communication Technologies in Education, and Programme for Adult Education in the Republic of Macedonia, in the</li> </ul>



	<p>context of the life-long learning efforts.</p> <p><b>Laws</b></p> <ul style="list-style-type: none"> <li>▪ The Law on Secondary Education ;</li> <li>▪ The Law on Occupational Education and Training;</li> </ul> <p><b>Other relevant documents</b></p> <ul style="list-style-type: none"> <li>▪ The Concept for Continued Occupational Education and Towards the European Framework for Qualifications for Life-long Learning;</li> <li>▪ Critical View on the Needs for a National Strategy for Sustainable Development of the Republic of Macedonia;</li> <li>▪ European Commission Progress report on the Republic of Macedonia 2007.</li> </ul>
<p><b>Sub-Sector Analysis Report Higher Education Zoran Jovchevski</b></p>	<p><b>European Documents for Sustainable Development</b></p> <ul style="list-style-type: none"> <li>▪ The programmes of the EU (Tempus, the sixth framework programme), COST, the bilateral cooperation and others are of great importance for the Republic of Macedonia;</li> <li>▪ 2005, Document for membership in CEEPUS network;</li> <li>▪ The network of Universities from South Eastern Europe;</li> <li>▪ The Stabilization and Association Agreement is the basic document in this process, i.e. CARDS programme, which provides resources for TEMPUS projects in the region;</li> <li>▪ Bologna Declaration of 1999, which was signed by the Republic of Macedonia in 2003 ;</li> <li>▪ European Commission Progress report on the Republic of Macedonia 2007.</li> </ul> <p><b>Relevant National Documents</b></p> <ul style="list-style-type: none"> <li>▪ Law on Higher Education;</li> <li>▪ Law on Changes and Amendments to the Law on Higher Education;</li> <li>▪ National Programme for Development of the Education in Republic of Macedonia (2005-2015);</li> <li>▪ Programme for Development of Higher Education;</li> <li>▪ Programme for Quality Assurance and Control in the Education;</li> <li>▪ Programme for Institutional Support to the Reforms in the Education;</li> <li>▪ Programme for Development of Information and Communications Technologies (ICT) in education;</li> <li>▪ Strategy for Development of the University „Ss Cyril and Methodius” (2004-2010).</li> </ul> <p><b>Strategies-programmes</b></p> <ul style="list-style-type: none"> <li>▪ In 2006, the National Programme for Development of the Education in the Republic of Macedonia (2005-2015) was adopted;</li> <li>▪ Programme for Development of Secondary and Post-Secondary Education, Programme for Professional Development of Teaching Staff, Programme for Quality Assurance and Quality Control in Education, Programme for Institutional Support to the Reforms in the</li> </ul>



	<p>Education, Programme for Development of Information and Communications Technologies in Education and Programme for Adult Education in the Republic of Macedonia in the context of life-long learning;</p> <ul style="list-style-type: none"> <li>▪ Strategy for Development of “Ss. Cyril and Methodius” University.</li> </ul> <p><b>Laws</b></p> <ul style="list-style-type: none"> <li>▪ The Law on Higher Education (endorsed by the National Assembly on 25 July 2000, (“Official Gazette of RM” No 64/2000) and the Law on Changes and Amendments to the Law on Higher Education (adopted by the National assembly on 16 July 2003, (“Official Gazette of RM”, No. 49/2003) comprise the national legal framework for higher education;</li> <li>▪ Programme for Quality Assurance and Quality Control in the Education;</li> <li>▪ Programme for Institutional Support to the Reforms in the Education;</li> <li>▪ Programme for Development of Information and Communications Technologies (ICT) in Education;</li> <li>▪ Critical View on the Need for a National Strategy for Sustainable Development (NSSD) of the Republic of Macedonia.</li> </ul>
<p><b>Sector Analysis Report Social Care</b> <b>Maria Donevska,</b> <b>Ph.D.</b></p>	<p><b>Existing strategies</b></p> <ul style="list-style-type: none"> <li>▪ National Poverty Reduction Strategy --overall analysis of poverty in RM and proposed draft measures;</li> <li>▪ Strategy on Roma in RM -- overall analysis of situation of Roma in RM, identification of priorities;</li> <li>▪ Research papers;</li> <li>▪ Social Exclusion and Human Insecurity in Macedonia, (2001) UNDP;</li> <li>▪ Focusing on Poverty, World Bank (1999);</li> <li>▪ Millennium Development Goals Report of the Republic of Macedonia (2005) Skopje;</li> <li>▪ Policy Assessment, Situation and Programmes for Children on the Streets, (2004) UNICEF, Institute for Social Work and Social Policy</li> <li>▪ .Amicic G., (2004) Social Welfare System in the Republic of Macedonia, Ministry of Labour and Social Policy;</li> <li>▪ Coneva Ljubica (2003) Implementation of the Decentralization in the Area of Social Protection, Conference, Introduction to the Law on Local Self-Government”.</li> </ul> <p><b>Laws and regulations</b></p> <ul style="list-style-type: none"> <li>▪ Law on Social Protection ;</li> <li>▪ Law on Family;</li> <li>▪ Law on Child Protection;</li> <li>▪ Law on Equal Opportunities between Men and Women.</li> </ul> <p><b>Other relevant documents</b></p> <ul style="list-style-type: none"> <li>▪ Answers to the questionnaires for receiving the status of a EU candidate country;</li> <li>▪ EU Report on Macedonia-2006;</li> <li>▪ CARDS priorities;</li> <li>▪ FYR OF MACEDONIA - POVERTY ASSESSMENT FOR 2002-2003, October 18, 2005, State Statistical Office (SSO), Macedonia and World</li> </ul>



	<p>Bank Poverty Reduction and Economic Management Unit Europe and Central Asia Region, Washington;</p> <ul style="list-style-type: none"> <li>▪ European Commission Progress report on the Republic of Macedonia 2007.</li> </ul>
<p><b>Sector Analysis Report Tourism</b></p> <p><b>Ivanka Nestoroska, Ph.D</b></p>	<ul style="list-style-type: none"> <li>▪ Renewed European Tourism Policy (A renewed EU Tourism Policy: Towards a stronger partnership for European Tourism, COM (2006) 134 final);</li> </ul> <p>The main areas on which the policy will focus are:</p> <ul style="list-style-type: none"> <li>▪ Mainstreaming measures affecting tourism (Better regulation, Policy-coordination, improved use of available European financial instruments)</li> <li>▪ Promoting tourism sustainability (A European Agenda 21 for tourism, Specific supporting actions for the sustainability of European tourism);</li> <li>▪ Enhancing the understanding and the visibility of tourism (Improving the understanding of European tourism, supporting the promotion of European destinations, improving the visibility of tourism: a common goal);</li> <li>▪ European Commission Progress report on the Republic of Macedonia 2007.</li> </ul> <p><b>Relevant National Documents</b></p> <ul style="list-style-type: none"> <li>▪ There is no National Strategy or other relevant national documents for sustainable development of tourism. But in Macedonia there are existing documents, laws and regulations; Law on tourist activity; Law on hospitality activity; Law on tourist tax; Regulations for minimum hygienic-technical working conditions for tourist activity; Regulations for minimum hygienic-technical working conditions for hospitality activity; Regulations for categorization of accommodation capacities, that contribute to the regulation of the main issues regarding tourism and hospitality activity in the country. Harmonization of these laws and regulations with other legislation from different sectors contributes and enables establishment of a basis for introduction and harmonization of SD issues. A study for master plan for tourism in the Republic of Macedonia was prepared by Louis Berger, S.A., in the period 2002-2003 but it was not officially adopted by the Government. Although not official this document has been used for many activities and projects in the field of tourism.</li> </ul>
<p><b>Employment Nikica Mojsoska Blazevska Ph.D</b></p>	<ul style="list-style-type: none"> <li>▪ National Employment Strategy 2010 (NES);</li> <li>▪ National Action Plan for Employment – NAPE 2006-2008;</li> <li>▪ Government programme 2006-2010;</li> <li>▪ European Commission (2005): Analytical Report for the Opinion on the Application from the Republic of Macedonia for EU Membership, pp. 95;</li> <li>▪ European Training Foundation (2005): Labour Market Review of the Republic of Macedonia, pp. 35-40, 43-45; European Commission (2005): Analytical Report for the Opinion on the Application from the Republic of Macedonia for EU Membership, pp. 95;</li> <li>▪ European Commission (08.11.2006): The former Yugoslav Republic of Macedonia 2006 Progress Report, pp. 25;</li> <li>▪ European Training Foundation (2005): Labour Market Review of the</li> </ul>



	<p>Republic of Macedonia, pp. 35-40;</p> <ul style="list-style-type: none"> <li>▪ Strategic Coherence Framework 2007-2013, section 2.2, pp. 22;</li> <li>▪ Mojsoska-Blazevski, N. (2006) The Public Employment, Education and Labour Markets in Macedonia, pp. 59;</li> <li>▪ European Commission Progress report on the Republic of Macedonia 2007.</li> </ul>
<p><b>SME Vesna Stojanova, Ph.D.</b></p>	<ul style="list-style-type: none"> <li>▪ collected documents: Review of all relevant documents for SD of SME sector (Agenda 21, EU Green Paper on entrepreneurship, Different reports on competitiveness (NECC report Dec.2005), EBRD country Report (June 2006), current situation assessments (from the SME Observatory Annual Report 2005, APPRM's annual Report 2005);</li> <li>▪ Revised Strategy of SME sector 2002-2013, Programme of activities in SME sector 2006-2010;</li> <li>▪ On the basis of comparative analyses of the national and international documents regarding the sustainable development of the SME sector the overall impression is that the National documents explicitly reflects and tries to achieve goals from the Lisbon strategy. That is, provision of economic growth and employment. However, since Macedonian SME sector is lagging behind the EU standards regarding its growth, competitiveness, innovativeness, R&amp;D, HRD etc. existing documents such as Revised Strategy of SME development in 2006-2013, as well as the Macedonian SME Competitiveness and Innovation Programme (2007-2010) consist explicit policies/measures to achieve these goals and objectives (Revised National Development Strategy for Small and Medium-Sized Enterprises (SMEs) (2002 – 2013), November, 2006 pg. 2-4 and Macedonian SME Competitiveness and Innovation Programme (2007-2010), September, 2006, pg.7), the Government's key socio-economic objective of reducing the current high levels of unemployment.</li> </ul> <p>This approach consist implicit sustainable development determinations regarding: economic and social issues such as economic and employment growth, it does not reflects environmental and human development issues.</p> <p>More explicit devotion to the sustainability issues is present in the SME Programme measures for the R&amp;D tax incentives (e.g. introduce tax exemptions for research and investment in renewable energy sources by SMEs, pg.31), and in measures for entrepreneurship awareness campaign at macro, meso and micro level (e.g. at macro level: campaign to emphasize entrepreneurs contribution to employment, social welfare, environmental protection and national growth; micro level: environmental protection awareness, health and safety at work, combating the informal economy, pg.43); including entrepreneurship awards for sustainable company of the year (social and environmental sustainability).</p> <ul style="list-style-type: none"> <li>▪ EU SDS;</li> <li>▪ European Commission Progress report on the Republic of Macedonia 2007.</li> </ul>



<b>Industry</b> <b>Delco</b> <b>Jovanoski</b> <b>PhD</b>	<b>International documents</b> <ul style="list-style-type: none"><li>▪ RENEWED EU SUSTAINABLE DEVELOPMENT STRATEGY June 9, 2006</li><li>▪ ANALYTICAL REPORT For the Opinion on the Application from the Republic of Macedonia for EU membership (November, 2005);</li><li>▪ COMMISSION STAFF WORKING DOCUMENT;</li><li>▪ The former Yugoslav Republic of Macedonia 2006 Progress Report EN {COM (2006) 649 final};</li><li>▪ Sustainable Development Indicators to monitor the implementation of the EU Sustainable Development Strategy (9.2.2005);</li><li>▪ UN Agenda 21;</li><li>▪ Presidency Conclusions of the Brussels European Council (15/16 June 2006);</li><li>▪ Targeting the Environmental Investment Challenge in South Eastern Europe (November, 2005);</li><li>▪ A European Union Strategy for Sustainable Development 2002;</li><li>▪ EU Funding in brief (June, 2006);</li><li>▪ The EU Strategy for Sustainable Development: Process and Prospects (January, 2004);</li><li>▪ A Results-Oriented Approach to Capacity Change (February 2005);</li><li>▪ Plan of Implementation of the World Summit on Sustainable Development (2002);</li><li>▪ Stabilization and Association Agreement between the Republic of Macedonia, on one part, and the European Communities and their member states, of the other part</li><li>▪ NSSD: GR, H, Lithuania, Belarus, D, Ireland, Estonia, S;</li><li>▪ European Commission Progress report on the Republic of Macedonia 2007.</li></ul>
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	<p><b>National documents</b></p> <ul style="list-style-type: none"><li>▪ Strategy for economy adjustment and global opinions on the economic development, prepared by MASA (Macedonian Academy of Sciences and Arts), 1992 on demand of the Government of the Republic of Macedonia;</li><li>▪ Law on Transformation of Enterprises with Social Capital ("Official Gazette of the Republic of Macedonia" No. 38/93, 48/93, 21/98, 25/99, 39/99, 49/00, 6/02, 31/03, 38/04);</li><li>▪ Law on Privatization of State Capital ("Official Gazette of the Republic of Macedonia " No.37/96, 25/99, 81/99, 49/00, 06/02, 77/05);</li><li>▪ Law on Institutions ("Official Gazette of the Republic of Macedonia " No. 32/05, 120/05);</li><li>▪ Law on Transformation of Public Enterprise "Macedonian Railways" ("Official Gazette of the Republic of Macedonia " No. 29/05);</li><li>▪ Law on Health Protection ("Official Gazette of the Republic of Macedonia " No. 85/05);</li><li>▪ The Broadcasting Law ("Official Gazette of the Republic of Macedonia " No. 100/05);</li><li>▪ Law on Restructuring of Loss Making Enterprises ("Official Gazette of the Republic of Macedonia " No.2/95);</li><li>▪ Law on Bankruptcy ("Official Gazette of the Republic of Macedonia " No.55/97, 53/00, 37/02, 17/04) and</li><li>▪ New Law on Bankruptcy ("Official Gazette of the Republic of Macedonia " No.34/06) Implementation 2006-2007;</li><li>▪ Agreement with IMF and the World Bank, II loan for adjustment of the financial sector and enterprise sector FESAL three trenches, December 2002-December 2003;</li><li>▪ Stabilization Program of the Government of the Republic of Macedonia ("Official Gazette of the Republic of Macedonia " No.br.4/94), prepared by IMF and the World Bank;</li><li>▪ National strategy for economic development of the Republic of Macedonia made in 1997 by MASA; it represents a long term vision till 2020;</li><li>▪ Strategy of export of the Republic of Macedonia, prepared by MASA in 1999;</li><li>▪ Frame program of economic development and reforms "Macedonia 2003" ("Official Gazette of the Republic of Macedonia " No.49/00);</li><li>▪ National strategy for the integration of the Republic of Macedonia in the European Union, 2004</li><li>▪ National program for adopting the law of EU 2006;</li><li>▪ National Strategy for development of small and medium size enterprises, 2003, financed by USAID;</li><li>▪ European act on small enterprises - Thessalonica 2003, R.M member with equal rights;</li><li>▪ Macedonian programme on competitiveness and innovation of MSP, 2007-2010 (Ministry of Economy);</li><li>▪ Industrial policy in the Macedonian economy, preparation is from 2006 to 2008, financed by the World Bank-BERIS. Implementation 2008-2010;</li><li>▪ National Strategy for reconstruction and modification of the steel industry in RM as an obligation from Protocol 2, of the Stabilization and Association Agreement with EU, prepared and financed by the European Committee; 2005 Implementation 2006-2008;</li></ul>
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	<ul style="list-style-type: none"><li>▪ Strategy for the development of textile industry in RM, underway, Institute of Economy. Implementation 2007-2009;</li><li>▪ Law on State Aid ("Official Gazette of the Republic of Macedonia" No.24/2003);</li><li>▪ Study on discovering administrative barriers and procedures for investing and attracting foreign investments in RM in cooperation with the World Bank - FIAS, 2003;</li><li>▪ Programme for stimulating investments in RM with help of the World Bank, MIGA, UNDP, USAID.2003-2006, Foreign Investment Agency established;</li><li>▪ New Programme for the Improvement of the investment climate in RM 2007-2010, EAR and TDI Group from Ireland;</li><li>▪ Law on stimulating and helping the technological development ("Official Gazette of the Republic of Macedonia " No. 98/2000);</li><li>▪ Law on stimulating and helping the technological culture ("Official Gazette of the Republic of Macedonia " No. 53/2000);</li><li>▪ Conceptual approach in the creation and revitalization of the National Strategy sustainable development of RM 2000;</li><li>▪ National estimation for sustainable development of RM – 2002;</li><li>▪ Research concept for ensuring analytical and predictable asset in function of preparing the National Strategy for sustainable development of RM – 2003;</li><li>▪ New Law on Trade Enterprises ("Official Gazette of the Republic of Macedonia" No. 24/04);</li><li>▪ Law on industrial ownership ("Official Gazette of the Republic of Macedonia " No. 09/2004);</li><li>▪ Law on concession ("Official Gazette of the Republic of Macedonia " No. 25/2002 and 24/2003);</li><li>▪ Law on the window reference system and Trade Registry ("Official Gazette of the Republic of Macedonia " No. 84/2005);</li><li>▪ Law on Free Economy Zones ("Official Gazette of the Republic of Macedonia " No. 2/2002), New Law on TIRZ -underway. Law on Competitors Protection ("Official Gazette of the Republic of Macedonia " No.4/2005);</li><li>▪ Law on Consumer Protection ("Official Gazette of the Republic of Macedonia" No.38/2004);</li><li>▪ Answers to the European Commission's Questionnaire;</li><li>▪ Strengthening the Capacity of the Ministry of Environment and Physical Planning (June, 2004);</li><li>▪ National reporting guidelines for CSD-14/15 Thematic Areas C. Industrial Development;</li><li>▪ National estimation for sustainable development of RM – 2003 (2002);</li><li>▪ Functional Analysis and Institutional Development Plan (16 July 2004).</li></ul> <p><b>Sector's documents</b></p> <ul style="list-style-type: none"><li>▪ Study on the privatization in Macedonia, prepared by the Faculty of Law, on demand of the Government of the Republic of Macedonia, 1993;</li><li>▪ Project - Programmes for restructuring the largest state-owned enterprises making losses;</li><li>▪ Study-Master plan for revitalization of the food industry in RM, Japanese agency for international cooperation,1996;</li><li>▪ GTZ: Project: Strategy for development of food industry with special</li></ul>
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	<ul style="list-style-type: none"><li>review towards production of fruit and vegetables 2002;</li><li>▪ Land of Lakes Project: "Proudly from Macedonia" and –Sign of quality for meat and dairy products, 1999;</li><li>▪ Sector studies on wine, leather and textile, production of fruit and vegetables 2001-2003 by the Macedonian Business Centre;</li><li>▪ GTZ: Studies on the conditions in RM regarding food production and safety HACCP;</li><li>▪ Programme for measures and activities for development of basic sectors with special sector policies, with Review of measures and activities for the realization of the frame programme on economic development and reforms, with tasks and dynamics holders (Ministry of Development);</li><li>▪ Annual programmes for adjusting the judiciary system of RM to the one of EU, starting from 2001;</li><li>▪ Institutional and financial frame:<ul style="list-style-type: none"><li>- Law on establishing Agency for the support of enterprising;</li><li>- Formation of national council for enterprising and competitiveness;</li><li>- Formation of eight regional center for enterprising support ;</li><li>- Euro - info correspondent centre in a chain with 300 European centers;</li><li>- Introduced guaranty fund within the Macedonian Bank for support of development, 2006;</li><li>- Established fund for human resources for strengthening managerial abilities in MSP;</li><li>- Annual programmes for support of MSP;</li><li>- National self-evaluated report on the European on small enterprises (RM 2006.)</li><li>- Special part of the project is creation of five clusters: lamb, cheese, wine, tourism and information technology;</li></ul></li><li>▪ Study on the development of the competition indicators of the Macedonian industry, 2006;</li><li>▪ Annual reports on realized activities in the restructuring of the steel industry in the Government of RM;</li><li>▪ Committee on protection of competitors according to principles of independence, selection and collectivistic in the decision making;</li><li>▪ Programme for stimulation of investments, 2003;</li><li>▪ Macedonian Business Centre: Investments in RM, 2003;</li><li>▪ Report on administrative procedures and investment barriers and attraction of SDI in RM, with an Action plan;</li><li>▪ Annual programmes for stimulating and helping the scientific-invention activities;</li><li>▪ Document for the basics and policies of the technologic development of RM–2004;</li><li>▪ Annual programmes for technologic development and culture;</li><li>▪ National Action Plan on Employment 2004-2005;</li><li>▪ Public Investments Programme 2004-2006;</li><li>▪ National programme for education development.2005-2015;</li><li>▪ Strategy on Energetic efficacy and National Ecology Action Plan.</li></ul>
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**List of international, national and sector's documents (related to SD)**

<p><b>Sector Analysis Report Agriculture Vlado Vukovic, Ph.D.</b></p>	<ul style="list-style-type: none"> <li>▪ AGENDA 21;</li> <li>▪ EU strategy for sustainable development;</li> <li>▪ Renewed EU Sustainable development strategy our commitment to sustainable development;</li> <li>▪ NEAP(s) National Environmental Action Plan (s);</li> <li>▪ NEHAP - National environmental health action plan of the R. Macedonia, 1999;</li> <li>▪ Agriculture development strategies of R. Macedonia to 2005 (2001);</li> <li>▪ Macedonian Sector Review, October 2002, WB;</li> <li>▪ Conceptual approach in the Creation and Implementation of the NSSD of the R. Macedonia, 2000;</li> <li>▪ National assessment report on sustainable development, 2002;</li> <li>▪ National Strategy for EU integration of R. Macedonia, 2004;</li> <li>▪ Strategy for approximation of the Macedonian agro-food sector to the CAP, 2004;</li> <li>▪ Questions/Answers toward our application to EU;</li> <li>▪ Livestock's long shadow, Environmental issues and options, 2006;</li> <li>▪ The State of the World's Animal Genetic Resources for Food and Agriculture, 2006;</li> <li>▪ Country study for Biodiversity of the R. Macedonia (First National Report, 2003);</li> <li>▪ Other local documents...still not officially adopted by Government of R. Macedonia;</li> <li>▪ European Commission Progress Report on the Republic of Macedonia 2007.</li> </ul>
<p><b>Sector Analysis Report Environment Svetislav Krstic, Ph.D.</b></p>	<ul style="list-style-type: none"> <li>▪ Conceptual Approach towards Creation and Implementation of the National Strategy for Sustainable Development of RM (2000);</li> <li>▪ National Assessment Report for Sustainable Development (2001-2002);</li> <li>▪ Guide towards Local Agenda 21 (2002);</li> <li>▪ Environmental Performance Reviews Series No.17 UNITED NATIONS New York and Geneva (2002);</li> <li>▪ Research Concept supportive to the creation and implementation of the NATIONAL STRATEGY FOR SUSTAINABLE DEVELOPMENT OF THE REPUBLIC OF MACEDONIA (2003);</li> <li>▪ Vision 2008 - The Roadmap of the Ministry of Environment and Physical Planning (2003);</li> <li>▪ Strengthening the Capacity of the Ministry of Environment and Physical Planning. An EU – funded project managed by the European Agency for Reconstruction. Technical Report: Environmental Awareness Strategy - Project result 14 (November 2003);</li> <li>▪ Strengthening the Capacity of the Ministry of Environment and Physical Planning. An EU – funded project managed by the European Agency for Reconstruction. Technical Report: Data Management Strategy - Project result 16 (June 2004);</li> <li>▪ Strengthening the Capacity of the Ministry of Environment and Physical Planning. An EU – funded project managed by the European Agency for Reconstruction. Technical Report: Environmental Communication Strategy - Project result 14 (June 2004);</li> </ul>



	<ul style="list-style-type: none"> <li>▪ Strengthening the Capacity of the Macedonian Ministry of Environment and Physical Planning an EU – funded project managed by the European Agency for Reconstruction. Technical report: Functional analysis and Institutional Development Plan - Project result 8 (July 2004);</li> <li>▪ Strengthening the Capacity of the Ministry of Environment and Physical Planning. An EU – funded project managed by the European Agency for Reconstruction. Technical Report: Environmental Monitoring Strategy - Project result 15 (July 2004);</li> <li>▪ National Strategy for European Integration of the Republic of Macedonia (September 2004);</li> <li>▪ ANALYTICAL REPORT for the Opinion on the application from the Republic of Macedonia for EU membership (November 2005);</li> <li>▪ Draft National Program for Adopting of the Acquis Communitarian (March 2006);</li> <li>▪ Answer to EU Commission Questionnaire (November 2006) - Chapter 22 ENVIRONMENT;</li> <li>▪ Pre-Accession Economic Program 2007-2009 (November 2006) - Chapter 4.7.5. ENVIRONMENT;</li> <li>▪ National Waste Management Plan, (2006);</li> <li>▪ National Framework for Biosafety, (2005);</li> <li>▪ Environmental Awareness Strategy, (2005);</li> <li>▪ Environmental Communication Strategy, (2005);</li> <li>▪ Environmental Data Management Strategy, (2005);</li> <li>▪ Strategy and Action Plan for the Aarhus Convention Implementation, (2005);</li> <li>▪ National Plan for Reduction and Elimination of Persistent Organic Pollutants in the Republic of Macedonia, (2005);</li> <li>▪ National Capacity Needs Self Assessment for Global Environmental Management, (2005);</li> <li>▪ Vision 2008 (2004);</li> <li>▪ Spatial Plan of the Republic of Macedonia, (2004), (Official Gazette of the Republic of Macedonia No.39/04);</li> <li>▪ National Strategy and Action Plan for Biological Diversity Protection (2004);</li> <li>▪ National Study on Biological Diversity, (2003);</li> <li>▪ First National Communication on Climate Change and Action Plan, (2003);</li> <li>▪ 14. National Environmental Health Action Plan (NEHAP), (1999);</li> <li>▪ National Environmental Action Plan (NEAP), (1996) and the Second National Environmental Action Plan (NEAP 2) (2006);</li> <li>▪ National Programme for Elimination of Ozone Depleting Substances, (1996), and</li> <li>▪ Water Master Plan of the Republic of Macedonia, (1978), whiles the development and adoption of a new Plan is in procedure;</li> <li>▪ European Commission Progress Report on the Republic of Macedonia 2007.</li> </ul>
<p><b>Sector Analysis Report Transport and Infrastructure Denis Zernovski, PhD.</b></p>	<ul style="list-style-type: none"> <li>▪ Regional Balkan Infrastructure – study Transport, EAR;</li> <li>▪ Transport and infrastructure regional study TIRS in the Balkans, Louis Berger SA;</li> <li>▪ Transport and energy infrastructure in South-East Europe;</li> <li>▪ Public Investment Program 2006-2008;</li> <li>▪ Railway reform project – World Bank Project;</li> <li>▪ Priority Projects for the Development of the South East Europe Core Regional Transport Network, 2006 – 2010 (SEETO);</li> <li>▪ Air Traffic infrastructure Regional Study;</li> <li>▪ Transport network management;</li> </ul>



	<ul style="list-style-type: none"> <li>▪ National strategy for economic development of Macedonia;</li> <li>▪ National waste management plan;</li> <li>▪ NEAP 2;</li> <li>▪ Physical plan of R. Macedonia;</li> <li>▪ Committee for IT program 2003-2007;</li> <li>▪ National strategy for IT sector and action plan;</li> <li>▪ Telecommunications: Country Comparative Report and Country Profile;</li> <li>▪ The study on integrated water resources development and management Master Plan;</li> <li>▪ Water Master Plan;</li> <li>▪ Statistical Year Book 2004;</li> <li>▪ Strategy for Macedonia – EBRD;</li> <li>▪ Law on Road Transport;</li> <li>▪ Law on Public Roads;</li> <li>▪ Law on Carriage of Dangerous Goods;</li> <li>▪ The Law on Road Transport Safety;</li> <li>▪ Law on Mandatory Transport Insurance;</li> <li>▪ Law on Railways;</li> <li>▪ Law on Transformation of the Public Enterprise “Macedonian Railways”- UnLtd Skopje;</li> <li>▪ Law on Aviation;</li> <li>▪ Law for radio diffusion;</li> <li>▪ Law for electronic communications;</li> <li>▪ Law on Energy;</li> <li>▪ Draft Water Law;</li> <li>▪ Law on Environment;</li> <li>▪ Law on Waste Management;</li> <li>▪ European Commission Progress report on the Republic of Macedonia 2007.</li> </ul>
<p><b>Sector Analysis Report Energy</b> <b>Natasa Markovska, D.Sc.</b></p>	<ul style="list-style-type: none"> <li>▪ EC Progress report, 8 November, 2006;</li> <li>▪ Regular Review 2006, under the Energy Charter Protocol on Energy Efficiency and Related Environmental Aspects – PEEREA;</li> <li>▪ Law for Founding Energy Agency (Official Gazette 62/2005);</li> <li>▪ National Environmental Action Plan II;</li> <li>▪ Athens Memorandum: Memorandum of Understanding on the Regional Energy Market in South East Europe and its Integration into the European Community Internal Energy Market;</li> <li>▪ MOEPP Response to Athens Memorandum (the “Athens Memorandum – 2002”, development of a South East Europe Regional Electricity Market (SEEREM));</li> <li>▪ Treaty for Establishing the Energy Community (25 October, 2005);</li> <li>▪ EC Treaty for South East Europe (3 May, 2006);</li> <li>▪ Law on Environment (Official Gazette 53/2005) and relevant secondary legislation ;</li> <li>▪ Energy Efficiency Strategy adopted by the Government in October 2004;</li> <li>▪ European Commission Progress report on the Republic of Macedonia 2007.</li> </ul>



<p><b>Cross-cutting Analysis Report National Policy and Legislation Silvana Mojsavska, Ph.D</b></p>	<ul style="list-style-type: none"><li>▪ National Strategy for Integration of the Republic of Macedonia into the EU, September 2004, Government of the Republic of Macedonia/Secretariat for European Affairs (<a href="http://www.sep.gov.mk">www.sep.gov.mk</a>);</li><li>▪ Council Decision on principles, priorities and conditions of the European partnership with the Republic of Macedonia, December 2005 (<a href="http://www.sep.gov.mk">www.sep.gov.mk</a>);</li><li>▪ Action plan for the European Partnership 2005, Government of the Republic of Macedonia/Secretariat for European Affairs (<a href="http://www.sep.gov.mk">www.sep.gov.mk</a>);</li><li>▪ EU Commission: Analytical Report on the Opinion of the Application of the Republic of Macedonia for EU membership, Brussels, 9 November 2005 (<a href="http://www.sep.gov.mk">www.sep.gov.mk</a>);</li><li>▪ National Programme for the Adoption of the Acquis, Government of the Republic of Macedonia, Secretariat for European Affairs (<a href="http://www.sep.gov.mk">www.sep.gov.mk</a>);</li><li>▪ Conceptual Approach towards Creation and Implementation of the National Strategy for Sustainable Development of RM" (2000);</li><li>▪ National Assessment Report for Sustainable Development" (2001-2002);</li><li>▪ Research Concept supportive to the creation and implementation of the National Strategy for sustainable development of the Republic of Macedonia" (2003);</li><li>▪ Agenda 21, United Nations, 1992 (<a href="http://www.un.org">www.un.org</a>);</li><li>▪ The Millenium Development Goals Report 2006, United Nations;</li><li>▪ Action Plan of the World Summit on Sustainable Development, Johannesburg 2002;</li><li>▪ Terry Willard, Maja Anelkovic (ed.), A Developing Connection: Bridging the Policy Gap between the Information Society and Sustainable Development, International Institute for Sustainable Development 2005 (<a href="http://www.iisd.org">www.iisd.org</a>);</li><li>▪ National Development Plan of the Republic of Macedonia 2007-2009, Government of the Republic of Macedonia (<a href="http://www.finance.gov.mk">www.finance.gov.mk</a>);</li><li>▪ Pre-accession Economic Programme 2007-2009, Government of the Republic of Macedonia (<a href="http://www.finance.gov.mk">www.finance.gov.mk</a>);</li><li>▪ Programme of the Government of the Republic of Macedonia for the period 2006-2010;</li><li>▪ EU Commission Staff Working Document: The Republic of Macedonia 2006 Progress Report (<a href="http://www.sep.gov.mk">www.sep.gov.mk</a>);</li><li>▪ National Restructuring and Conversion Programme in the Steel Industry of the Republic of Macedonia;</li><li>▪ Business Environment Report and Institutional Strengtning Project (BERIS), Ministry of Economy of Republic of Macedonia;</li><li>▪ Action Plan of the World Summit on Sustainable Development 2002</li><li>▪ EU Sustainable Development Strategy;</li><li>▪ Agenda 21;</li><li>▪ European Commission Progress report on the Republic of Macedonia 2007.</li></ul>
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<p><b>Sector Analysis Report Forestry</b> <b>Nikola Nikolov, Ph.D.</b></p>	<ul style="list-style-type: none"> <li>▪ Renewed EU Sustainable Development Strategy, June 9, 2006 – 10117/06;</li> <li>▪ Forestry strategy for the European Union (COM(1998) 649, 03/11/1998);</li> <li>▪ The Opinion of the Economic and Social Committee on ‘The European Union’s Forestry Strategy’ (2000/C 51/23);</li> <li>▪ National strategy for biodiversity and action plan Skopje, 2004;</li> <li>▪ National assessment report on sustainable development, Skopje, 2002;</li> <li>▪ National Strategy for EU integration of R. Macedonia Skopje, 2004;</li> <li>▪ Second National Communication (SNC) to the UNFCCC, Skopje 2006;</li> <li>▪ Second National Ecological Action Plan of Republic of Macedonia Skopje, 2006;</li> <li>▪ Spatial Plan of the Republic of Macedonia Skopje, 2004;</li> <li>▪ Strategy for sustainable development of forestry in the Republic of Macedonia Skopje, 2006;</li> <li>▪ European Commission Progress report on the Republic of Macedonia 2007.</li> </ul>
<p><b>Sub-Sector Analysis Report Local Government</b> <b>Ilija Todorovski, Ph.D.</b></p> <p><b>Sub-Sector Analysis Report Health Care</b> <b>Vladimir Kendrovski, Ph.D.</b></p>	<p><b>Strategies</b></p> <ul style="list-style-type: none"> <li>▪ Strategy for the Reform of the Local Government System in the Republic of Macedonia in 1999;</li> <li>▪ Constitution 1991;</li> <li>▪ Local Government Act (1995);</li> <li>▪ Law on Local Financing in 2004 and the new territorial division in 2004;</li> <li>▪ Program for Performance of the Decentralization Process 2004 - 2007.</li> </ul> <p><b>Studies</b></p> <ul style="list-style-type: none"> <li>▪ Sharing Powers - New Model of Decision Making in the Multicultural Municipalities in the Republic of Macedonia, 2005 (ADI);</li> <li>▪ Functioning of the Local Government System in the Republic of Macedonia. 2004 (ISPP);</li> <li>▪ Decentralization for Human Development, Human Development Report 2004, 2004 (UNDP);</li> <li>▪ Local Self-Government and Decentralization, Friedrich Ebert, 2001-2005;</li> <li>▪ Social Exclusion and Human Insecurity in the Republic of Macedonia, Human Development Report 2001, 2002 (UNDP).</li> </ul> <p><b>Laws</b></p> <ul style="list-style-type: none"> <li>▪ Local Government Act (2002);</li> <li>▪ Law on Financing Local Government Units (2004);</li> <li>▪ Law on Territorial Organization of the Local Government in the Republic of Macedonia (2004);</li> <li>▪ Law on the City of Skopje (2004);</li> <li>▪ Law on Amendments on the Primary Education Act (2004);</li> <li>▪ Law on Amendments on the Secondary Education Act (2004);</li> <li>▪ Law on Amendments on the Social Protection Act (2004);</li> <li>▪ Law on Amendments on the Children’s Protection Act (2004);</li> <li>▪ Law on Amendments on the Health Care Act (2004);</li> <li>▪ Law on Culture (2003);</li> <li>▪ Law on Libraries (2004);</li> <li>▪ Law on Museums (2004).</li> </ul> <p><b>International documents</b></p> <ul style="list-style-type: none"> <li>▪ European Charter of Local Self-Government (Council of Europe);</li> <li>▪ European Framework Convention for Cross-Border Cooperation Between the Territorial Communities and Authorities (Council of Europe);</li> <li>▪ Framework Convention for Protection of the National Minorities (Council of Europe)</li> </ul> <p>Strategies;</p>



	<ul style="list-style-type: none"><li>▪ Strategy on Advancement of Health Care of the Population in the Republic of Macedonia until 2010. Macedonian Academy of Sciences and Arts and the Ministry of Health, Skopje, 2001;</li><li>▪ Strategy for Continuous Medical Education in Primary Health Care in the Republic of Macedonia, 2000;</li><li>▪ Strategy for Accreditation of Medical Doctors in the Republic of Macedonia, of September 2001;</li><li>▪ Policy of Drugs in the Republic of Macedonia, of October 2001;</li><li>▪ National Strategy on HIV/AIDS for the period 2003-2006, of June 2003;</li><li>▪ National Strategy on Fight against Smoking 2005-2010, of 2004;</li><li>▪ National Strategy and Action Plan on Strengthening the Nursing Profession in the Republic of Macedonia, 2004;</li><li>▪ National Strategy on Job-related Health and Security, of April 2005;</li><li>▪ Strategy on Promotion of Mental Health 2005-2012, of January 2005;</li><li>▪ Strategy on Developing an Integrated Health Information System in the Republic of Macedonia, of April 2006;</li><li>▪ Millennium Development Goals Report in June 2005.</li></ul> <p><b>Action Plans</b></p> <ul style="list-style-type: none"><li>▪ National Environmental Health Action Plan of the Republic of Macedonia, Government of the Republic of Macedonia in June 1999;</li><li>▪ Action Plan on Food and Nutrition of the Republic of Macedonia 2004-2008, World Health Organization;</li><li>▪ National Action Plan for Primary, Secondary and Tertiary Health Care Prevention of the Non-Communicable Disease –Breast Cancer, 2004.</li></ul> <p><b>Projects</b></p> <ul style="list-style-type: none"><li>▪ World Bank. Project appraisal document on a proposed loan in the amount of US\$ 10.00 million to the Former Yugoslav Republic of Macedonia for a Health Sector Management Project. Washington DC, 26 April 2004;</li><li>▪ World Bank. Aide-memoire of the World Bank Supervision Mission, March 17 to April 14, 2005;</li><li>▪ World Bank. Aide-memoire of the World Bank Supervision Mission, 30 June to 8 July, 2005;</li><li>▪ BIS Healthcare Group. Strategy for financing and future organization of primary health care - final report (report no. 21335/3, version 4/7). 2001;</li><li>▪ Bossert T. Report on workshop on health systems and policies in Macedonia: evaluation, recommendations and follow-up. Harvard School of Public Health, 1 December 2003;</li><li>▪ Burchfield K. Health Insurance Fund governance reform component - final report, March 2004 (+ annexes);</li><li>▪ Cercone JA. Component 3: improving service delivery - Executive summary. No date;</li><li>▪ Cercone JA. Health sector reform project - Health services contracting and modernization component, final report. Ministry of Health, 31 March 2004;</li><li>▪ Ernst &amp; Young. HIF Macedonia - Audit of the internal controls. Final report. Luxemburg: 2004;</li><li>▪ Ernst &amp; Young. Action plan for the Health Insurance Fund for the Republic of Macedonia. Final report, January 2005;</li><li>▪ Ernst &amp; Young. HIF - Transitioning action plan for the health care sector - Short-term addendum to the “final report” (draft for discussion). April</li></ul>
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	<p>2005;</p> <ul style="list-style-type: none"> <li>▪ European Observatory on Health Care Systems. The Former Yugoslav Republic of Macedonia - Health systems in transition profile 2006;</li> <li>▪ Institute of Sociological, Political and Juridical Research. Social assessment of the health sector in the Republic of Macedonia. Final report, June 2004;</li> </ul> <p><b>Laws</b></p> <ul style="list-style-type: none"> <li>▪ Law on Health Care ("Official Gazette of the RM " No. 38/91; Constitutional Court - 73/92; 46/93 and 55/95 and revised text - 17/97 and amendments 2002, 2004, 2005);</li> <li>▪ Law on Health Insurance (Official Gazette of RM No.25/2000);</li> <li>▪ Law on Communicable Diseases Affecting the Country;</li> <li>▪ Law on Records-keeping in the Health Sector;</li> <li>▪ Law on Turnover of Drugs;</li> <li>▪ Law on Food Security and Items in Contact with Food (Official Gazette of RM, No.54/2002).</li> </ul>
<p><b>Sub-Sector Analysis Report Secondary Professional Education</b> <b>Zoran Jovchevski</b></p>	<ul style="list-style-type: none"> <li>▪ Law on Secondary Education;</li> <li>▪ Law on Occupational Education and Training;</li> <li>▪ National Programme for Development of the Education in the Republic of Macedonia (2005-2015);</li> <li>▪ Programme for Development of Secondary and Post-Secondary Education;</li> <li>▪ Programme for Professional Development of Teaching Staff;</li> <li>▪ Programme for Quality Assurance and Quality Control;</li> <li>▪ Programme for Institutional Support to the Reforms in the Education;</li> <li>▪ Programme for Development of Information and Communication Technologies in the Education;</li> <li>▪ Programme for Adult Education in the Republic of Macedonia in the Context of Life-long Learning;</li> <li>▪ Towards the European Framework of Qualifications for Life-long Learning- working documentation;</li> <li>▪ Concept for Continuous Occupational Education and Training.</li> </ul> <p><b>Strategies - Programmes</b></p> <ul style="list-style-type: none"> <li>▪ 2006, a National Programme for Development of the Education in the Republic of Macedonia (2005-2015);</li> <li>▪ Specific programmes: Programme for Development of Secondary and Post-Secondary Education, Programme for Professional Development of Teaching Staff, Programme for Quality Assurance and Quality Control in Education, Programme for Institutional Support to the Reforms in the Educational System, Programme for Development of Information and Communication Technologies in Education, and Programme for Adult Education in the Republic of Macedonia, in the context of the life-long learning efforts.</li> </ul> <p><b>Laws</b></p> <ul style="list-style-type: none"> <li>▪ The Law on Secondary Education ;</li> <li>▪ The Law on Occupational Education and Training;</li> </ul>



	<p><b>Other relevant documents</b></p> <ul style="list-style-type: none"> <li>▪ The Concept for Continued Occupational Education and Towards the European Framework for Qualifications for Life-long Learning;</li> <li>▪ Critical View on the Needs for a National Strategy for Sustainable Development of the Republic of Macedonia;</li> <li>▪ European Commission Progress report on the Republic of Macedonia 2007.</li> </ul>
<p><b>Sub-Sector Analysis Report Higher Education</b> <b>Zoran Jovchevski</b></p>	<p><b>European Documents for Sustainable Development</b></p> <ul style="list-style-type: none"> <li>▪ The programmes of the EU (Tempus, the sixth framework programme), COST, the bilateral cooperation and others are of great importance for the Republic of Macedonia;</li> <li>▪ 2005, Document for membership in CEEPUS network;</li> <li>▪ The network of Universities from South Eastern Europe;</li> <li>▪ The Stabilization and Association Agreement is the basic document in this process, i.e. CARDS programme, which provides resources for TEMPUS projects in the region;</li> <li>▪ Bologna Declaration of 1999, which was signed by the Republic of Macedonia in 2003 ;</li> <li>▪ European Commission Progress report on the Republic of Macedonia 2007.</li> </ul> <p><b>Relevant National Documents</b></p> <ul style="list-style-type: none"> <li>▪ Law on Higher Education;</li> <li>▪ Law on Changes and Amendments to the Law on Higher Education;</li> <li>▪ National Programme for Development of the Education in Republic of Macedonia (2005-2015);</li> <li>▪ Programme for Development of Higher Education;</li> <li>▪ Programme for Quality Assurance and Control in the Education;</li> <li>▪ Programme for Institutional Support to the Reforms in the Education;</li> <li>▪ Programme for Development of Information and Communications Technologies (ICT) in education;</li> <li>▪ Strategy for Development of the University „Ss Cyril and Methodius” (2004-2010).</li> </ul> <p><b>Strategies-programmes</b></p> <ul style="list-style-type: none"> <li>▪ In 2006, the National Programme for Development of the Education in the Republic of Macedonia (2005-2015) was adopted;</li> <li>▪ Programme for Development of Secondary and Post-Secondary Education, Programme for Professional Development of Teaching Staff, Programme for Quality Assurance and Quality Control in Education, Programme for Institutional Support to the Reforms in the Education, Programme for Development of Information and Communications Technologies in Education and Programme for Adult Education in the Republic of Macedonia in the context of life-long learning;</li> <li>▪ Strategy for Development of “Ss. Cyril and Methodius” University.</li> </ul>



	<p><b>Laws</b></p> <ul style="list-style-type: none"> <li>▪ The Law on Higher Education (endorsed by the National Assembly on 25 July 2000, (“Official Gazette of RM” No 64/2000) and the Law on Changes and Amendments to the Law on Higher Education (adopted by the National assembly on 16 July 2003, (“Official Gazette of RM”, No. 49/2003) comprise the national legal framework for higher education;</li> <li>▪ Programme for Quality Assurance and Quality Control in the Education;</li> <li>▪ Programme for Institutional Support to the Reforms in the Education;</li> <li>▪ Programme for Development of Information and Communications Technologies (ICT) in Education;</li> <li>▪ Critical View on the Need for a National Strategy for Sustainable Development (NSSD) of the Republic of Macedonia.</li> </ul>
<p><b>Sector Analysis Report Social Care</b> <b>Maria Donevska, Ph.D.</b></p>	<p><b>Existing strategies</b></p> <ul style="list-style-type: none"> <li>▪ National Poverty Reduction Strategy --overall analysis of poverty in RM and proposed draft measures;</li> <li>▪ Strategy on Roma in RM -- overall analysis of situation of Roma in RM, identification of priorities;</li> <li>▪ Research papers;</li> <li>▪ Social Exclusion and Human Insecurity in Macedonia, (2001) UNDP;</li> <li>▪ Focusing on Poverty, World Bank (1999);</li> <li>▪ Millennium Development Goals Report of the Republic of Macedonia (2005) Skopje;</li> <li>▪ Policy Assessment, Situation and Programmes for Children on the Streets, (2004) UNICEF, Institute for Social Work and Social Policy</li> <li>▪ .Amicic G., (2004) Social Welfare System in the Republic of Macedonia, Ministry of Labour and Social Policy;</li> <li>▪ Coneva Ljubica (2003) Implementation of the Decentralization in the Area of Social Protection, Conference, Introduction to the Law on Local Self-Government”.</li> </ul> <p><b>Laws and regulations</b></p> <ul style="list-style-type: none"> <li>▪ Law on Social Protection ;</li> <li>▪ Law on Family;</li> <li>▪ Law on Child Protection;</li> <li>▪ Law on Equal Opportunities between Men and Women.</li> </ul> <p><b>Other relevant documents</b></p> <ul style="list-style-type: none"> <li>▪ Answers to the questionnaires for receiving the status of a EU candidate country;</li> <li>▪ EU Report on Macedonia-2006;</li> <li>▪ CARDS priorities;</li> <li>▪ FYR OF MACEDONIA - POVERTY ASSESSMENT FOR 2002-2003, October 18, 2005, State Statistical Office (SSO), Macedonia and World Bank Poverty Reduction and Economic Management Unit Europe and Central Asia Region, Washington;</li> <li>▪ European Commission Progress report on the Republic of Macedonia 2007.</li> </ul>



<p><b>Sector Analysis Report Tourism</b></p> <p><b>Ivanka Nestoroska, Ph.D</b></p>	<ul style="list-style-type: none"> <li>▪ Renewed European Tourism Policy (A renewed EU Tourism Policy: Towards a stronger partnership for European Tourism, COM (2006) 134 final);</li> </ul> <p>The main areas on which the policy will focus are:</p> <ul style="list-style-type: none"> <li>▪ Mainstreaming measures affecting tourism (Better regulation, Policy-coordination, improved use of available European financial instruments)</li> <li>▪ Promoting tourism sustainability (A European Agenda 21 for tourism, Specific supporting actions for the sustainability of European tourism);</li> <li>▪ Enhancing the understanding and the visibility of tourism (Improving the understanding of European tourism, supporting the promotion of European destinations, improving the visibility of tourism: a common goal);</li> <li>▪ European Commission Progress report on the Republic of Macedonia 2007.</li> </ul> <p><b>Relevant National Documents</b></p> <ul style="list-style-type: none"> <li>▪ There is no National Strategy or other relevant national documents for sustainable development of tourism. But in Macedonia there are existing documents, laws and regulations; Law on tourist activity; Law on hospitality activity; Law on tourist tax; Regulations for minimum hygienic-technical working conditions for tourist activity; Regulations for minimum hygienic-technical working conditions for hospitality activity; Regulations for categorization of accommodation capacities, that contribute to the regulation of the main issues regarding tourism and hospitality activity in the country. Harmonization of these laws and regulations with other legislation from different sectors contributes and enables establishment of a basis for introduction and harmonization of SD issues. A study for master plan for tourism in the Republic of Macedonia was prepared by Louis Berger, S.A., in the period 2002-2003 but it was not officially adopted by the Government. Although not official this document has been used for many activities and projects in the field of tourism.</li> </ul>
<p><b>Employment Nikica Mojsoska Blazevska Ph.D</b></p>	<ul style="list-style-type: none"> <li>▪ National Employment Strategy 2010 (NES);</li> <li>▪ National Action Plan for Employment – NAPE 2006-2008;</li> <li>▪ Government programme 2006-2010;</li> <li>▪ European Commission (2005): Analytical Report for the Opinion on the Application from the Republic of Macedonia for EU Membership, pp. 95;</li> <li>▪ European Training Foundation (2005): Labour Market Review of the Republic of Macedonia, pp. 35-40, 43-45; European Commission (2005): Analytical Report for the Opinion on the Application from the Republic of Macedonia for EU Membership, pp. 95;</li> <li>▪ European Commission (08.11.2006): The former Yugoslav Republic of Macedonia 2006 Progress Report, pp. 25;</li> <li>▪ European Training Foundation (2005): Labour Market Review of the Republic of Macedonia, pp. 35-40;</li> <li>▪ Strategic Coherence Framework 2007-2013, section 2.2, pp. 22;</li> <li>▪ Mojsoska-Blazevski, N. (2006) The Public Employment, Education and Labour Markets in Macedonia, pp. 59;</li> <li>▪ European Commission Progress report on the Republic of Macedonia 2007.</li> </ul>



<p><b>SME Vesna Stojanova, Ph.D.</b></p>	<ul style="list-style-type: none"> <li>▪ collected documents: Review of all relevant documents for SD of SME sector (Agenda 21, EU Green Paper on entrepreneurship, Different reports on competitiveness (NECC report Dec.2005), EBRD country Report (June 2006), current situation assessments (from the SME Observatory Annual Report 2005, APPRM's annual Report 2005);</li> <li>▪ Revised Strategy of SME sector 2002-2013, Programme of activities in SME sector 2006-2010;</li> <li>▪ On the basis of comparative analyses of the national and international documents regarding the sustainable development of the SME sector the overall impression is that the National documents explicitly reflects and tries to achieve goals from the Lisbon strategy. That is, provision of economic growth and employment. However, since Macedonian SME sector is lagging behind the EU standards regarding its growth, competitiveness, innovativeness, R&amp;D, HRD etc. existing documents such as Revised Strategy of SME development in 2006-2013, as well as the Macedonian SME Competitiveness and Innovation Programme (2007-2010) consist explicit policies/measures to achieve these goals and objectives (Revised National Development Strategy for Small and Medium-Sized Enterprises (SMEs) (2002 – 2013), November, 2006 pg. 2-4 and Macedonian SME Competitiveness and Innovation Programme (2007-2010), September, 2006, pg.7), the Government's key socio-economic objective of reducing the current high levels of unemployment. This approach consist implicit sustainable development determinations regarding: economic and social issues such as economic and employment growth, it does not reflects environmental and human development issues. More explicit devotion to the sustainability issues is present in the SME Programme measures for the R&amp;D tax incentives (e.g. introduce tax exemptions for research and investment in renewable energy sources by SMEs, pg.31), and in measures for entrepreneurship awareness campaign at macro, meso and micro level (e.g. at macro level: campaign to emphasize entrepreneurs contribution to employment, social welfare, environmental protection and national growth; micro level: environmental protection awareness, health and safety at work, combating the informal economy, pg.43); including entrepreneurship awards for sustainable company of the year (social and environmental sustainability).             <ul style="list-style-type: none"> <li>▪ EU SDS;</li> <li>▪ European Commission Progress report on the Republic of Macedonia 2007.</li> </ul> </li> </ul>
<p><b>Industry Delco</b></p>	<p><b>International documents</b></p>



<p><b>Jovanoski PhD</b></p>	<ul style="list-style-type: none"> <li>▪ RENEWED EU SUSTAINABLE DEVELOPMENT STRATEGY June 9, 2006;</li> <li>▪ ANALYTICAL REPORT For the Opinion on the Application from the Republic of Macedonia for EU membership (November, 2005);</li> <li>▪ COMMISSION STAFF WORKING DOCUMENT;</li> <li>▪ The former Yugoslav Republic of Macedonia 2006 Progress Report EN {COM (2006) 649 final};</li> <li>▪ Sustainable Development Indicators to monitor the implementation of the EU Sustainable Development Strategy (9.2.2005);</li> <li>▪ UN Agenda 21;</li> <li>▪ Presidency Conclusions of the Brussels European Council (15/16 June 2006);</li> <li>▪ Targeting the Environmental Investment Challenge in South Eastern Europe (November, 2005);</li> <li>▪ A European Union Strategy for Sustainable Development 2002;</li> <li>▪ EU Funding in brief (June, 2006);</li> <li>▪ The EU Strategy for Sustainable Development: Process and Prospects (January, 2004);</li> <li>▪ A Results-Oriented Approach to Capacity Change (February 2005);</li> <li>▪ Plan of Implementation of the World Summit on Sustainable Development (2002);</li> <li>▪ Stabilization and Association Agreement between the Republic of Macedonia, on one part, and the European Communities and their member states, of the other part</li> <li>▪ NSSD: GR, H, Lithuania, Belarus, D, Ireland, Estonia, S;</li> <li>▪ European Commission Progress report on the Republic of Macedonia 2007.</li> </ul>
	<p><b>National documents</b></p> <ul style="list-style-type: none"> <li>▪ Strategy for economy adjustment and global opinions on the economic development prepared by MASA (Macedonian Academy of Sciences and Arts), 1992 on demand of the Government of the Republic of Macedonia;             <ul style="list-style-type: none"> <li>○ Law on Transformation of Enterprises with Social Capital ("Official Gazette of the Republic of Macedonia" No. 38/93, 48/93, 21/98, 25/99, 39/99, 49/00, 6/02, 31/03, 38/04);</li> </ul> </li> <li>▪ Law on Privatization of State Capital ("Official Gazette of the Republic of Macedonia " No.37/96, 25/99, 81/99, 49/00, 06/02, 77/05);</li> <li>▪ Law on Institutions ("Official Gazette of the Republic of Macedonia " No. 32/05, 120/05);</li> <li>▪ Law on Transformation of Public Enterprise "Macedonian Railways" ("Official Gazette of the Republic of Macedonia " No. 29/05);</li> <li>▪ Law on Health Protection ("Official Gazette of the Republic of Macedonia " No. 85/05);</li> <li>▪ The Broadcasting Law ("Official Gazette of the Republic of Macedonia "</li> </ul>



	<p>No. 100/05);</p> <ul style="list-style-type: none"> <li>▪ Law on Restructuring of Loss Making Enterprises ("Official Gazette of the Republic of Macedonia " No.2/95);             <ul style="list-style-type: none"> <li>▪ Law on Bankruptcy ("Official Gazette of the Republic of Macedonia " No.55/97, 53/00, 37/02, 17/04) and</li> </ul> </li> <li>▪ New Law on Bankruptcy ("Official Gazette of the Republic of Macedonia " No. Implementation 2006-2007);</li> <li>▪ Agreement with IMF and the World Bank, II loan for adjustment of the financial and enterprise sector FESAL three tranches, December 2002-December 2003;</li> <li>▪ Stabilization Program of the Government of the Republic of Macedonia ("Official Gazette of the Republic of Macedonia " No.br.4/94), prepared by IMF and the World Bank;             <ul style="list-style-type: none"> <li>▪ National strategy for economic development of the Republic of Macedonia made in 1997 by MASA; it represents a long term vision till 2020;</li> <li>▪ Strategy of export of the Republic of Macedonia, prepared by MASA in 1997;</li> <li>▪ Frame program of economic development and reforms "Macedonia 2003" ("Official Gazette of the Republic of Macedonia " No.49/00);</li> <li>▪ National strategy for the integration of the Republic of Macedonia in the European Union, 2004</li> <li>▪ -National program for adopting the law of EU 2006;                 <ul style="list-style-type: none"> <li>▪ National Strategy for development of small and medium size enterprises, 2003, financed by USAID;                     <ul style="list-style-type: none"> <li>▪ European act on small enterprises - Thessalonica 2003,</li> </ul> </li> </ul> </li> </ul> </li> </ul> <p>R.M member with equal rights;</p> <ul style="list-style-type: none"> <li>▪ Macedonian programme on competitiveness and innovation of MSP, 2007-2010 (Ministry of Economy) ;</li> <li>▪ Industrial policy in the Macedonian economy, preparation is from 2006 to 2010 financed by the World Bank-BERIS. Implementation 2008-2010;</li> <li>▪ National Strategy for reconstruction and modification of the steel industry in RM as an obligation from Protocol 2, of the Stabilization and Association Agreement with EU, prepared and financed by the European Committee; 2005 Implementation 2006-2008;</li> <li>▪ Strategy for the development of textile industry in RM, underway, Institute of Economy. Implementation 2007-2009;</li> <li>▪ Law on State Aid ("Official Gazette of the Republic of Macedonia" No.24/03);</li> <li>▪ Study on discovering administrative barriers and procedures for investing and attracting foreign investments in RM in cooperation with the World Bank - 2003;</li> <li>▪ Programme for stimulating investments in RM with help of the World Bank, MIGA, UNDP, USAID.2003-2006, Foreign Investment Agency established;</li> </ul>
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	<ul style="list-style-type: none"> <li>▪ New Programme for the Improvement of the investment climate in RM 2000; EAR and TDI Group from Ireland;</li> <li>▪ Law on stimulating and helping the technological development ("Official Gazette of the Republic of Macedonia " No. 98/2000);</li> <li>▪ Law on stimulating and helping the technological culture ("Official Gazette of the Republic of Macedonia " No. 53/2000);</li> <li>▪ Conceptual approach in the creation and revitalization of the National Strategy sustainable development of RM 2000;</li> <li>▪ National estimation for sustainable development of RM – 2002;</li> <li>▪ Research concept for ensuring analytical and predictable asset in function preparing the National Strategy for sustainable development of RM – 2003;</li> <li>▪ New Law on Trade Enterprises ("Official Gazette of the Republic of Macedonia" No. 24/04);</li> <li>▪ Law on industrial ownership ("Official Gazette of the Republic of Macedonia " No. 09/2004);</li> <li>▪ Law on concession ("Official Gazette of the Republic of Macedonia " No. 25/2002 and 24/2003);</li> <li>▪ Law on the window reference system and Trade Registry ("Official Gazette of the Republic of Macedonia " No. 84/2005);</li> <li>▪ Law on Free Economy Zones ("Official Gazette of the Republic of Macedonia " No. 2/2002), New Law on TIRZ -underway. Law on Competitors Protection ("Official Gazette of the Republic of Macedonia " No.4/2005);</li> <li>▪ Law on Consumer Protection ("Official Gazette of the Republic of Macedonia" No.38/2004);</li> <li>▪ Answers to the European Commission's Questionnaire;</li> <li>▪ Strengthening the Capacity of the Ministry of Environment and Physical Planning (June, 2004);</li> <li>▪ National reporting guidelines for CSD-14/15 Thematic Areas C. Industrial Development;</li> <li>▪ National estimation for sustainable development of RM – 2003 (2002);</li> <li>▪ Functional Analysis and Institutional Development Plan (16 July 2004).</li> </ul> <p><b>Sector's documents</b></p> <ul style="list-style-type: none"> <li>▪ Study on the privatization in Macedonia, prepared by the Faculty of Law, on demand of the Government of the Republic of Macedonia, 1993;</li> <li>▪ Project - Programmes for restructuring the largest state-owned enterprises making losses;</li> <li>▪ <b>Study-Master plan for revitalization of the food industry in RM, Japanese agency for international cooperation,1996;</b></li> </ul>
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	<ul style="list-style-type: none"><li>▪ GTZ: Project: Strategy for development of food industry with special review towards production of fruit and vegetables ,2002;</li><li>▪ Land o"Lakes Project: "Proudly from Macedonia" and –Sign of quality for meat and dairy products, 1999;</li><li>▪ Sector studies on wine, leather and textile, production of fruit and vegetables 2001-2003 by the Macedonian Business Centre;</li><li>▪ GTZ: Studies on the conditions in RM regarding food production and safety HACCP;</li><li>▪ Programme for measures and activities for development of basic sectors with special sector policies, with Review of measures and activities for the realization of the frame programme on economic development and reforms, with tasks and dynamics holders (Ministry of Development);</li><li>▪ Annual programmes for adjusting the judiciary system of RM to the one of EU, starting from 2001;</li><li>▪ Institutional and financial frame:<ul style="list-style-type: none"><li>- Law on establishing Agency for the support of enterprising;</li><li>- Formation of national council for enterprising and competitiveness;</li><li>- Formation of eight regional center for enterprising support ;</li><li>- Euro - info correspondent centre in a chain with 300 European centers ;</li><li>- Introduced guaranty fund within the Macedonian Bank for support of development, 2006;</li><li>- Established fund for human resources for strengthening managerial abilities in MSP;</li><li>- Annual programmes for support of MSP;<ul style="list-style-type: none"><li>- National self-evaluated report on the European on small enterprises (RM 2006.)</li></ul></li></ul></li></ul> <p>Special part of the project is creation of five clusters: lamb, cheese, wine, tourism and information technology;</p> <ul style="list-style-type: none"><li>▪ Study on the development of the competition indicators of the Macedonian industry, 2006;</li><li>▪ Annual reports on realized activities in the restructuring of the steel industry in the Government of RM;</li><li>▪ Committee on protection of competitors according to principles of independence, selection and collectivistic in the decision making;</li><li>▪ Programme for stimulation of investments, 2003;</li><li>▪ Macedonian Business Centre: Investments in RM, 2003;</li><li>▪ Report on administrative procedures and investment barriers and attraction of SDI in RM, with an Action plan;</li><li>▪ Annual programmes for stimulating and helping the scientific-invention activities;</li><li>▪ Document for the basics and policies of the technologic development of RM–2004;</li><li>▪ Annual programmes for technologic development and culture;</li><li>▪ National Action Plan on Employment 2004-2005;</li><li>▪ Public Investments Programme 2004-2006;</li><li>▪ National programme for education development.2005-2015;</li><li>▪ Strategy on Energetic efficacy and National Ecology Action Plan.</li></ul>
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## List of relevant documents (existing strategies, studies, laws, international documents) used for preparation of AA Reports divided by sectors

<p><b>Sector Analysis Report Agriculture Vlado Vukovic, Ph.D.</b></p>	<ul style="list-style-type: none"> <li>• AGENDA 21;</li> <li>• A EU strategy for sustainable development;</li> <li>• Renewed EU Sustainable development strategy our commitment to sustainable development;</li> <li>• NEAP(s) National Environmental Action Plan (s)</li> <li>• NEHAP - National environmental health action plan of the republic of R.Macedonia, 1999;</li> <li>• Agriculture development strategies of R.Macedonia to 2005 (2001);</li> <li>• Macedonian Sector Review, October 2002, WB</li> <li>• Conceptual approach in the Creation and Implementation of the NSSD of the R.Macedonia, 2000;</li> <li>• National assessment report on sustainable development, 2002;</li> <li>• National Strategy for EU integration of R.Macedonia, 2004;</li> <li>• Strategy for approximation of the Macedonian agro-food sector to the CAP, 2004;</li> <li>• Questions/Answers toward our application to EU;</li> <li>• Livestock's long shadow, Environmental issues and options, 2006</li> <li>• The State of the World's Animal Genetic Resources for Food and Agriculture, 2006</li> <li>• Country study for Biodiversity of the R.Macedonia (First National Report, 2003);</li> <li>• Other local documents...still not officially adopted by Government of R.Macedonia</li> </ul>
<p><b>Sector Analysis Report Environment Svetislav Krstic, Ph.D.</b></p>	<ul style="list-style-type: none"> <li>▪ Conceptual Approach towards Creation and Implementation of the National Strategy for Sustainable Development of RM (2000)</li> <li>▪ National Assessment Report for Sustainable Development (2001-2002)</li> <li>▪ Guide towards Local Agenda 21 (2002)</li> <li>▪ Environmental Performance Reviews Series No.17 UNITED NATIONS New York and Geneva (2002)</li> <li>▪ Research Concept supportive to the creation and implementation of the NATIONAL STRATEGY FOR SUSTAINABLE DEVELOPMENT OF THE REPUBLIC OF MACEDONIA (2003)</li> <li>▪ Vision 2008 - The Roadmap of the Ministry of Environment and Physical Planning (2003)</li> <li>▪ Strengthening the Capacity of the Ministry of Environment and Physical Planning An EU – funded project managed by the European Agency for Reconstruction Technical Report: Environmental Awareness Strategy - Project result 14 (November 2003)</li> <li>▪ Strengthening the Capacity of the Ministry of Environment and Physical Planning An EU – funded project managed by the European Agency for</li> </ul>



	<p>Reconstruction          Technical Report: Data Management Strategy - Project result 16 (June 2004)</p> <ul style="list-style-type: none"> <li>▪ Strengthening the Capacity of the Ministry of Environment and Physical Planning          An EU – funded project managed by the European Agency for Reconstruction</li> </ul> <p>Reconstruction          Technical Report: Environmental Communication Strategy - Project result 14 (June 2004)</p> <ul style="list-style-type: none"> <li>▪ Strengthening the Capacity of the Macedonian Ministry of Environment and Physical Planning          An EU – funded project managed by the European Agency for Reconstruction</li> </ul> <p>Reconstruction          Technical report: Functional analysis and Institutional Development Plan - Project result 8 (July 2004)</p> <ul style="list-style-type: none"> <li>▪ Strengthening the Capacity of the Ministry of Environment and Physical Planning          An EU – funded project managed by the European Agency for Reconstruction</li> </ul> <p>Reconstruction          Technical Report: Environmental Monitoring Strategy - Project result 15 (July 2004)</p> <ul style="list-style-type: none"> <li>▪ National Strategy for European Integration of the Republic of Macedonia (September 2004)</li> <li>▪ ANALYTICAL REPORT for the Opinion on the application from the Republic of Macedonia for EU membership (November 2005)</li> <li>▪ Draft National Program for Adopting of the Acquis Communautaire (March 2006)</li> <li>▪ Answer to EU Commission Questionnaire (November 2006) - Chapter 22 ENVIRONMENT</li> <li>▪ Pre-Accession Economic Program 2007-2009 (November 2006) - Chapter 4.7.5. ENVIRONMENT</li> </ul> <ol style="list-style-type: none"> <li>1. National Waste Management Plan, (2006);</li> <li>2. National Framework for Biosafety, (2005);</li> <li>3. Environmental Awareness Strategy, (2005);</li> <li>4. Environmental Communication Strategy, (2005);</li> <li>5. Environmental Data Management Strategy, (2005);</li> <li>6. Strategy and Action Plan for the Aarhus Convention Implementation, (2005);</li> <li>7. National Plan for Reduction and Elimination of Persistent Organic Pollutants in the Republic of Macedonia, (2005);</li> <li>8. National Capacity Needs Self Assessment for Global Environmental Management, (2005)</li> <li>9. Vision 2008 (2004);</li> <li>10. Spatial Plan of the Republic of Macedonia, (2004), (Official Gazette of the Republic of Macedonia No.39/04);</li> <li>11. National Strategy and Action Plan for Biological Diversity Protection (2004);</li> <li>12. National Study on Biological Diversity, (2003);</li> <li>13. First National Communication on Climate Change and Action Plan, (2003);</li> <li>14. National Environmental Health Action Plan (NEHAP), (1999);</li> </ol>
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	<p>15. National Environmental Action Plan (NEAP), (1996) and the Second National Environmental Action Plan (NEAP 2) (2006);</p> <p>16. National Programme for Elimination of Ozone Depleting Substances, (1996), and</p> <p>17. Water Master Plan of the Republic of Macedonia, (1978), while the development and adoption of a new Plan is in procedure.</p> <ul style="list-style-type: none"> <li>▪</li> </ul>						
<p><b>Sector Analysis Report Transport and Infrastructure Denis Zernovski, PhD.</b></p>	<ul style="list-style-type: none"> <li>▪ Regional Balkan Infrastructure – study Transport, EAR</li> <li>▪ Transport and infrastructure regional study TIRS in the Balkans, Louis Berger SA</li> <li>▪ Transport and energy infrastructure in South-East Europe</li> <li>▪ Public Investment Program 2006-2008</li> <li>▪ Railway reform project – World Bank Project</li> <li>▪ Priority Projects for the Development of the South East Europe Core Regional Transport Network, 2006 – 2010 (SEETO)</li> <li>▪ Air Traffic infrastructure Regional Study</li> <li>▪ Transport network management</li> <li>▪ National strategy for economic development of Macedonia</li> <li>▪ National waste management plan</li> <li>▪ NEAP 2</li> <li>▪ Physical plan of R. Macedonia</li> <li>▪ Committee for IT program 2003-2007</li> <li>▪ National strategy for IT sector and action plan</li> <li>▪ Telecommunications: Country Comparative Report and Country Profile</li> <li>▪ The study on integrated water resources development and management Master Plan</li> <li>▪ Water Master Plan</li> <li>▪ Statistical Year Book 2004</li> <li>▪ Strategy for Macedonia – EBRD</li> <li>▪ Law on Road Transport</li> <li>▪ Law on Public Roads</li> <li>▪ Law on Carriage of Dangerous Goods</li> <li>▪ The Law on Road Transport Safety</li> <li>▪ Law on Mandatory Transport Insurance</li> <li>▪ Law on Railways</li> <li>▪ Law on Transformation of the Public Enterprise “Macedonian Railways”- UnLtd Skopje</li> <li>▪ Law on Aviation</li> <li>▪ Law for radio diffusion</li> <li>▪ Law for electronic communications</li> <li>▪ Law on Energy</li> <li>▪ Draft Water Law</li> <li>▪ Law on Environment</li> <li>▪ Law on Waste Management</li> </ul>						
<p><b>Sector Analysis Report Sector Working Group INDUSTRY Delčo Jovanoski, Ph.D.</b></p>	<table border="1"> <tr> <th colspan="2" style="text-align: center;"><b>National documents</b></th> </tr> <tr> <td style="width: 50%;"></td> <td>N1: Stability program of the Government of Republic of Macedonia (Official Register of Republic of Macedonia N.4/94), made by IMF and World Bank</td> </tr> <tr> <td></td> <td>N2: National strategy for economic development of Republic of</td> </tr> </table>	<b>National documents</b>			N1: Stability program of the Government of Republic of Macedonia (Official Register of Republic of Macedonia N.4/94), made by IMF and World Bank		N2: National strategy for economic development of Republic of
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	Macedonia, made 1997 by MANU, vision for longer period of time until year 2020
	N3: Export strategy of Republic of Macedonia, prepared by MANU 1999
	N4: Frame program for economic development and reforms - Macedonia 2003 Official Register of Republic of Macedonia N.49/00
	N5: National strategy for integration of Republic of Macedonia in the European Union
	N6: National strategy for small and middle-sized businesses 2003, financed by USAID European charter for small businesses – Thessalonica 2003 Republic of Macedonia – equal member
	N7: National strategy Reconstructing of steel industry in Republic of Macedonia Stabilization and association agreement with EU, prepared and financed of European Commission 2005, implementation 2006 - 2009
	N8: Study for uncovering administrative barriers and procedures for investing and attracting foreign investments in Republic of Macedonia, in collaboration with WB – FIAS 2003
	N9: Program for stimulation of investments in Republic of Macedonia, helped by WB, MIGA, UNDP, USAID, 2003 - 2006
	N10: New program for improvement of investments in Republic of Macedonia, 2007 – 2010 EAR and TDI Group from Ireland
	N11: Creating and implementing the National strategy for development of the Republic of Macedonia – year 2000
	<b>International documents</b>
	I1: RENEWED EU SUSTAINABLE DEVELOPMENT STRATEGY June 9, 2006
	I2: ANALYTICAL REPORT For the Opinion on the Application from the Republic of Macedonia for EU membership (November, 2005)
	I3: COMMISSION STAFF WORKING DOCUMENT The former Yugoslav Republic of Macedonia 2006 Progress Report EN {COM (2006) 649 final}
	I4: Sustainable Development Indicators to monitor the implementation of the EU Sustainable Development Strategy (9.2.2005)
	I5: UN Agenda 21



<b>Sector's documents</b>	
	S1: Export strategy of Republic of Macedonia, 1999 MANU (Macedonian academy of sciences and arts)
	S2: Frame program of economic development and reforms, 2003
	S3: National strategy for steel
	S4: Strategy for textile development
	S5: Study for recognizing the administration barriers and procedures for investment, FIJAS, 2003
	S6: Technological development in Republic of Macedonia
<p><b>Sector Analysis Report Energy</b></p> <p><b>Natasa Markovska, D.Sc.</b></p>	<ul style="list-style-type: none"> <li>- EC Progress report, 8 November, 2006</li> <li>- Regular Review 2006, under the Energy Charter Protocol on Energy Efficiency and Related Environmental Aspects – PEEREA</li> <li>- Law for Founding Energy Agency (Official Gazette 62/2005)</li> <li>- National Environmental Action Plan II</li> <li>- AthensMemorandum: Memorandum of Understanding on the Regional Energy Market in South East Europe and its Integration into the European Community Internal Energy Market</li> <li>- MOEPP Response to Athens Memorandum (the “<b>Athens Memorandum – 2002</b>”, development of a South East Europe Regional Electricity Market (SEEREM))</li> <li>- Treaty for Establishing the Energy Community (25 October, 2005)</li> <li>- EC Treaty for South East Europe (3 May, 2006)</li> <li>- Law on Environment (Official Gazette 53/2005) and relevant secondary legislation</li> </ul> <p>- Energy Efficiency Strategy adopted by the Government in October 2004</p>
<p><b>Sector Analysis Report Forestry</b></p> <p><b>Nikola Nikolov, Ph.D.</b></p>	<ul style="list-style-type: none"> <li>- Renewed EU Sustainable Development Strategy, June 9, 2006 – 10117/06</li> <li>Forestry strategy for the European Union (COM(1998) 649, 03/11/1998)</li> <li>The Opinion of the Economic and Social Committee on ‘The European Union’s Forestry Strategy’ (2000/C 51/23)</li> <li>- National strategy for biodiversity and action plan Skopje, 2004</li> <li>- National assessment report on sustainable development, Skopje, 2002</li> <li>- National Strategy for EU integration of R.Macedonia Skopje, 2004</li> </ul>



	<ul style="list-style-type: none"><li>- Second National Communication (SNC) to the UNFCCC, Skopje 2006</li><li>- Second National Ecological Action Plan of Republic of Macedonia Skopje, 2006</li><li>- Spatial Plan of the Republic of Macedonia Skopje, 2004</li><li>- Strategy for sustainable development of forestry in the Republic of Macedonia Skopje, 2006</li></ul>
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<p>Cross-cutting Analysis Report National Policy and Legislation</p> <p>Silvana Mojsovska, Ph.D</p>	<ul style="list-style-type: none"><li>• National Strategy for Integration of the Republic of Macedonia into the EU, September 2004, Government of the Republic of Macedonia/Secretariat for European Affairs (<a href="http://www.sep.gov.mk">www.sep.gov.mk</a>)</li><li>• Council Decision on principles, priorities and conditions of the European partnership with the Republic of Macedonia, December 2005 (<a href="http://www.sep.gov.mk">www.sep.gov.mk</a>)</li><li>• Action plan for the European Partnership 2005, Government of the Republic of Macedonia/Secretariat for European Affairs (<a href="http://www.sep.gov.mk">www.sep.gov.mk</a>)</li><li>• EU Commission: Analytical Report on the Opinion of the Application of the Republic of Macedonia for EU membership, Brussels, 9 November 2005 (<a href="http://www.sep.gov.mk">www.sep.gov.mk</a>)</li><li>• National Programme for the Adoption of the Acquis, Government of the Republic of Macedonia, Secretariat for European Affairs (<a href="http://www.sep.gov.mk">www.sep.gov.mk</a>)</li><li>• Conceptual Approach towards Creation and Implementation of the National Strategy for Sustainable Development of RM" (2000)</li><li>• National Assessment Report for Sustainable Development" (2001-2002)</li><li>• Research Concept supportive to the creation and implementation of the National Strategy for sustainable development of the Republic of Macedonia" (2003);</li><li>• Agenda 21, United Nations, 1992 (<a href="http://www.un.org">www.un.org</a>)</li><li>• The Millenium Development Goals Report 2006, United Nations</li><li>• Action Plan of the World Summit on Sustainable Development, Johannesburg 2002</li><li>• Terry Willard, Maja Andelkovic (ed.), A Developing Connection: Bridging the Policy Gap between the Information Society and Sustainable Development, International Institute for Sustainable Development 2005 (<a href="http://www.iisd.org">www.iisd.org</a>)</li><li>– National Development Plan of the Republic of Macedonia 2007-2009, Government of the Republic of Macedonia (<a href="http://www.finance.gov.mk">www.finance.gov.mk</a>)</li><li>– Pre-accession Economic Programme 2007-2009, Government of the Republic of Macedonia (<a href="http://www.finance.gov.mk">www.finance.gov.mk</a>)</li><li>– Programme of the Government of the Republic of Macedonia for the period 2006-2010</li><li>– EU Commission Staff Working Document: The Republic of</li></ul>
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	<p>Macedonia 2006 Progress Report (<a href="http://www.sep.gov.mk">www.sep.gov.mk</a>)</p> <ul style="list-style-type: none"><li>- National Restructuring and Conversion Programme in the Steel Industry of the Republic of Macedonia</li><li>- Business Environment Report and Institutional Strengthening Project (BERIS), Ministry of Economy of Republic of Macedonia</li><li>- Action Plan of the World Summit on Sustainable Development 2002</li><li>- EU Sustainable Development Strategy</li><li>- Agenda 21</li></ul>
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<p>Sub-Sector Analysis Report Local Government Ilija Todorovski, Ph.D.</p>	<p>a)Strategies</p> <p>1. The Local Government Ministry passed its Strategy for the Reform of the Local Government System in the Republic of Macedonia in 1999. It was prepared in the period of strong centralization coming from the Local Government Act of 1995 and the supplementary legislation. In this context this Strategy tended to pave the way towards</p> <p>a)Enhancement of the competencies within the framework of the Constitution 1991 that stipulated much more competencies than the Local Government Act (1995) but much less than those introduced in legislation enacted since 2001</p> <p>b)Passing legislation dealing with local financing that did not exist at the time being</p> <p>c) Changes in the territorial organization by reconsidering the existence of the 123 municipalities, etc.</p> <p>The changes that took place after 2001 by introducing wider range of competencies than the Strategy's commitment, passing specific Law on Local Financing in 2004 and the new territorial division in 2004 makes the large portion of this Strategy be outdated.</p> <p>2. The Government of the Republic of Macedonia passed the Program for Performance of the Decentralization Process 2004 - 2007.</p>
<p>Sub-Sector Analysis Report Health Care Vladimir Kendrovski, Ph.D.</p>	<p>b) Studies</p> <p>More studies treating the local government issues in the Republic of Macedonia have been published in this period, the most important of which are:</p> <p>-Sharing Powers - New Model of Decision Making in the Multicultural Municipalities in the Republic of Macedonia, 2005 (ADI)</p> <p>The study is focused on interethnic communication and problems in four municipalities in the Western Part of Macedonia settled with various ethnicities</p>



	<p>-Functioning of the Local Government System in the Republic of Macedonia. 2004 (ISPP)</p> <p>It elaborates the issues such as relations between central and local authorities and transfer of competencies, local financing, relations between organs within municipalities, operation of public utility companies, political culture of the local population, the role of NGOs at local level, etc.</p> <p>-Decentralization for Human Development, Human Development Report 2004, 2004 (UNDP)</p> <p>It deals with economic, political, educational and other aspects in the process of decentralization</p> <p>-Local Self-Government and Decentralization, Friedrich Ebert, 2001-2005</p> <p>It is a set of comparative studies of the Balkan countries, including the Republic of Macedonia, on various topics, such as: relations between central and local authorities, executive and legislative bodies at local level, local public administration, etc.</p> <p>-Social Exclusion and Human Insecurity in the Republic of Macedonia, Human Development Report 2001,2002 (UNDP)</p> <p>The relationship between central and local authorities is elaborated in this study.</p> <p>c) Laws</p> <p>-Local Government Act (2002)</p> <p>-Law on Financing Local Government Units (2004)</p> <p>-Law on Territorial Organization of the Local Government in the Republic of Macedonia (2004)</p> <p>-Law on the City of Skopje (2004)</p> <p>-Law on Amendments on the Primary Education Act (2004)</p> <p>-Law on Amendments on the Secondary Education Act (2004)</p> <p>-Law on Amendments on the Social Protection Act (2004)</p> <p>-Law on Amendments on the Children's Protection Act (2004)</p>
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	<ul style="list-style-type: none"><li>-Law on Amendments on the Health Care Act (2004)</li><li>-Law on Culture (2003)</li><li>-Law on Libraries (2004)</li><li>-Law on Museums (2004)</li></ul> <p>d)International documents</p> <ul style="list-style-type: none"><li>-European Charter of Local Self-Government (Council of Europe)</li><li>-European Framework Convention for Cross-Border Cooperation Between the Territorial Communities and Authorities (Council of Europe)</li><li>-Framework Convention for Protection of the National Minorities (Council of Europe)</li></ul> <p>a) Strategies</p> <ol style="list-style-type: none"><li>1. Strategy on Advancement of Health Care of the Population in the Republic of Macedonia until 2010. Macedonian Academy of Sciences and Arts and the Ministry of Health, Skopje, 2001.</li></ol>
	<p>Preparation of a NEW STRATEGY is underway as an obligation of the State relating to the World Bank loan. The formulation process commenced in 2005 and the Strategy is expected to be adopted in the course of 2007.</p>
	<p>The new Strategy intends to unite all existing (adopted) strategies that are complementary in terms of health sector goals and visions by 2015:</p> <ul style="list-style-type: none"><li>➤ Strategy for Continuous Medical Education in Primary Health</li></ul>



	<p>Care in the Republic of Macedonia, 2000;</p> <ul style="list-style-type: none"><li>➤ Strategy for Accreditation of Medical Doctors in the Republic of Macedonia, of September 2001;</li><li>➤ Policy of Drugs in the Republic of Macedonia, of October 2001;</li><li>➤ National Strategy on HIV/AIDS for the period 2003-2006, of June 2003;</li><li>➤ National Strategy on Fight against Smoking 2005-2010, of 2004;</li><li>➤ National Strategy and Action Plan on Strengthening the Nursing Profession in the Republic of Macedonia, 2004;</li><li>➤ National Strategy on Job-related Health and Security, of April 2005;</li><li>➤ Strategy on Promotion of Mental Health 2005-2012, of January 2005;</li><li>➤ Strategy on Developing an Integrated Health Information System in the Republic of Macedonia, of April 2006.</li></ul> <p>All abovementioned strategies are germane to certain components of the health system, provide scrutiny of the current situation and propose measures for advancements.</p> <p>In addition, there is a draft version of the following strategy:</p> <ul style="list-style-type: none"><li>❖ National Strategy for Fight against Alcoholism.</li></ul> <p>Apart from the mentioned policies and strategies, there are a number of other finalized or draft papers from various health-related areas (HIV/AIDS, tuberculosis, mental health, alcohol, tobacco, drugs, food security and pharmaceutical products, etc).</p> <p>The Government of the Republic of Macedonia adopted the Millennium Development Goals Report in June 2005.</p> <p>b) Action Plans</p>
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	<p>National Environmental Health Action Plan of the Republic of Macedonia adopted by the Government of the Republic of Macedonia in June 1999.</p> <p>Action Plan on Food and Nutrition of the Republic of Macedonia 2004-2008 of April 2004 is a strategic document deriving from the agreed activities of the member-states of the World Health Organisation.</p> <p>National Action Plan for Primary, Secondary and Tertiary Health Care Prevention of the Non-Communicable Disease –Breast Cancer, 2004. Due to the lack of feasibility and sustainability in terms of financing and also due to non-designation of an institution to lead the process, this Plan is not being implemented.</p> <p>c) Projects</p> <p>World Bank. Project appraisal document on a proposed loan in the amount of US\$ 10.00 million to the Former Yugoslav Republic of Macedonia for a Health Sector Management Project. Washington DC, 26 April 2004.</p> <p>World Bank. Aide-memoire of the World Bank Supervision Mission, March 17 to April 14, 2005.</p> <p>World Bank. Aide-memoire of the World Bank Supervision Mission, 30 June to 8 July, 2005.</p> <p>BIS Healthcare Group. Strategy for financing and future organisation of primary health care - final report (report no. 21335/3, version 4/7). 2001.</p> <p>Bossert T. Report on workshop on health systems and policies in Macedonia: evaluation, recommendations and follow-up. Harvard School of Public Health, 1 December 2003.</p>
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	<p>Burchfield K. Health Insurance Fund governance reform component - final report, March 2004 (+ annexes).</p> <p>Cercone JA. Component 3: improving service delivery - Executive summary. No date.</p> <p>Cercone JA. Health sector reform project - Health services contracting and modernization component, final report. Ministry of Health, 31 March 2004.</p> <p>Ernst &amp; Young. HIF Macedonia - Audit of the internal controls. Final report. Luxemburg: 2004</p> <p>Ernst &amp; Young. Action plan for the Health Insurance Fund for the Republic of Macedonia. Final report, January 2005.</p> <p>Ernst &amp; Young. HIF - Transitioning action plan for the health care sector - Short-term addendum to the "final report" (draft for discussion). April 2005.</p> <p>European Observatory on Health Care Systems. The Former Yugoslav Republic of Macedonia - Health systems in transition profile 2006</p> <p>Institute of Sociological, Political and Juridical Research. Social assessment of the health sector in the Republic of Macedonia. Final report, June 2004.</p> <p>d) Laws</p> <p>1. Law on Health Care</p> <p>This Law lays down the rights to health care of the citizens, the relations and rights to health insurance, the procedures for claiming health insurance and the system and organization of health care.</p>
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	<p>("Official Gazette of the RM" No. 38/91; Constitutional Court - 73/92; 46/93 and 55/95 and revised text - 17/97 and amendments 2002, 2004, 2005).</p> <p>2. Law on Health Insurance (Official Gazette of RM No.25/2000)</p> <p>3. Law on Communicable Diseases Affecting the Country</p> <p>4. Law on Records-keeping in the Health Sector</p> <p>5. Law on Turnover of Drugs</p> <p>6. Law on Food Security and Items in Contact with Food (Official Gazette of RM, No.54/2002)</p>
<p>Sub-Sector Analysis Report Secondary Professional Education</p> <p>Zoran Jovchevski</p>	<p>The period 1998-2006 was full of activities related to reforms in the educational system. The reform activities were supported by a large number of projects that also produced numerous documents dealing with the strategic priorities of the Republic of Macedonia.</p> <p>Below is a review of the documents relevant and topical for the overall educational system including the occupational education in the R. Macedonia:</p> <ul style="list-style-type: none"> <li>➤ Law on Secondary Education;</li> <li>➤ Law on Occupational Education and Training;</li> <li>➤ National Programme for Development of the Education in the Republic of Macedonia (2005-2015);</li> <li>➤ Programme for Development of Secondary and Post-Secondary Education;</li> <li>➤ Programme for Professional Development of Teaching Staff;</li> <li>➤ Programme for Quality Assurance and Quality Control;</li> <li>➤ Programme for Institutional Support to the Reforms in the Education;</li> <li>➤ Programme for Development of Information and Communication Technologies in the Education;</li> <li>➤ Programme for Adult Education in the Republic of Macedonia</li> </ul>





	<p>in the Context of Life-long Learning;</p> <ul style="list-style-type: none"> <li>➤ Towards the European Framework of Qualifications for Life-long Learning- working documentation;</li> <li>➤ Concept for Continuous Occupational Education and Training.</li> </ul> <p>a) Strategies - Programmes</p> <p>In 2006, a National Programme for Development of the Education in the Republic of Macedonia (2005-2015) was adopted. The general Programme is accompanied by specific programmes as follows: Programme for Development of Secondary and Post-Secondary Education, Programme for Professional Development of Teaching Staff, Programme for Quality Assurance and Quality Control in Education, Programme for Institutional Support to the Reforms in the Educational System, Programme for Development of Information and Communication Technologies in Education, and Programme for Adult Education in the Republic of Macedonia, in the context of the life-long learning efforts.</p> <p>b) Laws</p> <p>The Law on Secondary Education ; The Law on Occupational Education and Training</p> <p>c) Other relevant documents</p> <p>The Concept for Continued Occupational Education and Training of 2003 is a document which served as a point of departure for conceptualising the Strategy for development of post-secondary education.</p> <p>Towards the European Framework for Qualifications for Life-long Learning – working documentation is a document of the European Community that should serve as a basis for designing the national framework for qualifications of the Republic of Macedonia.</p> <p>Critical View on the Needs for a National Strategy for Sustainable Development of the Republic of Macedonia.</p>
<p>Sub-Sector Analysis Report Higher Education</p>	<p>2.3.1. European Documents for Sustainable Development</p>



<p>Zoran Jovchevski</p>	<p>The programmes of the EU (Tempus, the sixth framework programme), COST, the bilateral cooperation and others are of great importance for the Republic of Macedonia, as instruments to increase the mobility of students and employees.</p> <p>It is a fact that the bilateral, regional and multilateral and bilateral cooperation among the higher educational institutions is mutually bound and inter-dependent. It is worth mentioning that the bilateral cooperation of the University "Ss Cyril and Methodius" includes 56 University agreements for cooperation through exchange of teachers, students, preparation of mutual projects and seminars.</p> <p>In 2005, Republic of Macedonia signed a document for membership in CEEPUS network, which provides mobility for students and academics among the higher educational institutions of the Central and Eastern European countries</p> <p>The network of Universities from South Eastern Europe, where the universities located in the capitals of the SEE countries belong, supports the idea that academic cooperation significantly contributes to building of trust, peace, stability and economic development in the region. So far, the most successful studies proved to be the master's studies at the University of Athens instructed in the English language.</p> <p>The European community is committed to stabilisation and development of the countries from South East Europe through promotion of integration processes.</p> <p>The Stabilisation and Association Agreement is the basic document in this process, i.e. CARDS programme, which provides resources for TEMPUS projects in the region. The active participation in the local projects enables implementation of projects for quality assurance and procedures for evaluation of the higher education, curricula development, validation of diplomas, academic mobility, distant learning, multilateral and bilateral cooperation in the priority areas within the TEMPUS. In the period 1996-2003, 68 projects, 19 compact measures and more than 260 scholarships for mobility were approved with a total budget of 16 million Euro. The first phase of the TEMPUS project was focused on development of the European dimension of the higher education and restructuring of the course programmes for</p>
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	<p>technical and engineering sciences with the aim to more efficiently address the needs of the market economy. Within the TEMPUS 2, special attention was given to the national reforms of the higher education by including the issues of continuous education, institutional development and IT. The latest TEMPUS 3 phase (2000-2006) deals with the actual needs of each particular country through new kinds of projects, namely, Institution Building Projects, Networking Projects and Mobility Projects.</p> <p>The mobility of students and academic staff, promotes one of the dimensions of European higher education space, which strives for undisturbed flow of people at national, regional, and international level, exchange of ideas and cooperation in the field of education and scientific research work, and development of skills to adjust to the new cultures and educational environments. The Sorbonne Declaration, which stipulates that the “national identities and the shared interests could serve the benefits of Europe, its students and all the citizens”, is another confirmation of the correctness of the efforts to create European higher education space.</p> <p>Certainly, the most important European document is the Bologna Declaration of 1999, which was signed by the Republic of Macedonia in 2003 as a full-fledged member of the European family of countries committed to follow and effectuate the recommendations from this document. The Bologna process in fact paves the way for sustainability and development of the higher education. The actual steps to achieve the vision of this process are defined in the related Governmental goals and policies.</p> <p><b>2.3.2. Relevant National Documents</b></p> <p>The following review presents the documents relevant to the education process, including the higher education in the Republic of Macedonia.</p> <ul style="list-style-type: none"><li>➤ Law on Higher Education;</li><li>➤ Law on Changes and Amendments to the Law on Higher Education;</li></ul>
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	<ul style="list-style-type: none"><li>➤ National Programme for Development of the Education in Republic of Macedonia (2005-2015);</li><li>➤ Programme for Development of Higher Education;</li><li>➤ Programme for Quality Assurance and Control in the Education;</li><li>➤ Programme for Institutional Support to the Reforms in the Education;</li><li>➤ Programme for Development of Information and Communications Technologies (ICT) in education;</li><li>➤ Strategy for Development of the University „Ss Cyril and Methodius”(2004-2010).</li></ul> <p>a) Strategies-programmes</p> <p>In 2006, the National Programme for Development of the Education in the Republic of Macedonia (2005-2015) was adopted. Complementary, but still separate elements of this programme are: Programme for Development of Secondary and Post-Secondary Education, Programme for Professional Development of Teaching Staff, Programme for Quality Assurance and Quality Control in Education, Programme for Institutional Support to the Reforms in the Education, Programme for Development of Information and Communications Technologies in Education and Programme for Adult Education in the Republic of Macedonia in the context of life-long learning.</p> <p>Strategy for Development of “Ss. Cyril and Methodius” University.</p> <p>b) Laws</p> <p>The Law on Higher Education (endorsed by the National Assembly on 25 July 2000, (“Official Gazette of RM” No 64/2000) and the Law on Changes and Amendments to the Law on Higher Education (adopted by the National assembly on 16 July 2003, (“Official Gazette of RM”,</p>
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	<p>No. 49/2003) comprise the national legal framework for higher education. The Laws regulate the following areas:</p> <ul style="list-style-type: none"><li>- the legal status and the autonomy of the Universities in conformity with the Constitution of the Republic of Macedonia;</li><li>- the establishment of public and private higher educational institutions and the conditions for their registration;</li><li>- introduction of a quality assurance system (evaluation and accreditation of higher educational institutions);</li><li>- Establishment and termination of the work of the higher educational institutions;</li><li>- Organisational units in the higher educational institutions and forms of mutual cooperation;</li><li>- Bodies of the higher educational institutions and their responsibilities;</li><li>- Development, financing and ownership of higher education institutions;</li><li>- higher education activities;</li><li>- scholarly/research, teaching and associate titles;</li><li>- students;</li><li>- recognition of diplomas;</li><li>- supervision over the activities of the higher education institutions..</li></ul> <p>The complexity of the Bologna process requires constant modernisation of the legislation in order to develop the required regulatory context for the reforms to take place. It is therefore crucial to modernise the Law on Higher Education along with the laws, by-laws and other legal instruments pertaining to higher education and the areas pertinent to its development (for instance, finance laws, labour and social welfare laws, laws on protection of intellectual property, laws on mobility of citizens etc).</p> <p>v) Other Relevant Documents</p> <p>Programme for Quality Assurance and Quality Control in the Education.</p> <p>Programme for Institutional Support to the Reforms in the Education.</p> <p>Programme for Development of Information and Communications Technologies (ICT) in Education.</p>
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	<p>Critical View on the Need for a National Strategy for Sustainable Development (NSSD) of the Republic of Macedonia</p>	
<p>Sector Analysis Report Social Care Maria Donevska, Ph.D.</p>	<p>Existing strategies</p>	
	<p>1. National Poverty Reduction Strategy --overall analysis of poverty in RM and proposed draft measures</p>	
	<p>2. Strategy on Roma in RM -- overall analysis of situation of Roma in RM, identification of priorities</p>	
	<p>Research papers</p>	
	<p>2.1. Social Exclusion and Human Insecurity in Macedonia, (2001) UNDP.</p>	
	<p>2.2. Focusing on Poverty, World Bank (1999)</p>	
	<p>2.3. Millennium Development Goals Report of the Republic of Macedonia (2005) Skopje</p>	
	<p>2.4. Policy Assessment, Situation and Programmes for Children on the Streets, (2004) UNICEF, Institute for Social Work and Social Policy</p>	
	<p>2.5. Amicic G., (2004) Social Welfare System in the Republic of Macedonia, Ministry of Labour and Social Policy</p>	
	<p>2.6. Coneva Ljubica (2003) Implementation of the Decentralization in the Area of Social Protection, Conference „Introduction to the Law on Local Self-Government”</p>	
	<p>Laws and regulations</p>	
	<p>3.1. Law on Social Protection</p>	
	<p>3.2. Law on Family</p>	
	<p>3.3. Law on Child Protection</p>	
	<p>3.4. Law on Equal Opportunities Between Men and Women</p>	



	<p>4. Other relevant documents</p> <p>4.1. Answers to the questionnaires for receiving the status of a EU candidate country</p> <p>4.2. EU Report on Macedonia-2006;</p> <p>4.3. CARDS priorities</p> <p>4.4. FYR OF MACEDONIA - POVERTY ASSESSMENT FOR 2002-2003, October 18, 2005, State Statistical Office (SSO), Macedonia and World Bank Poverty Reduction and Economic Management Unit Europe and Central Asia Region, Washington;</p>
<p>Sector Analysis Report Tourism</p> <p>Ivanka Nestoroska, PhD</p>	<p>Renewed European Tourism Policy (A renewed EU Tourism Policy: Towards a stronger partnership for European Tourism, COM (2006) 134 final);</p> <p>The main areas on which the policy will focus are:</p> <ul style="list-style-type: none"> <li>- Mainstreaming measures affecting tourism (Better regulation, Policy-coordination, improved use of available European financial instruments)</li> <li>- Promoting tourism sustainability (A European Agenda 21 for tourism, Specific supporting actions for the sustainability of European tourism)</li> <li>- Enhancing the understanding and the visibility of tourism (Improving the understanding of European tourism, supporting the promotion of European destinations, improving the visibility of tourism: a common goal)</li> </ul> <p>Relevant National Documents</p> <p>There is no National Strategy or other relevant national documents for sustainable development of tourism. But in Macedonia there are existing documents, laws and regulations; Law on tourist activity; Law on hospitality activity; Law on tourist tax; Regulations for minimum hygienic-technical working conditions for tourist activity; Regulations for minimum hygienic-technical working conditions for hospitality activity; Regulations for categorization of accommodation capacities, that contribute to the regulation of the main issues regarding tourism and hospitality activity in the country. Harmonization of these laws and regulations with other legislation from different sectors contributes and enables establishment of a basis for introduction and harmonization of SD issues. A study for master plan for tourism in the Republic of Macedonia was prepared by Louis Berger, S.A., in the period 2002-2003 but it was not officially adopted by the Government. Although not official this document has been used for many activities and projects in the field of tourism.</p>
<p>Sector Analysis Report</p>	<p>● collected documents: Review of all relevant documents for SD</p>



<p><b>SME SECTOR</b></p>	<p>of SME sector (Agenda 21, EU Green Paper on entrepreneurship, Different reports on competitiveness (NECC report Dec.2005), EBRD country Report (June 2006), current situation assessments (from the SME Observatory Annual Report 2005, APPRM's annual Report 2005), Revised Strategy of SME sector 2002-2013, Programme of activities in SME sector 2006-2010;</p>
<p>Vesna Stojanova, Ph.D.</p>	<p>The whole analysis is based on the SME's SD approach, having in mind the three pillars: economic growth, social development and environment protection. Regarding the SD of the SME sector, these three pillars implies the following elements:</p> <ol style="list-style-type: none"> <li>1. Economic efficiency of the SMEs: competitiveness, productivity, innovativeness, new added value, establishment of new and growth of existing SMEs, vertical/horizontal networking, HRD;</li> <li>2. Social welfare: good working conditions, social care for the employees, education and career development, social welfare of the local/national community;</li> <li>3. Environmental awareness: cost-effective energy use, utilization of renewable energy sources, environmental management system (EMS), pollution abatement.</li> </ol>
	<p>On the basis of comparative analyses of the national and international documents regarding the sustainable development of the SME sector the overall impression is that the National documents explicitly reflects and tries to achieve goals from the Lisbon strategy. That is, provision of economic growth and employment. However, since Macedonian SME sector is lagging behind the EU standards regarding its growth, competitiveness, innovativeness, R&amp;D, HRD etc. existing documents such as Revised Strategy of SME development in 2006-2013, as well as the Macedonian SME Competitiveness and Innovation Programme (2007-2010) consist explicit policies/measures to achieve these goals and objectives (Revised National Development Strategy for Small and Medium-Sized Enterprises (SMEs) (2002 – 2013), November, 2006 pg. 2-4 and Macedonian SME Competitiveness and Innovation Programme (2007-2010), September, 2006, pg.7), only:</p>
	<p><b>Strategic Goals</b></p> <ul style="list-style-type: none"> <li>• Increase the number of SMEs</li> <li>• Increase employment in SMEs</li> <li>• Increase the contribution of SMEs to GDP</li> </ul> <p><b>Strategic Objectives</b></p> <ul style="list-style-type: none"> <li>• Enhance Policy Making</li> <li>• Simplify the Legal and Regulatory Environment</li> <li>• Improve Access to Finance</li> <li>• Simplify Taxation</li> </ul>





	<ul style="list-style-type: none"><li>• Foster Information and Communication Technology</li><li>• Enhance Science, Technology and Innovation</li><li>• Promote Entrepreneurship in Education and Training</li><li>• Encourage Internationalization</li><li>• Improve Business Development Services</li></ul> <p>Accordingly, this approach is implemented in the SME Programme into the following main components:</p> <ol style="list-style-type: none"><li>1. Institutional architecture</li><li>2. Business environment.</li><li>3. Finance and taxation.</li><li>4. Innovation and competitiveness</li></ol> <p>It is considered that the four sets of issues above are crucial in raising the competitiveness of SMEs in the country. At the same time, the increased level of profitability is expected to lead to growth and employment generation, thus impacting on the Government's key socio-economic objective of reducing the current high levels of unemployment.</p> <p>This approach consist implicit sustainable development determinations regarding: economic and social issues such as economic and employment growth, it does not reflects environmental and human development issues.</p> <p>More explicit devotion to the sustainability issues is present in the SME Programme measures for the R&amp;D tax incentives (e.g. introduce tax exemptions for research and investment in renewable energy sources by SMEs, pg.31), and in measures for entrepreneurship awareness campaign at macro, meso and micro level (e.g. at macro level: campaign to emphasize entrepreneurs contribution to employment, social welfare, environmental protection and national growth; micro level: environmental protection awareness, health and safety at work, combating the informal economy, pg.43); including entrepreneurship awards for sustainable company of the year (social and environmental sustainability).</p> <p>Regarding international documents on SD that is a EU SDS.</p>
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Support to the Preparation of a National Strategy for Sustainable Development in  
The Republic of Macedonia

**Draft Final National Strategy for Sustainable Development February 2008**

Part II: Strategic background and analysis

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Support to the Preparation of a National Strategy for Sustainable Development in  
The Republic of Macedonia

**Draft Final National Strategy for Sustainable Development February 2008**

Part II: Strategic background and analysis

# **Annex No. 11:**

## **SHORT TERM EXPERTISE**



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# **REPORT**

on

**“ Preparation of a National Strategy for Sustainable Development in the Republic of Macedonia ”**

## **Part AGRICULTURE**

### **Tasks:**

- **Agriculture and climate change**
- **Agriculture and soil protection**
- **Agriculture and pesticides**
- **Agriculture and nitrates**
- **Agriculture and water**

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## 1. Agriculture and climate change

### Introduction

Climate change (CC) is becoming main environmental issue in last several years in the country. Several projects financed by international donors (GEF, UNDP) were financed in last 5 years. Project "Enabling Macedonia to prepare its First National Communication on Climate Change in response to its commitments to the UNFCCC", Project "Expedited Financing of Climate Change Enabling Activities (Phase II)" that are already completed and on going project "Enabling activities for the preparation of Macedonia' Second National Report to the UNFCCC". In the frame of these projects several strategic documents on Climate Change were prepared in last several years:

- Macedonia First National Communication to UNFCCC
- Evaluation of Technology needs for GHG Abatement in Energy Sector

In stage of preparation is Macedonian Second National Communication to UNFCCC. The following documents are available:

- National GHG Inventory Report
- Vulnerability assessment and adaptation sector reports for following sectors: Agriculture, Biodiversity, Forestry, Health and Water resources
- Climate Change Scenarios for Macedonia

Climate change can be analyzed from two major aspects:

- Agriculture as a source of GHG
- Effects of Climate Change on agricultural production in the country.

### State in Macedonia

Macedonia ratified United Nation Framework Convention on Climate Change (UNFCCC) on 28 January 1998 and it entry in force on 28 April 1998. Also Macedonia ratified Kyoto Protocol on 18 November 2004 and it entry into force on 16 February 2005.

### Agriculture as source of GHG

Agricultural sector, accounting for more than 10% of country's GDP, has a great impact on the Macedonian economy. Therefore, the objective of this analysis is assessment of the environmental and economic effectiveness of potential measures in this sector.

GHG emissions from the agriculture sector are consisted of methane (CH<sub>4</sub>) and nitrous oxide (N<sub>2</sub>O), originating from the following sources:

- Enteric fermentation (CH<sub>4</sub> emissions)
- Manure management (CH<sub>4</sub> and N<sub>2</sub>O emissions)
- Rice cultivation (CH<sub>4</sub> emissions)
- Agricultural soils (N<sub>2</sub>O emissions).

Despite these direct emissions, agriculture is also analyzed as source of GHG in energy sector. This emission is almost neglectable, because in 1990 agriculture contributed with 2,48% (246 228 kt CO<sub>2</sub>-eq) and in 2002 these values decrease to 0,61% (56 810 kt CO<sub>2</sub>-eq).

Due to this facts there is not further analyze of agriculture as source of GHG emissions in energy sector.

The inventory revision in the Agricultural Sector (1990-1998) and the new inventory (1992-2002) are conducted according to the IPCC Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories.

At this moment the available input data are in correlation with the request of the IPCC Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories for application of the Tier 2 method. Therefore revision and new inventory allow application of the Tier 1 method. The implementation of the more complex Tier 2 method requires country-specific information for sector Agriculture. Implementation of more sophisticated method (Tier 2) in the future inventories can be accepted if experts pose data which will be in accordance with the Tier 2 methodology. To achieve this request certain changes, rearrangements, should be done in the field of data collections and approximation of our statistical office with Euro stat.

The main problem is the absence of relevant statistical department within the Ministry of Agriculture, Forestry and Water Economy (MAFWE) and non-existence of appropriate systems which will serve as a reliable and constant source of field data which will be further on statistically appropriate elaborated and delivered to the State Statistical Office for further integration with other relevant data.

Collection of activity data for realization of this inventory, concerning the agriculture sector is based on official data of the State Statistical Office of the Republic of Macedonia as a key source. Greenhouse gases emissions are computed using data for each category and each sub-sector further multiplied by the specific emission factors, which are estimated separately for each year.

The GHG Inventory for Agriculture is based on the data for the following gases: CH<sub>4</sub>, N<sub>2</sub>O and CO<sub>2</sub>-eq, and their emission from the following source categories:

- CH<sub>4</sub> emissions from enteric fermentation in domestic livestock,
- CH<sub>4</sub> emissions from manure management,
- N<sub>2</sub>O emissions from manure management,
- CH<sub>4</sub> and N<sub>2</sub>O emissions from agricultural residue burning,
- Direct N<sub>2</sub>O emissions from agricultural soils,
- Indirect N<sub>2</sub>O emissions from nitrogen used in agriculture,
- CH<sub>4</sub> emissions from rice production.

Other gases such as: hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulphur hexafluoride (SF<sub>6</sub>) and SO<sub>2</sub> are not specific, characteristic for agriculture.

The emissions of CO<sub>2</sub>-eq from agriculture for the period are given by subsectors in Table 1. In addition, in the lower part of the table the contribution of the individual subsectors are presented. It is evident that the main sources of the emissions are the enteric fermentation and agricultural soils, both with about 40-50% of the total CO<sub>2</sub>-eq emissions. There is trend of increasing of enteric fermentation as a major source of GHG in agriculture in last period unlike 1990 when major source of GHG was soil. It is not result of better soil management, but of decreased use of nitrogen fertilizers as result of transition and decreased economic power of agricultural production. Even enteric fermentation decrease in absolute numbers for more than 20% in same period, even though relatively it became biggest and most important GHG source in the country fertilizers Table 2 presents the contributions of the individual GHGs in

the total CO<sub>2</sub>-eq for the agriculture. In 1990 main GHG is N<sub>2</sub>O with about 60 % of all GHG's. In 2002 main GHG emitted from agriculture is CH<sub>4</sub> with 55% of total emission.

**Table 1. Contribution of individual sub sectors to the total CO<sub>2</sub>-eq emissions in agriculture**

[kt]	1990	1995	2000	2002
Enteric Fermentation	694.38	692.21	559.46	545.42
Manure Management	170.07	167.90	162.22	158.12
Rice Cultivation	9.32	1.32	4.06	1.96
Agricultural Soils	1,034.49	963.61	653.78	367.89
<b>Total</b>	<b>1,908.27</b>	<b>1,825.04</b>	<b>1,379.52</b>	<b>1,073.39</b>
[%]				
Enteric Fermentation	36.39	37.93	40.55	50.81
Manure Management	8.91	9.20	11.76	14.73
Rice Cultivation	0.49	0.07	0.29	0.18
Agricultural Soils	54.21	52.80	47.39	34.27
<b>Total</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>

**Table 2. Contribution of individual GHGs to the total CO<sub>2</sub>-eq emissions in agriculture**

[kt]	1990	1995	2000	2002
CH <sub>4</sub>	757.53	746.60	615.04	597.20
N <sub>2</sub> O	1,150.74	1,078.44	764.48	476.19
Total	1,908.27	1,825.04	1,379.52	1,073.39
[%]				
CH <sub>4</sub>	39.70	40.91	44.58	55.64
N <sub>2</sub> O	60.30	59.09	55.42	44.36
<b>Total</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>

Table 3 presents sectoral emission of GHG expressed as CO<sub>2</sub> equivalents. Emission from agriculture decreases in period 1990-2002 (from 1908 to 1073 kt). Finally it is not result of better management practices, but of decreased activities in agriculture. These decreased activities change participation of agriculture in total emission from 14,8% in 1995 to 8,59% in 2002. The measures for support of agriculture undertaken in the country (direct payment and subsidies amounting more than 40 millions EURO) will create better environment for increasing of agricultural activities. Such increasing surely will increase GHG emission and some mitigation and abatement measures should be undertaken.

**Table 3 Sectorial CO<sub>2</sub>-equivalent emissions**

<b>Sector[kt]</b>	1990	1995	2000	2002
Energy	9,939.83	8,925.02	9,226.90	9,755.52
Industry	889.29	793.28	885.70	784.05
Agriculture	1,908.27	1,825.04	1,379.52	1,073.39
LUCF*	283.66	5.67	1,973.70	36.49
Waste	786.29	778.67	844.23	840.59
<b>Total</b>	<b>13,807.34</b>	<b>12,327.68</b>	<b>14,310.05</b>	<b>12,490.04</b>
<b>Sector %</b>				
Energy	71.99	72.40	64.48	78.11
Industry	6.44	6.43	6.19	6.28
Agriculture	13.82	14.80	9.64	8.59
LUCF*	2.05	0.05	13.79	0.29
Waste	5.69	6.32	5.90	6.73
<b>Total</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>

\*LUCF - Land use changes and forestry

### **Effect of climate change on agricultural production**

Notwithstanding the fact that Macedonia has semi arid climate, some regions can be considered as one of the most arid regions in Europe. Increased temperature and evapotranspiration along with the decreased rainfalls (expected with climate changes scenarios) will have negative effect on agricultural sector through decreased crop yield, lower biomass production, reduced fodder for animal breeding, increased mineralization of soil organic matter etc. The agriculture report further analyzes three very vulnerable sub sectors: crop production, soils and animal production.

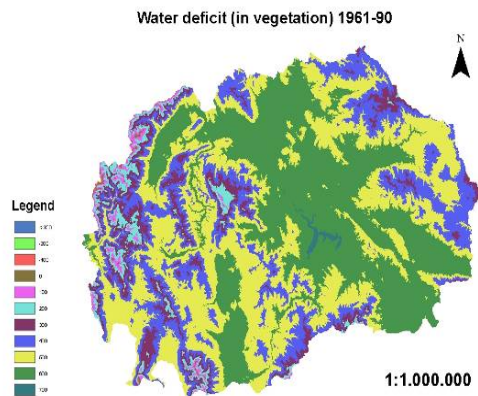
### **Crop production**

#### **Changes in climatic and agro-climatic environment**

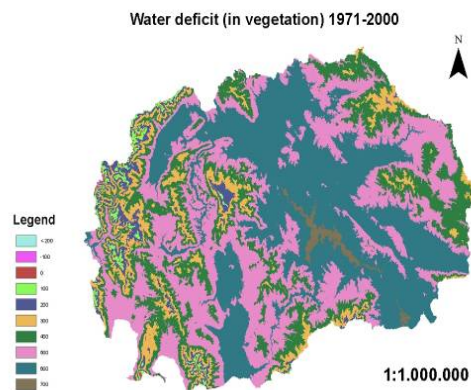
Analysis of agro climatic conditions was conducted in order to determine most vulnerable area to climate change for crop production. This is the first analysis at a country level, done using models developed in GIS environment. Analysis of climate and agro-climate conditions in the country was done based on comparison of two series of meteorological data (1961-90 and 1971-2000). Model for water deficit for growing of agricultural crops was developed for period 1961-1990 (Map 1) and 1971-2000) Map 2. In both periods higher water deficit appears in central part of the country (central Vardar river valley with conjunctions with Crna and Bregalnica River). In the second period (Map 2) this area has increased, along with the deficit. The new area with water deficit of above 600 mm appeared in the most south part of Vardar River Valley - Gevgelija region (Map 2). The Map 3 shows difference between Map 1 and Map 2. This maps shows increase of the water deficit for normal crop growing in almost all agricultural areas in the country (whole Vardar River Valley, Strumica River Valley, Ovche Pole, Skopje and Kumanovo regions, Pelagonija Valley, Polog Valley etc.). Similar condition is presented in Map 4 (difference between drought index by De Marttone for periods 1961-1990 and 1971-2000). This map shows area of the country where aridity increases. This analyze proves that agro-climate conditions for crop growing are becoming more severe for most of agricultural areas, and if adaptation measures are not implemented agricultural

sector, especially the crop production will decrease significantly, due to increased aridity and water deficit as limiting factor of crop production.

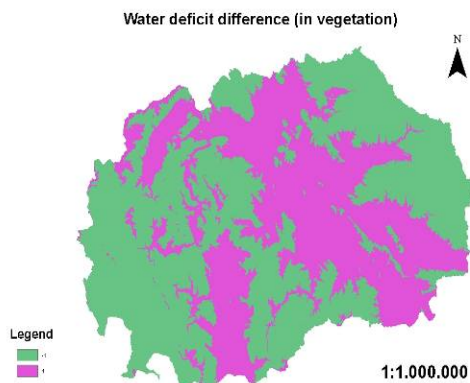
**Map 1**



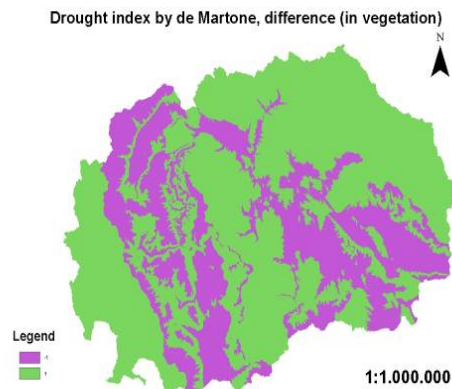
**Map 2**



**Map 3**



**Map 4**



### Vulnerability assessment for crop sector

Previous maps clearly show that most of important agriculture areas in the country are vulnerable to climate change.

1. The most vulnerable zone is Povardarie region, especially area of conjunction of Crna and Bregalnica Rivers with Vardar River (Kavadarci as a corresponding meteo station)
2. Very vulnerable zones with its corresponding meteo station are:
  - Southeastern Part of the country (Strumica)
  - Southern Vardar Valley (Gevgelija)
  - Skopje-Kumanovo Valley (Skopje)
  - Ovche Pole (Stip)
3. Less vulnerable zones with its corresponding meteo station are:

- Pelagonija Valley (Bitola)
- Polog (Tetovo and Gostivar - no climate scenario)
- Prespa/Ohrid region (Resen)

The further vulnerability assessment analyses are based on the results of the climate change scenarios up to 2100, both at national level and the down-scaled ones.

Identification of the most vulnerable crops was done according cropping pattern in vulnerable areas. The crops that predominate in vulnerable regions were determined as vulnerable crops. Following crops were defined as vulnerable crops:

1. Vine grape as most important crop in Povardarie Region
2. Tomato as most important vegetable crop in predominantly vegetable growing agriculture in South Eastern part of the country (Gevgelija - Strumica)
3. Winter wheat as most important cereal in Skopje -Kumanovo and Ovche Pole region
4. Apple in Prespa/Ohrid region, especially Resen
5. Alfalfa as crop with very high water demand and huge importance in livestock sector that is vulnerable in all agricultural regions in the country, especially for Bitola region

Expected yield decrease was calculated using FAO Crop Yield Response to Water Deficit methodology. Calculation was done using downscaled climate change scenario developed up to 2100 within the Second National Communication. Data are presented in table 7.

**Table 4 Expected yield decreasing for vulnerable areas and crops as result of climate change impact in %**

Area	Crop	2025	2050	2075	2100
Kavadarci	Grape	46	50	55	59
Gevgelija	Tomato	75	78	81	84
Strumica	Tomato	72	75	79	82
Stip	Winter Wheat	14	17	21	25
Skopje	Winter wheat	8	12	16	21
Bitola	Alfalfa	58	62	66	70
Resen	Apple	46	50	55	59

Results are obtained under the assumption that crops would be planted without irrigation, and therefore yield decrease is so dramatic.

## Soils

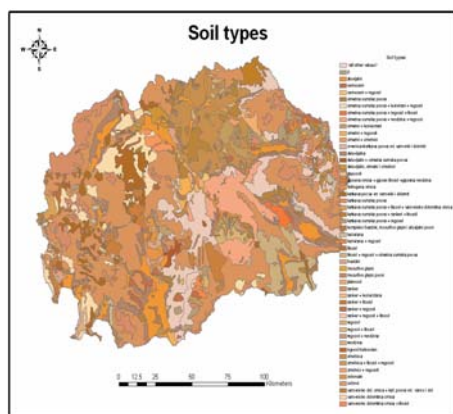
Although the country is spread on only 25 942 sq.km, due to the intense spatial variability of the main pedogenetic factors: geology, vegetation, relief and climate, soil cover shows an immense variability. In the recent version of the soil map drafted in digital format for the purposes of this study, the whole territory has been divided into 22 soil types and 27 soil associations (Map 5).

## Vulnerability assessment

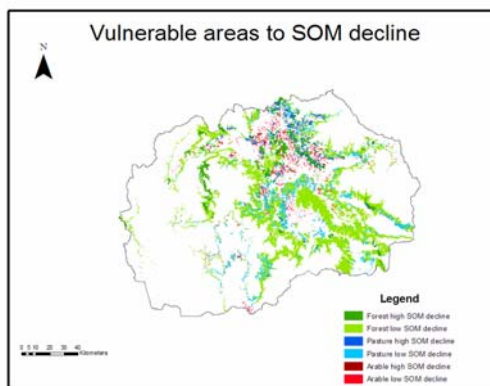
Predicted climate change will affect soils through several soil degradation processes such as: decline of soil organic matter (SOM), increase of soil erosion intensity and soil salinisation. Using GIS technology, digital soil map, Digital Elevation Model, soil texture classes and

climate data, the vulnerable areas to these degradation processes were determined and, presented in Maps 6, 7 and 8.

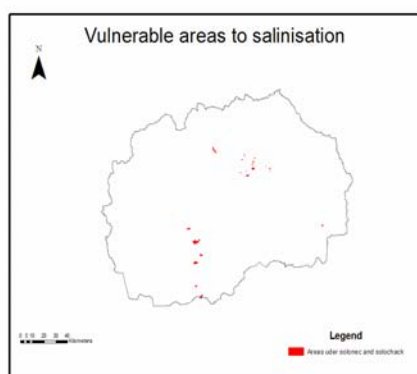
**Map 5**



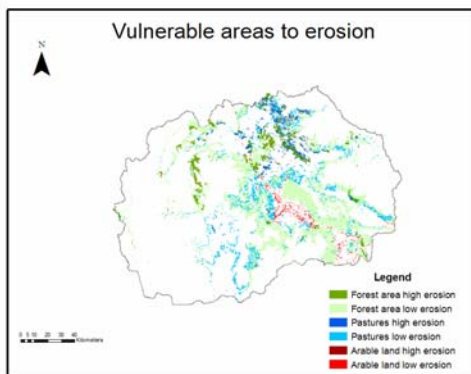
**Map 6**



**Map 7**



**Map 8**



## Livestock production

According to the Annual report of the Ministry of Agriculture, Forestry and Water Economy (MAFWE) for year 2005, animal breeding sector is rather stable over the past 7 years. Breed structure in ruminants is still based on local breeds (54% of total cattle population is Busha and crossbreeds of Busha with grey cattle mountain breeds; over 90% of sheep population are two local breeds). Pig and poultry production in large farms are based on modern, genetically superior crossbreeds and modern hybrids. Animal production in broad sense is affected directly and indirectly with climate changes.

## Vulnerability assessment

Effects of climate change to animal breeding sector can be direct effects and indirect effects.

**Direct effects** are correlated to projected temperature increase and increased heath stress on domestic animals. Heath stress decreases productivity of domestic animals especially for modern high productive breads in comparison with local breads already adapted to local environment.

**Indirect effects** are correlated to projected decrease of forage production as well as in emerging diseases. It is expected that shortage of locally produced animal fodder will decrease amount of animal products in the country. It can be foreseen that some tropical diseases, especially those transmitted by insects, will leave their natural basin of endemia to spread to other countries out of their natural habitat (possible appearance of such animal diseases in the country).

## Socio Economic Impact

Socio-economic impacts are considered bearing in mind two scenarios: baseline (without any adaptation measure implemented), and adaptation scenario.

According to the baseline scenario, in most of the nonirrigated areas production will decrease dramatically, and irrigated areas will mostly remain on same level. The poverty will increase in nonirrigated agricultural areas, thus leading to migration from these areas to areas with higher development.

According to adaptation scenario, the production will be smaller (significant decrease in crop production and lower decrease in livestock production), but with increased focus on environmental issues. Decreased agricultural population would lead to reducing of number of farms and farmers. Productivity and profitability of such farms will increase due to new agricultural practices and measures implemented. The welfare of rural population will be improved and reduction of poverty will take place.

Despite yield decrease, climate change will cause severe economical losses. Estimation of economical losses, based on assumption that whole country will be equally affected by climate changes and adaptation measures will not be applied, is presented in following table.

**Table 5 Estimated economic losses caused by expected climate changes for winter wheat, grape and alfalfa**

year	Decrease of production due to climate change in t			Cost of decreased production in Euro		
	winter wheat	grape	alfalfa	winter wheat	grape	alfalfa
2025	31806	112910	62204	4104004	18211370	7023001
2050	41926	122729	66494	5409823	19794968	7507346
2075	53492	135002	70784	6902188	21774465	7991691
2100	66504	144820	75073	8581099	23358062	8476036

Decrease of winter wheat will result in reduced food security, since it is the essential crop for food supply in the country. Decrease of grape production will affect not only farmers, but also wine processing industry that is in rapid development in the country. Decrease of alfalfa production will respond with decrease of livestock production and increased deficit in animal products (milk, meat etc.) with further negative impact on food security in the country.

Total direct economical damages for the three analyzed crops would be almost 30 millions euros in 2025 and it will increase up to 40 millions euros in 2100.

## Gender

There are very few documents and analyses dealing with gender issues in the country. If some data exist it hardly deals with agricultural sector and not even close to climate change related issues.



Women have a high share of agricultural activities but only little decision-making power or control over inputs and outputs. While men prefer mechanized agriculture and are responsible for irrigation, women usually are involved in a very labour-intensive agriculture. They do not receive formal salaries or benefits from their work.

Very few women are organized in farmers associations, water users associations etc. Men participate in almost all training programs while woman is more engaged with the farm work. Such disproportion puts woman in unfavourable condition, being less educated and skilled to cope with modern technologies (adaptation, mitigation etc.). At the same time, women's traditional knowledge and skills have helped families and communities to cope with severe weather. As crop yields will reduce with climate change, and resources become scarcer, women's workloads will only become more time-consuming and burdensome, jeopardizing chances to work outside the home or to strengthen their capacities.

It is clear that women in agricultural sector are crucial player, and adaptation and mitigation technologies should be equally transferred to both sexes.

## State in EU

Agriculture contributes to about 10% of the EU greenhouse gas emissions. However, it could also contribute to providing solutions to the EU's overall climate change challenges.

The European climate change programme (ECCP), launched in March 2000, contains plans for how the EU will meet its Kyoto Protocol commitment to reduce greenhouse gas (GHG) emissions by 8% by 2012. There are three main sources of GHG emissions from agriculture:

- N<sub>2</sub>O (nitrous oxide) emissions from soils, mainly due to nitrogen fertilisation;
- CH<sub>4</sub> (methane) emissions from intestinal fermentation - 41% of all CH<sub>4</sub> emissions in the EU are from agriculture;
- CH<sub>4</sub> and N<sub>2</sub>O emissions from manure management.

The ECCP working groups on agriculture and on carbon sinks (related to agricultural soils and to forestry) evaluated the best means to reduce GHG emissions in agriculture and also how agriculture could provide a positive impact to address climate change. Technical measures were assessed with respect to their GHG mitigation potential, their environmental side effects and their potential socio-economic impact.

The ECCP working group on agriculture covered the major GHG emission sources from the agricultural sector. The working group identified a technical potential for GHG emissions of 31 Mt CO<sub>2</sub>-eq. y<sup>-1</sup> corresponding to 7.4% of agricultural GHG emissions. However, this potential was estimated to be much smaller than the mitigation potential provided by the agricultural production of biofuels. Technical measures for GHG mitigation considered include: encouragement of more efficient fertiliser applications to reduce overall use, a process already started under existing nitrate legislation (the nitrates directive); composting and improvements in anaerobic digestion systems (e.g., for production of biogas), to deal with biodegradable by-products and waste; renewed emphasis on biomass production, conservation tillage and organic farming.

The ECCP working group on carbon sinks related to agricultural soils had the general objective of estimating the carbon sequestration potential of agricultural land in the EU. To this aim technical measures for carbon sequestration in agricultural soils were analysed with

respect to their sequestration potential as well as their environmental and their socio-economic impact. Furthermore, as organic carbon is an important issue in connection with soil functions, such as soil fertility, stability, structure and water storage capacity, the group made the link between carbon sequestration and the broader aspects of soil protection. According to the estimates provided by the experts, there is the potential to sequester up to 60-70 Mt CO<sub>2</sub> y<sup>-1</sup> in agricultural soils of EU-15 during the first commitment period, which is equivalent to 1.5-1.7 % of the EU's anthropogenic CO<sub>2</sub> emissions. This amount of 60-70 Mt CO<sub>2</sub> y<sup>-1</sup> would make up 19-21% of the total reduction of 337 Mt CO<sub>2</sub> y<sup>-1</sup> to which the EU is committed during that period. Carbon sequestration can occur either through a reduction in soil disturbance (since more carbon is lost as CO<sub>2</sub> from tilled soils than soils that are less disturbed) or through increasing the carbon input to the soil. At the same time it is important to maintain existing carbon stocks and slow soil carbon loss through improved management practices.

Further development of renewable, agricultural biomass could contribute to reductions in emissions from energy and transport, while benefiting the agricultural sector. Energy crops are currently already produced on set-aside land. But additional measures were considered to be needed. Thus, the 2003 CAP reform introduced a 'carbon credit' system offering financial incentives to farmers to produce biomass.

## **Finding and Recommendations**

### **Abatement of GHG**

Several projects related with the improvement of the Animal Waste Management System (AWMS) have been identified in the Republic of Macedonia, that will reduce the uncontrolled release of GHG from manure. These projects are based on the technology for biogas collection and combustion at pig breeding farms.

This technology includes installation of covered lagoons creating negative pressure and anaerobic digesters, instead of current anaerobic open lagoons. The system will also include an efficient enclosed flare to combust the digester biogas, converting its methane content to CO<sub>2</sub> and thereby achieving significant GHG reduction.

After anaerobic digestion, the solid sludge can be separated and stored for sale to the local farmers for land application as fertilizer.

Another possible benefit from this technology can be utilization of the biogas from manure digesting as a fuel, replacing the oil and electricity currently used for barns heating. But this action increases the investment costs and would not be considered in this analysis.

It is worth mentioning that the selected technology can be also applied at breeding farms for the others types of livestock, such as cow breeding farms, where large amount of manure is produced.

Under the mitigation scenario we assume that this technology will be implemented at the following pig farms in Macedonia: "Agria Group"- Veles, "Edinstvo"- Tetovo and four farms owned by private company "Zito Vardar" - Veles ("Tarinci"- Stip, "Vineam" - Vinica, "Sveti Nikola" - Sveti Nikole, "Zito Males"-Berovo)

The annual emission of methane from the manure of approximately 30 000 pigs would be 360 t. Assuming that all methane is captured and flared, the emission reduction will achieve the value of 6 240 [t/CO<sub>2</sub>-eq], as result of implementation of this technology. This reduction is a difference between baseline emissions (CH<sub>4</sub> released to the atmosphere) and project

emissions (collected CH<sub>4</sub> and converted to CO<sub>2</sub>). The total investment for realization of this technology is determined by the number of pigs at the farm and for 30000 pigs is estimated to 390 000 US\$. Considering the project lifetime of 20 years, the discount rate of 6 % and the O&M costs (2 % of total investment), total annual costs will be 41 802 US\$. Therefore, the specific costs (costs for reduction of 1 t CO<sub>2</sub>-eq) will be 6.7 US\$/t CO<sub>2</sub>-eq.

Assuming that the selected abatement technology will be gradually implemented at the all specified pig farms, the total annual emission reduction will be 17.56 [kt CO<sub>2</sub>-eq].

### **Research needs for Abatement of GHG's from agriculture**

Abatement of GHG's emitted from agriculture is possible and there is available solutions. Some of these solutions are very feasible in form of existing technologies; some are in form of ideas that need a lot of research to be transferred in new technologies and eventually implemented. Anyhow these options should be established as priorities for future research in agricultural sector on national level and should cover the spectrum of research methodology:

- Fundamental research studies intended to understand processes that may identify future abatement measures
- Applied research to develop the technology for abatement measures
- On-farm research to demonstrate the feasibility of a technology on the farm level

### **Abatement of Nitrous oxide**

Nitrous oxide in agriculture is emitted from ruminants and from soils as a result of natural processes and used practices. There is existing knowledge and available practices that can be implemented for abatement of nitrous oxide emission. However there is not common practice of using some of these well known practices in the country and additional research (applied, on-farm) should be undertaken.

#### **1. For ruminants:**

- Manipulating the diet of animals to influence the amount of nitrogen excreted, particularly urea nitrogen. For example, feeding dairy cattle protein that resists degradation in the rumen and high starch diets can result in less nitrogen being excreted in the urine, reduced ammonia volatilization, and less nitrous oxide emission.
- Breeding forage cultivars that provide an energy-to-protein ratio adjusted to the animal's needs could improve nitrogen efficiency.
- Proper management of manure and animal excreta on farm level

#### **2. For cropping and forage production:**

- Synchronization of nitrogen supply with crop demand, optimizing soil cultivation system and proper irrigation and drainage management of agricultural land could reduce nitrous oxide emissions from fertilizer in significant amount
- Nitrate leaching can be reduced by lowering fertilizer application rates, synchronizing nitrogen supply to plant nitrogen demand (several applications, slow release fertilizers, fertigation), growing cover crops, and proper irrigation scheduling according crop water requirement and soil water holding capacities with eliminating over irrigation.

However, even if nitrous oxide emissions will be reduced using these options, it will only be maintained at that level if nitrogen inputs remain static. This means that fertilizer nitrogen use

and animal numbers can not increase. Production could only increase by increasing the efficiency of nitrogen use by farm animals or increasing of nitrogen use efficiency by crops. The options proposed for reducing nitrous oxide emission from animals could only be implemented by limiting a farmer's options for increasing production. Crop production can be increased through higher and more efficient use of animal manures. If the options proposed for reducing emissions from fertilizer use were implemented, they would increase rather than decrease farmers' incomes. If fertilizer nitrogen is used more efficiently, less money will be spent on fertilizer. Anyhow some additional research has to be implemented in order to derive recommendations for farmers.

### **Methane: Abatement Technologies and Recommended Research**

Enteric emissions from ruminant is the most important methane emissions source from agriculture. Methane is produced in the rumen and caecum by the anaerobic microbial fermentation of plant organic matter. Methane is synthesised from hydrogen and carbon dioxide at the end of the microbial digestion chain by the methanogenic archaea, a group of microorganisms that is widely distributed in nature and is also responsible for methane synthesis in manure, effluent ponds and the soil. If hydrogen is allowed to accumulate in the rumen it depresses digestion, so the archaea remove it as methane. Management of hydrogen in the rumen is the key to controlling ruminant methane emissions.

To date there is some existed techniques, but none of these are used in the country.

Many possibilities for mitigating methane emissions have been proposed in the literature, and many of them have been evaluated experimentally. They include:

- Reducing livestock numbers. This is not an acceptable solution as a stand-alone option. However, it may be possible to reduce methane by combining increasing production by animal head and lowering livestock number in that ratio to maintain same production.
- Manipulation of dietary composition by increasing digestibility, reducing cell wall carbohydrates, increasing starch, addition of certain lipids and increased protein can reduce methane.
- A wide range of feed additives has been proposed to reduce methane. These include alternative hydrogen acceptors, halogenated methane analogues, antibiotics, defaunating agents, probiotics, bacteriocins and naturally occurring plant compounds (e.g. condensed tannins). Problems with these compounds, such as toxicity to the microbes and the animal, short-lived effects due to microbial adaptation, volatility, expense, and failure to meet consumer acceptance have ensured that none have yet been used successfully in agriculture for reducing methane emissions.
- Immunisation of animals against methanogens is one of possible solutions. This is a good concept, but there is not experimental results to date.

Many suggestions have been made for manipulating the rumen microbial ecosystem to achieve methane reduction. The present level of knowledge needs a lot of research involved in understanding the complexities of the rumen microbial ecosystem. Then development of mitigation technologies from this type should take place. However there are several nutritional and farm management strategies currently available in the world that, if applied in a systematic manner, would be expected to reduce methane emissions.

## Research Priorities

1. Exploit rumen processes that influence occurrence of methane and develop strategies and technologies to lower methane emissions
2. Identifying and quantifying forage and plant inhibitors to lower methane emissions
3. Genomics research for identifying methanogenic microbes weakness
4. Animal factors affecting methane emissions
5. Applied research on possible methane-reducing technologies to establish possible on-farm technologies
6. On-farm testing of developed technologies

## Carbon dioxide mitigation in Agriculture

The main findings on carbon dioxide mitigation options are:

- Carbon dioxide emissions are currently not reported from the agriculture but are included within the energy sector and land use change and forestry national inventory calculations. However, agricultural management practices have implications for soil C sequestration.
- Increased productivity per unit area (intensification) can be achieved without any cost in C sequestered as long as either the inputs (fertiliser, irrigation) on that area are also increased or the increased utilization of one area is matched by reduced utilization on other areas of the farm or region.
- Biofuels have the greatest potential for using agricultural land to mitigate greenhouse gas emissions because they can sequester soil C and substitute fossil fuels.
- Energy crops become more popular in the country, especially for biodiesel production, but not for ethanol production. New advances in cellulose conversion technology and the debate on negative environmental effects of energy crops means that a in depth re-evaluation is required.

Three main options have been identified by IPCC for the mitigation of CO<sub>2</sub> emissions from agriculture

- Reduction of agricultural-related CO<sub>2</sub> emissions
- Production of biofuels to replace fossil fuels
- Creation and strengthening of carbon sinks in the soil

The substitution of fossil fuels by fuels from renewable sources, have considerable potential for reducing emissions because of both fuel substitution and the introduction of a perennial crop with potential gains in soil C sequestration.

Bioenergy crops can be used in two ways: as a solid fuel being combusted alone or in a co-combustion process with coal or after conversion processes, as a source of liquid fuel. Almost any kind of agricultural waste can be used for combustion. Liquid fuel production has been confined to production of biodiesel from oil crops or ethanol from starch. The problem with this technology is that it is energy-intensive and the resulting fuel is only cost-effective in relation to petroleum when heavily subsidised. Recent developments in cellulosic conversion have the

potential to change the efficiency of ethanol production from biomass and produce fuel that can compete directly with petrol.

C sequestration in ecosystems occurs when C entering the system through gross primary production (photosynthesis) is greater than the C leaving the system through plant and heterotrophic respiration, lateral transfers, leaching and harvest. International research on the management of agricultural sinks has concentrated on arable crops, in particular tillage and fertiliser options. Bioenergy crops have potential for C sequestration (particularly if they replace annual crops or are planted on degraded land) but more importantly, they provide a renewable fuel source that can directly substitute for fossil fuels.

### **Research priorities**

- Technologies that increased productivity per unit area (intensification in C sequestered) with emphasis on increasing and/or better management of the inputs (fertiliser, irrigation, pesticides, tillage etc). This offers the possibility of concentrating production on smaller areas and releasing more marginal areas (presently used in agriculture) to be used as C sinks with potential benefits also for control of C losses through erosion. Potential gains in C sequestration need to be calculated for different intensification options at a range of spatial scales from the farm to the regional level.
- Biofuel options appear to have a great potential for using agricultural land to mitigate greenhouse gas emissions. They have the double benefit: sequestering C and the production of fuel to directly replace fossil fuel use. Rapid advances in ethanol production technology have potential for its application in the country. The potential of biofuel crops, initial tests of appropriate species and their integration into farming systems should be investigated.
- Investigate potential for sinking carbon on marginal lands that will be planted with perennial crops or forest with potential to be used as biofuels
- Investigate potential of using of crop residues (straw, pruning residues in orchards and vineyards) as energy source.
- Investigate effect of using of annual energy crops and crop residues as biofuels on soil organic matter, carbon sequestration and possible degradation of agro environment and environment as whole.

### **Adaptation measures for crop production sector**

Adaptation techniques for crop production in the country should be divided in two parts:

- Irrigated agriculture
- Rainfed Agriculture

#### **Adaptation measures in irrigated agriculture**

Even though more than 120 000 ha of Macedonian agricultural land can be irrigated, in last several years only about 30 000 ha are irrigated. Such situation is unfavorable, especially in relation to climate change adaptation, because irrigation is best available practice for the Macedonian agriculture. Best adaptation strategy for irrigated areas will be spreading of water saving techniques in irrigated agriculture, in order to maintain same or even increased irrigated areas with same water amount. Best available practice will be increased irrigation efficiency trough micro irrigation (micro irrigation 90% of efficiency; furrow irrigation less than 50% efficiency and sprinkler irrigation less than 70% efficiency) ne mi e bas jasna recenicava.

Despite technical rehabilitation of irrigation schemes several important measures should be undertaken in next period. The priority is to determine real price of irrigation water. Farmers should pay real price for water in order to become more aware about the importance of water saving techniques. Structural changes in Water management and increased level of know-how of all participants in the sector should follow these measures.

### **Adaptation measures in rainfed agriculture**

The best available adaptation technology - irrigation is hardly applicable in areas without irrigation schemes, infrastructure etc. Due to this, adaptation technologies should be oriented towards mitigation of negative effects of drought and heat stress on crop development and yield.

Adaptation measures for rainfed agriculture should be divided in 4 groups:

1. Genetic measures (new more drought tolerant crops and varieties)
2. Land reclamation measures (to increase soil water holding capacity – manure, organic matter increase, some polymers)
3. Agricultural practices (soil and water conservation soil cultivation – reduced tillage, water harvesting, mulching etc.)
4. Irrigation – building of new irrigation schemes and rehabilitation of existing schemes
5. Increased level of knowledge through education of farmers
6. Increased public awareness for new adaptation techniques

### **Adaptation measures for soils:**

- Application of organic fertilizers (manure, sideration)
- System for recommending the amount of fertilizer to be applied based on soil or plant tissue analyses
- Cultivation of legumes,
- Crop rotation and leaving the soil for several years as uncultivated (fallow)
- Constant monitoring of SOM and nitrogen turnover and all necessary parameters in the identified vulnerable areas
- Reduced or no-tillage cultivation,
- Afforestation of the sloppy terrains prone to the process of soil erosion.
- Implementation of new more efficient irrigation techniques and application of irrigation water in right time (when needed) and amount (according soil water capacity)
- Establishment of monitoring at a small number of fully instrumented sites, where an adequate soil, climate, topographic and crop/cover data
- Demonstration and increasing of the awareness of farmers to manage their

### **Adaptation and mitigation actions for Livestock sector**

Since intensive animal production (pig, poultry and dairy cattle) consider highly productive animals in combination with intensive breeding techniques, the outcome can be only with

strictly conditioned environment. Recently in the country, existing pig and poultry farms, faced with ensuring barn environment in tolerable zone, begin to invest in isolation, heating, cooling (sprinkler systems) and ventilation. On the other hand traditional extensive breeding techniques involving low energy output, reduced work and low costs, based on local breeds, have shown high adaptation ability to diverse climate conditions.

To minimize the effects of heat stress three strategies can be adopted e.g. physical modification of the environment; genetic development of heat tolerant breeds and improved nutritional management practices

The implementation of the best adaptation strategy and best available practice should be considered in two main directions:

1. The ability of livestock producers to adapt their herds (biodiversity) and, their breeding and husbandry practices to the physiological stress of climate change perhaps will be successful strategy to face the problem. To achieve this following measures are recommended:
  - Determination of regions suitable for particular species and type of livestock production, according available technology and crops. Seuste Nejasno sto sakas da kazes
  - Identification and introduction of resistant breeds on climate changes and tropical diseases
  - Continuous work on productivity improvement of local breeds
  - Intensive production will depend on highly selected animals with some tolerance on heat
  - Recurring special husbandry and technology practice, under specific nutritional management.
  - Continuous education and training of farmers to adopt technology and practice
2. It is important for policy makers to update or develop new and more accurate norms and regulations to be applied to the production of food products. This will contribute to determine specific quality parameters linked to environmental, animal or human factors, not only for the purpose of protecting the domestic agricultural and food sector, but also to protect animal and public health against the negative effects of climate change.
  - To create knowledge in decision making based on analytical work
  - To support research programmes related to maintenance of the genetic resources, animals with better heat tolerance, improved nutritional exploration, disease resistant and welfare
  - Dissemination of results and public awareness



## Agriculture and soil protection

### Introduction

Soil is defined as the top layer of the earth's crust. It is formed by mineral particles, organic matter, water, air and living organisms. It is in fact an extremely complex, variable and living medium. The interface between the earth, the air and the water, soil is a non-renewable resource which performs many vital functions: food and other biomass production, storage, filtration and transformation of many substances including water, carbon, nitrogen. Soil has a role as a habitat and gene pool, serves as a platform for human activities, landscape and heritage and acts as a provider of raw materials. These functions are worthy of protection because of their socio-economic as well as environmental importance.

Erosion, loss of organic matter, compaction, salinisation, landslides, contamination, sealing are some of soil degradation processes. Soil degradation in arid environment is called desertification. Macedonia ratified United Nations Convention to Combat Desertification (UNCCD) on 6.03.2002. National Action Plan on Combating Land Degradation and Desertification is under preparation. Macedonia adapted new law on agricultural land (Official Gazette 135/07 from 8.11.2007). This law dedicated paragraph IV (articles 42-47) on Protection of Agricultural Land. In this Law protection from soil erosion is set up as major issue and protection from soil pollution and fires are just mentioned. The Law should be followed with several regulatives in order to set up pollutants and maximal allowed concentrations.

Major problem with protection of soils in the country is that most of the data do not exist: soil map (one presented here is developed for the needs of second communication to UNFCCC in very big scale), land use map, vegetation map etc. Despite this soil monitoring does not exist and it is very hard to determine state with soil degradation as well as to establish protection measures and zones. National Strategy for Agriculture and Rural Development (2007-2013) put some emphasis on environmental issues and according to this document soil monitoring will be regulated.

### State in Macedonia

#### Land Use

The present picture of the land use in the country is a summary of all socio-economic processes taking part in the country history. The Agricultural area by category of use is presented in table 6.

**Table 6. Agricultural Area by category of use 1998-2005 in '000 ha**

	Total area	Agricultural area	Cultivable area					Pastures	Ponds, reed beds and fishponds
			total	arable land and gardens	orchards	vineyards	meadows		
1998	2571	1293	635	533	19	29	54	656	2
1999	2571	1284	633	534	17	28	54	649	2
2000	2571	1236	598	498	16	28	56	636	2
2001	2571	1244	612	512	17	28	55	630	2
2002	2571	1316	577	480	16	28	53	738	1
2003	2571	1303	569	473	16	27	53	733	1
2004	2571	1265	560	461	15	26	58	704	1
2005	2571	1229	546	448	13	26	59	682	1

Source: Statistical yearbook of the Republic of Macedonia, 2006, 2003

Agricultural land represents 51 % of the total area of the country. Half of the agricultural land is covered with pastures and only 25.86 % of the total area is arable land. About 140 000 ha. of the arable land has been abandoned, decreasing the arable land portion to only 20.36 % of the total area. (according data from the Spatial Plan, 2003). This data can not be compared with data in table 6 due to big differences in this table, especially in pastures area (from 630 000 ha to 738 000 ha). This difference appears only in one year (2001 and 2002) and seems as impossible, but it is official statistical data. Due to this data from Spatial plan is presented.

Due to different human activities, 9.08 % of the total land becomes unproductive for agriculture, forest, and nature purposes. (Spatial Plan of R. of Macedonia (1998), cited by Filipovski, G. (2003))

The agricultural land is being reduced. Within the past fifteen years, according to data from the Spatial Plans (1988; 2003) we can determine reduction of agricultural land as about 47 254 ha. (3.66 %). The area under forest has been reduced by 23 765 ha. (2.33 %). Within the area of agricultural land, the percentage of arable land is dramatically decreasing by approximately 45 681 ha. (6.95 %), while the area under pasture is slightly decreasing – only 3 562 ha. (0.56 %). Due to the population migration processes the area of abandoned arable land (fallow or no cultivated) is 150 000-190 000 ha. It is important to stress that fallow is not common agricultural practice in the country.

Increasing of the area with anthropogenic soils (rigosols under perennial plants) and deposols (mines, landfills with municipal and industrial waste material) is quite evident.

Increasing of the area with unproductive soils is very common. Most frequent increase is due to: building of artificial lakes, extension of the infrastructure, expansion of settlements, excavation of various kinds of materials, etc.

There are several factors that have influenced these changes of land use in the past few decades. The area of productive (agricultural and forest) land is decreasing rapidly as a result of a bad management of agricultural land, land sealing, and lack of financial resources for the reforestation of forests destroyed by fires and cutting. There is no shifting of land use within the separate categories of the productive land since the area of all categories has been reduced. This indicates that an area of more than 70 000 ha. has been transformed in the category of unproductive land. The rapid increase of the size of unproductive land is a result of a fast extension of the settlements and infrastructure of the country. The perspectives for the next 20 years are that the road network will extend for about 9 700 km of different categories of roads. The realization of this amount of road network will occupy about 40 000 ha of land.

The abandoned land (fallow or non cultivated), starting from 1996, is decreasing and the total area of abandoned land is 131 000 ha. The changes of the area of abandoned land are the result of the social and demographic transformation of rural population.

### **Status and trends in land ownership**

In Macedonia, the State has been reluctant to privatize all agricultural land for fear of a reduction in productivity, even though productivity level of state owned farms was not very high in most cases. Nevertheless, 65, 5 % of the total area of arable land or 83, 2 % of total number of parcels of arable land in Macedonian is privately owned and is farmed privately.

Presuming the former percentage, about 451 702 hectares of arable land are held privately. (Georgievski 2006). (Data presented in table 7)

**Table 7. Land ownership in Republic of Macedonia in ha and in number of parcels**

	PRIVATE OWNED	%	STATE OWNED	%	TOTAL	%
<b>Arable land</b>						
Parcels(No)	2,215,189	83,2	447,482	16,8	2,662,671	100
Area (ha)	451,702	65,5	237,882	34,5	689,584	100
Average parcel size (ha)	0,2		0,53		0,26	
<b>Pastures</b>						
Parcels(No)	315,605	60,4	206,764	39,6	522,369	100
Area (ha)	81,566	12,6	567,507	87,4	649,073	100
Average parcel size (ha)	0,26		2,74		1,24	
<b>Forests</b>						
Parcels(No)	278,310	73,7	99,221	26,3	377,531	100
Area (ha)	102,374	10,9	832,765	89,1	935,139	100
Average parcel size (ha)	0,37		8,39		2,48	
<b>Non productive land</b>						
Parcels(No)	661,383	65,5	348,175	34,5	1,009,558	100
Area (ha)	21,555	11,3	169,525	88,7	191,080	100
Average parcel size (ha)	0,03		0,49		0,19	
<b>Total</b>						
Parcels(No)	3,470,487	75,9	1,101,642	24,1	4,572,129	100
Area (ha)	657,197	26,7	1,807,679	73,3	2,464,876	100
Average parcel size (ha)	0,19		1,64		0,54	

Georgievski (2006) - Land consolidation and land development in Macedonia, State Authority for Geodetic Works, Skopje

Non-privatized land is state owned and farmed in large *agrokombinats* or by smaller socially owned farms. The socially owned farms and *agrokombinats* are decollectivized but only non-land assets are privatized. The state owned agricultural land is designated by law as a public resource and State retains title to this agricultural land pursuant to the Law for Transformation of Enterprises Which Manage Agricultural Land. The users of the non-land assets (privatized agricultural enterprises) usually obtain contracts for the lease of the state owned land. Part of state owned agricultural land (cca 20%) is also offered for lease to other private farmer's through tender procedures. Usually land is leased on 30 years period. According present legislation state owned agricultural land can not be privatized.

The process of re-privatization (previously private owned land collectivized during communist period) is still ongoing, but close to the end and there are possibilities for some minor changes in structure of the agricultural land ownership. Anyhow only small changes are

possible, because state owned land, what is not subject of re-privatization according the law can not be privatized.

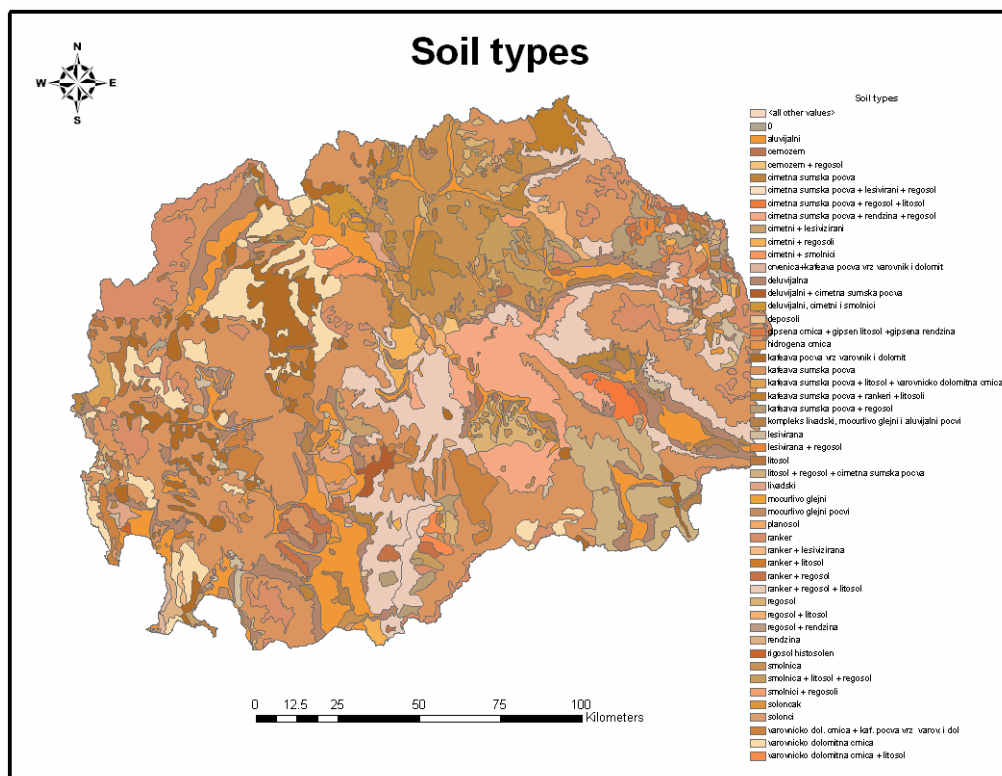
Pastures are dominantly state owned. According data in Table 7 87,4 % of pasture area is state owned and only 12,6 % are private, even though number of parcels in private ownership is bigger. The state owned pastures are managed by Public enterprise for pastures. Data about pastures in the country are hardly available and hardly published. It is hard to say ratio of lowland:highland pastures neither private neither state owned. Large percentages of pastures, are man-made pastures with low productivity, established by deforestation. Yield of the pastures is very low (various sources 270-400 kg of hay per ha)

Effective use of agricultural land in Macedonia is seen by some as hindered by a serious fragmentation problem that stems from earlier limitations on land use and ownership, inheritance practices, and a long history of informal land market activity. Until 1988, the maximum amount of land a rural inhabitant could own was 10 hectares. There is currently no farm size restriction. Average farm sizes now are 2.5 to 2.8 hectares, and these family farms are typically separated into several (estimated to six) non-contiguous parcels. Land scarcity and lack of security have furthered this fragmentation, and land market activity has generally not resulted in consolidation.

### Soils in Macedonia

Although the country is spread on only 25 942 sq.km, due to the intense spatial variability of the main pedogenetic factors: geology, vegetation, relief and climate, soil cover shows an immense variability. In the recent version of the soil map drafted in digital format for the purposes of this study, the whole territory has been divided into 22 soil types and 27 soil associations (Map 9).

**Map. 9 Soil map of Macedonia (scale 1:200 000), Andreevski, M. et all 2006**



According to Filipovski, G. (2003) the distribution of the main soil types is as follows:

a. Mountainous soil types

The most important mountainous soil types are *Litosols*, with total area is 378 325 ha. or 14.73 %, *Rankers*, 232 841 ha. or 9.06 %, *Leptosols on lime stone* with an approximate area of about 221 441 ha. or 8.61 % and *Brown forest soils (distric and eutric cambisols)* which cover in total area of 1 028 686 ha. or 40.01 %.

b. Soils of lake terraces and undulated hilly relief

The most important are the following: Regosols, as a separate cartographic unit and in complexes (litosol + rendzinas + cinemomic soil, litosol + luvisols ) cover a total area of 317 634 ha. or 12.35 %, Vertisoils, of about 61 900 ha. or 2.41 %, Rendzinas, as a separate cartographic unit are estimated at 2 100 ha. or 0.08 %, as a complex with regosols and cynamonic forest soil 218 583 ha. or 8.50 % (the net area of the rendzinas in Macedonia is unknown because the biggest part of this soil type was classified as vertisoils during the preparation of the Soil Map), Chernozems (32 800 ha. or 1.28 %), Cinnamonic forest soils (separate or as complex with regosols and rendzinas or with luvisols) and Luvisols (separate, as a complex with cinemomic forest soils or with regosols).

c. Soils of colluvial forms

Colluvial soils, as a separate carto-graphic unit 159 600 ha. or 6.19 %. The high percentage of colluvial soils in Macedonia is a significant fact of the intensive erosion processes.

d. Soils of the plains

In the plains, the following types are present: Alluvial soils, as a separate cartographic unit 131 599 ha. or 5.14 %, Fluviative-meadow, hymmogleys and gley soils 39 395 ha. or 1.53 %, Peat soils, 672.72 ha. or 0.03 %, and Pseudogleys, as a separate cartographic unit 2 100 ha or 0.08 %. These data are not definitive and it are expected to be corrected in the future. Further, there are also Hallomorphic soils – of about 3 200 ha. or 0.12 %. Arenosols (sandy soils) are present in very small areas of about 200 ha. in Gevgelija valley near River Vardar.

The soil types according to their quality are classified in the following seven classes:

**I. class:** alluvial, alluvial-colluvial, and meliorated hydromorphic soils: meadow, gley, and peat soils 197 702 ha. (7.68 %);

**II. class:** vertisoils and chernozems 94 700 ha. (3.69%);

**III. class:** rendzinas, cinnamonic forest soils, and colluvial soils 451 942 ha. (17.56 %);

**IV. class:** luvisols, pseudogleys, and regosols 195 629 ha. (7.60 %);

**V. class:** rankers and brown forest soils 1 117 583 ha. (43.49 %);

**VI. class:** rendzinas on hard limestone and dolomites and brown soils on hard limestone and dolomites 314 385 ha. (12.23 %);

**VII. class:** litosols and halomorphic soils 199 359 ha. (7.75 %).

The soil types from the first four classes are agricultural land (arable land and pasture); soils within the next two classes are mainly under forests and pastures, while soils from the seventh class are unproductive soils.

Soils in Republic of Macedonia according to their productivity are classified in 8 cadastral classes. Data about the areas under given cadastral class and crop types growed on that area are given in Table 8. According data presented in table 8 we can conclude that: the most fertile soil from I and II cadastral classes has only 8.06 % of the total arable land. The biggest part of them (more than 30 000 ha.) is covered with low productive field crops. (Filipovski, G. 2003)

**Table 8. Cadastral classes (Agriculture zone) in ha**

Crop	Cadastral classes in ha							
	I	II	III	IV	V	VI	VII	VIII
Fields	10 969	24 780	47 068	67 507	73 097	72 733	62 379	59 429
Vegetable gardens	596	1 142	1 189	831	758	529	9	0
Orchards	938	2 617	3 765	3 549	2 269	610	73	0
Vineyards	552	2 863	5 801	5 519	2 818	982	727	12
Meadows	559	3 101	7 574	10 657	8 483	6 950	3 779	1 691
Pastures	818	1 848	7 815	21 923	20 689	18 627	12 072	7 019
Forests	825	3 438	11 095	30 290	25 405	17 725	6 202	2 606
Swamps	83	208	186	34	1	0	1	1
Total area/cadast. class	15 340	39 997	84 493	140 310	133 520	118 156	85 242	70 758
Percent from total area	2,23	5,82	12,28	20,40	19,41	17,18	12,39	10,29

## Land degradation

The big variability of soil cover in combination with the diversity of the main edaphic factors on one hand and small land parcels of the arable land and still unknown land use on the other hand, makes very difficult the identification of the vulnerable areas to climate changes. For these reasons, the delineation of the main zones with similar edaphic and climatic and vegetative characteristics represents a significant step forward to the identification of the vulnerable areas to soil degradation. The only missing tools for implementation of more significant methods for prediction of degradation of soil are: preparation of more detailed soil map, land use map and establishment and maintenance of monitoring of the most important soil indicators and parameters which are affected with climate changes.

Three methods for identification of the vulnerable areas to deterioration of the soil properties are proposed:

- **qualitative approach** is based on expert knowledge,
- **quantitative approach** relies on measured data from inventories/monitoring, and requires baselines and thresholds;
- **model approach** predicts the extent of soil degradation from modeling considering site actors (soil properties, climate) and soil management.

For identification and assessment of the vulnerability zones, due to the lack of permanent monitoring of the above mentioned soil indicators, for this study the first method has been used supported by the GIS thematic layers that has been developed for the purposes of this study, e.g. soil map (in scale 1:200 000), texture classes map, CORINE land cover and slope.

## **Soil organic matter decline**

Organic matter (OM) is an important 'building block' for soil structure and for the formation of stable aggregates. Other benefits are related to the improvement of infiltration rates and the increase in storage capacity for water. Furthermore, OM serves as a buffer against rapid changes in soil reaction (pH) and it acts as an energy source for soil micro-organisms. Without OM, biochemical activity in soil would effectively be negligible.

Identifying the factors influencing soil OM turnover and quality on the other side is important for estimation of carbon emissions that influence global warming and climate change.

Organic material in soil is essentially derived from residual plant and animal material, synthesized by microbes and decomposed under the influence of temperature, moisture and ambient soil conditions. In essentially warm and dry areas, like Southern Europe, depletion of OM can be rapid because the processes of decomposition are accelerated at high temperatures. The factors influencing soil OM may be divided into two groups of:

1. Natural factors (climate, soil parent material, land cover and/or vegetation type, topography)
2. Human-induced factors (land use and nature of farming systems; land management; degradation of soil and land).

Climatic conditions, especially temperature and rainfall, exert a dominant influence on the amounts OM found in soils. When moving from a warmer to a cooler climate, the OM content of comparable soils tends to increase. This is because the overall trend in the decomposition of OM is accelerated in warm climates, while a lower rate of decomposition is the case for cool regions.

Effective soil moisture also exerts a very positive control upon the accumulation of OM in soils. In general, under comparable conditions, OM content increases as the effective moisture becomes greater. This is explained by the fact that microbes are more active, and the humification of OM more rapid in areas of moderate to low rainfall, which tend to have scantier vegetation than wetter areas.

### *Effect of Soil Properties*

Provided other factors are constant, the texture of the soil influences the amount of OM and nitrogen present. A sandy soil usually contains less OM than a soil of finer texture – heavy loam or clay. This is because the generally lower moisture content and greater aeration in sandy soils result in more rapid oxidation of OM compared with heavier soils. Generally, poorly drained soils have high moisture contents and low aeration. This results in generally much larger OM contents in these soils than in their better-drained equivalents.

Water and wind erosion can be responsible for physically removing OM from soils, because OM is concentrated in the top 30cm and this is the layer that is normally removed first.

Vegetation is an important source for replenishment of OM, but where plant cover is scant OM is usually deficient.

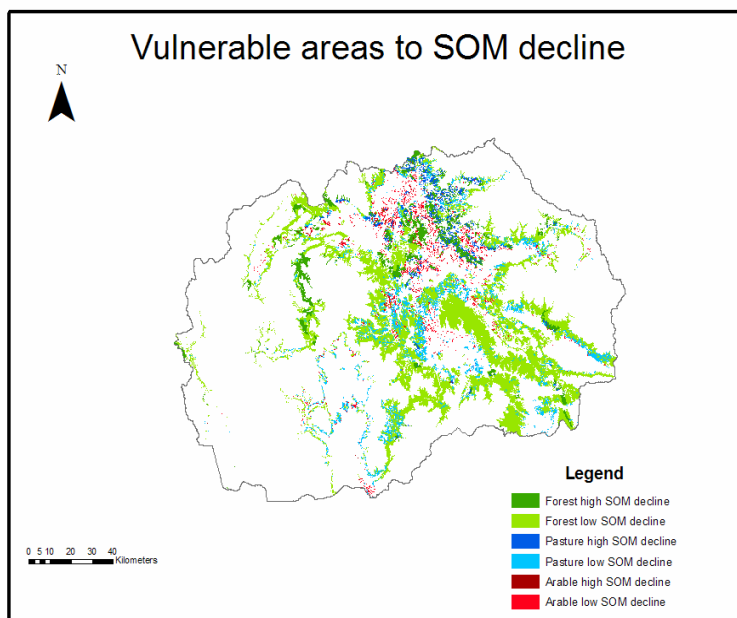
Cultivation can have a significant effect on the content and quality of soil OM. During field operations such as ploughing, drilling, harrowing etc. soil aggregates are repeatedly disturbed and broken, thus exposing fresh surfaces, many of which will have coatings or particles of OM associated with them. Unfortunately due to the inexistence of a land use map, the effect of different types of cultivation on SOM can not be taken into account in our study.

For the above mentioned reasons in the process of delineation of the vulnerable areas prone to SOM depletion as a result of CC, the influence of slope, land cover, texture classes and moisture index which represents sublimation of rainfalls, temperature and potential evapotranspiration, has been taken in consideration.

On Map 10 are presented the vulnerable areas identified on the basis of the following criteria Table 9.

**Tab. 9 Criteria selected for identification of vulnerable areas to soil erosion**

Land cover	Moisture index	Slope	Texture class
Arable land + heterogeneous agricultural areas + permanent crops	semiarid + dry sub humid	< 15	Loamy clay, clay loam
Arable land + heterogeneous agricultural areas + permanent crops	semiarid + dry sub humid	< 15	Sandy loam, loam
Pastures	semi arid + dry sub-humid	<8	Loamy clay, clay loam
Pastures	semi arid + dry sub-humid	<8	Sandy loam, loam
Forest and seminatural areas	dry sub-humid	<8	Loamy clay, clay loam
Forest and seminatural areas	dry sub-humid	<8	Sandy loam, loam



**Map 10 Vulnerable areas to soil organic mater (SOM) decline**



As a most vulnerable soils can be identified the soils under intensive agriculture production on a sloppy terrains with heavy texture and shallow soil profile. In this sense, on the base of these criteria, as most vulnerable soil types in the selected areas can be pointed out, the soils on the hilly relief (litosols, rendzinas, cinemonic forest soils, vertisolas and the soils on coluvial forms. Any decreasing of SOM in these soils especially in litosols (shallow soil profile) and vertisols (heavy textured soils) can cause a serious and prompt damage on their production capability.

### **Adaptation measures**

In a situation of non existence of reliable long term series field dataset regarding the content and turnover of the SOM and its depletion it is difficult to define precise adaptation measures for the defined areas and soil types within these areas. In any case from our experience and out of many studies and analyses performed which can give an global picture of the situation in Macedonia regarding soil management, as a most important adaptation measures that can be recommended for successful combating negative impact of climate change on SOM depletion on the base of the previous experience, are the following ones:

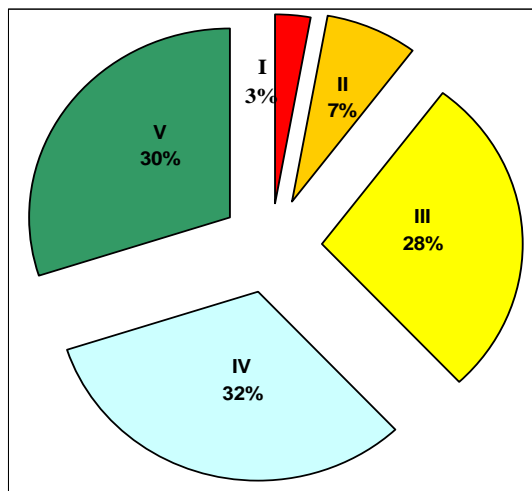
- application of organic fertilizers (manure, sideration). This measure will significantly maintain and in many cases increase the quantity of SOM,
- system for recommending the amount of fertilizer to be applied based on soil or plant tissue analyses
- cultivation of legumes, for enrichment of the soil with nitrogen, row organic mater and improvement of the soil structure.
- crop rotation and leaving the soil for several years as uncultivated (fallow), will preserve the soil from biased consumption of nutrients and will enlarge the quantum of organic residues in the soil. In addition crop rotation will ensure maximum cover of the soil surface and diminish the negative influence of the increasing air temperatures on depletion of SOM and reduced rainfalls.
- constant monitoring of SOM and nitrogen turnover and all necessary parameters in the identified vulnerable zones which will enable sufficient data for future running of one of the proposed models e.g. CENTURY IV, V.
- Reduced or no-tillage cultivation,

### **Soil erosion**

Soil erosion is normally a natural process occurring over geological timescales, only where (and when) the natural rate has been significantly increased by anthropogenic activity, should accelerated soil erosion be perceived as a process of degradation and therefore a threat in the context of soil protection.

The following types of erosion have been identified : (a) water erosion, by rill and inter-rill, gully, snowmelt, and of banks in rivers and lakes; translocation erosion by tillage, land-levelling, harvesting of root crops, trampling and burrow animals;

**Fig. 1 Area under different intensity of soil erosion**



(Source: UNDP-NCSA Project)

wind erosion, by the action of strong desiccating wind; geological erosion: internal subterranean erosion by groundwater, coastal erosion and landslides.

In Macedonia water erosion is the dominant type. According to the Erosion map elaborated in 1:50000 in GIS format, there are five categories and 12 sub-categories of erosion intensity (I-extreme, II-high, III-medium, IV-low, V-very low).

Around 96.5 % of the total area is affected by the processes of soil erosion. An amount of 9 423 km<sup>2</sup> or 36.65 % of the total state territory is encompassed by stronger categories (I – III) (Fig. 1).

The total annual production of erosive materials on the whole territory is about 17 x 10<sup>6</sup> m<sup>3</sup> / year or 685 m<sup>3</sup> / km<sup>2</sup> / year, out of which 7.5 x 10<sup>6</sup> m<sup>3</sup> / year or 303 m<sup>3</sup> / km<sup>2</sup> / year are transported.

A significant part of these deposits, about 3 x 10<sup>6</sup> m<sup>3</sup> / year is not carried through the downstream sections of the rivers to the exit of the state territory, but deposited in natural lakes and artificial reservoirs.

Annual soil loss represents an annual average loss of arable soil layer of 20 mm in depth over an area of 8 500 ha. The economic cost of erosion impact is thus considerable.

#### *Factors (or Hazards) related to the threat of soil erosion*

As for most threats to soil, there are natural and anthropogenic factors at work (Table 10).

**Table 10 Factors affecting erosion**

<b>Natural Factors</b>	<b>Anthropogenic Factors</b>
climate: precipitation, evapotranspiration, temperature, wind speed & direction	climate change
soil properties: particle size (sand, silt content), susceptibility to crusting, aggregate stability	tillage, cultivation translocation
vegetation/land cover: natural or climax	land use/land cover: arable, grassland/pasture, forest, semi-natural. land management: e.g. irrigation; grazing intensity; cropping systems
topography: slope angle, slope length, surface geometry	land leveling, terrace construction construction

With a very slow rate of soil formation, any soil loss of more than 1 t/ha/yr could be considered as irreversible within a time span of 50-100 years. Losses of 5-20 t/ha/yr can have serious effects, both on- and off-site (Gobin, A. et al 2002). Soil losses of 20-40 t/ha/yr can result from individual storms and, more extreme events that may occur once every two or three years, can lead to losses of more than 100 t/ha/yr. These large losses, computed from research studies, can have catastrophic effects at local level and serious off-site consequences.

*Identification of areas at risk of erosion*

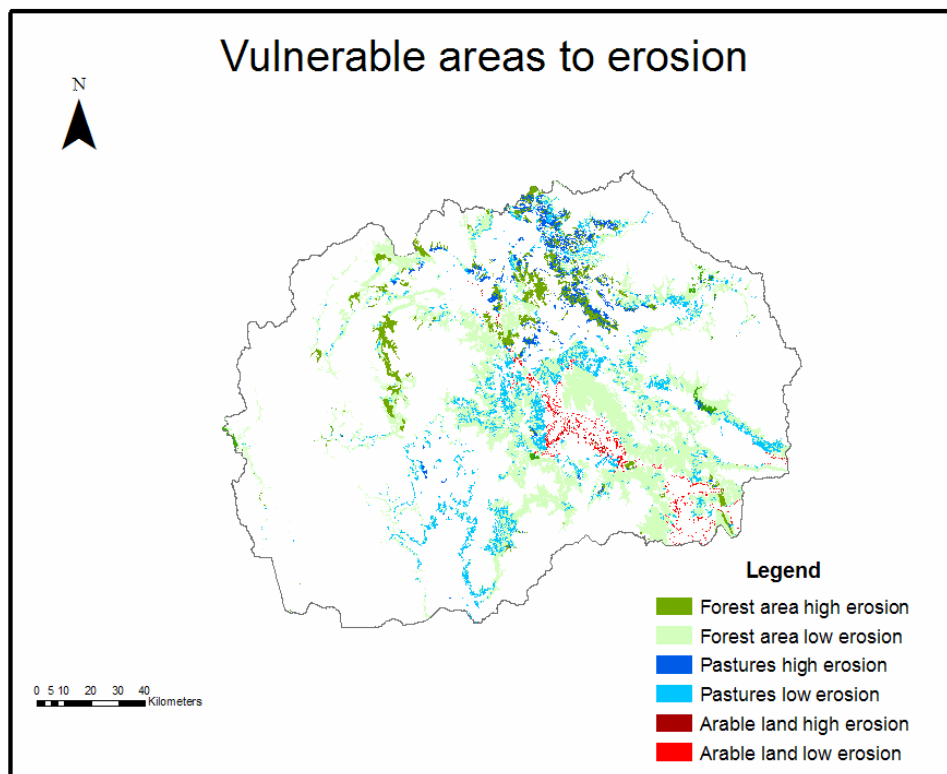
On the basis of soil loss predicted for standard spatial unit areas at risk of accelerated soil erosion could be identified. Having in mind the existing and newly developed datasets for Macedonia, for identification of vulnerable areas to climate change with regards to soil erosion, the following sets of indicators have been assigned (Table 11).

Tab. 11 Criteria selected for identification of vulnerable areas to soil erosion

Land cover	Moisture index	Slope	Texture class
Arable land + heterogeneous agricultural areas + permanent crops	semiarid	< 15	Loamy clay, clay loam
Arable land + heterogeneous agricultural areas + permanent crops	semiarid	< 15	Sandy loam, loam
Pastures	dry sub-humid	<8	Loamy clay, clay loam
Pastures	dry sub-humid	<8	Sandy loam, loam
Forest and seminatural areas	dry sub-humid	<8	Loamy clay, clay loam
Forest and seminatural areas	dry sub-humid	<8	Sandy loam, loam

As an output result of this analysis the areas most prone to the soil erosion as a result of the climate change has been identified (Map 11). Unfortunately some important data sets e.g. land use, hydrology, density, hydraulic properties are still missing.

## Map 11 Vulnerable areas to soil erosion



### **Addaptation measures**

Afforestation of the sloppy terrains prone to the process of soil erosion. This measure will enable protection of the soil surface from the devastation impact of the rain drops and will preserve surface flow of water. In addition root will improve soil structure and increase capability of soil to infiltrate more rain water. Production of biomass and content of SOM will increase.

Implementation in practice a new irrigation techniques which enable efficient use of water, eliminate surface flow of water, especially important on sloppy terrains, and decrease the water scarcity part of which is a result of decreased rainfalls due to the climatic change.

Central to any pragmatic approach to combating soil erosion for soil protection should be the estimation of soil erosion using models that were already tested, and to some extent validated, at existing erosion monitoring sites. The selected model(s), e.g. PESERA (Kirkby, M.J. et all 2004), USLE (Wischmeier, W.H, et all 1978) RUSLE (Renard, K.G., et all 1997).

Establishment of monitoring at a small number of fully instrumented sites, where an adequate soil, climate, topographic and crop/cover data will be collected, to obtain predicted sediment loss and could enable periodically run of the above mentioned models.

Managing such sites for measuring soil erosion at field scale is a complex and expensive process. Sediment traps, storage tanks and other equipment must be installed at the

experimental site and they need to be operated over a several years, even decades, to provide sufficient replication. Automatic meteorological recording equipment is also essential to put the results into a climatic context.

Demonstration and increasing of the awareness of farmers on how much management of the land, through changing the crop/vegetation cover, adequate cultivation (contour ploughing, reduced or no-tillage cultivation) could affect intensity of erosion and reducing of the negative impact of climate change.

### **Soil salinisation**

Salinisation is the process that leads to an excessive increase of water-soluble salts in the soil. The accumulated salts include sodium, potassium, magnesium and calcium, chloride, sulphate, carbonate and bicarbonate. Primary salinisation involves accumulation of salts through natural processes due to high salt contents in parent materials or groundwater. Secondary salinisation is caused by human activities, (inappropriate irrigation practices, with salt-rich irrigation water)

*Identification of factors/ hazards related to threat of salinisation.*

*Environmental (natural) factors result in salinisation:*

- particular geological conditions bring about an increase of the concentration of salts in groundwater and consequently in soils;
- rise of salt-rich groundwater due to natural factors or human intervention (see below) up to the surface, near to the surface or to the overlying horizons;
- groundwater seepage into areas lying below sea level, micro-depression with no or limited drainage;
- fluvial waters flooding from areas with geological substrates that release large amounts of salts;

*Human-induced factors may lead to salinisation:*

- irrigation of waters rich in salts;
- rising water table due to human activities (filtration from unlined canals and reservoirs; uneven distribution of irrigation water; poor irrigation practice, improper drainage);
- use of fertilizers and other additions, especially where land under intensive agriculture has low permeability and limited possibilities of leaching;
- use of wastewaters rich in salts for irrigation;
- salt-rich wastewater disposal on soils;
- contamination of soils with salt-rich waters and industrial by-products.

About 90 % of total area of salt affected soils is situated in 4 valleys in Macedonia (Strumica, Skopje, Ovce Pole and Pelagonija). According to the FAO-UNESCO soil map only 3200 ha are under halomorphyc soils (solonets and solonschac), whilst the rest of the area are soils affected with the processes of salinisation and alkalisation.

Basic source for materialization of the ground water in OVce Pole valley where the main part of salinised soils are situate, are the paleogenic geological sediments. With total content of 0.813% of salts paleogenic sediments of Ovce Pole are very salted and represents a excellent source for enrichment of ground and surface water with salts.

In such environment of mineralized ground water, dry climate and intensive agriculture and fulfillment of all above mentioned preconditions for rising of the water table and accumulation of salts in the top layer, the formation of salty soils is unavoidable.

Some investigation showed that the quantities of salts in ground, surface and spa water, are high and vary in the range 1.0-3.5 mg/l. Predominant type of salts are sulfates (similar to the ground water and sediments). Boron content is significant and yields 1.7-3.0 mg/l.

Content of salts in ground water in the areas of salts affected soils is high and in average yields 44.13 mg/l. Significant spatial variations of total salt quantities is observed in ground water of Ovce pole which influences the process of salinisation and increase the complexity of soil cover.

Some conservation researches of salty soils (Spirovski, J at al 1981 and Gicev, A. 1989,1993) in Ovce Pole, showed that combination of irrigation with quality water and evacuation of excess moisture and lowering of ground water table can dramatically reduce the total salt content in the soil (Table 12).

These experiments supports the thesis that in a conditions of controlled irrigation with quality water which will reduce capillary ascendant movement of ground water, reducing of excessive surface water from high hills (afforestation, and conservation of wild torential flows) negative process of salinisation can be stopped or significantly diminished.

**Table 12. Effect of leaching and control of ground water on salt content in soil**

	0-20	30-50	50-70	70-90
before treatment	1.746	2.638	2.340	1.779
after treatment	0.453	0.356	0.370	0.560
before treatment	3.925	2.672	2.682	2.347
after treatment	0.350	0.420	0.650	0.730

Salinisation of the top soil layers affects one or more soil functions. The possible risks that affects soil production capability are as follows: plant life (soil fertility), life and function of soil biota (biodiversity); soil deteriorations (increased erosion potential, desertification, structure destruction, aggregate failure, compaction); hydrological cycle, moisture regime, biogeochemical cycles of elements (plant nutrients, pollutants, potentially harmful elements and compounds).

*Definition of common criteria for risk area identification*

There are certain common criteria and input data needed for identification of the vulnerable areas to the phenomena of salinisation. These required input data are listed in Common Criteria for Risk Area Identification according to Soil Threats, JRC IAC Handbok, 2006, and can give an good hint if type of data needed to be collected during an eventual monitoring of areas affected with soil salinisation due to climate change.

In absence of quality field data that will meet data requirements, in this study we are presenting the map of soils that has been already identified as saline soils according the prepared soil map in a scale 1:200 000. No other information can be presented for the areas of soil under threat of salinisation and quantification of the influence of climate change on this negative process of soil degradation.

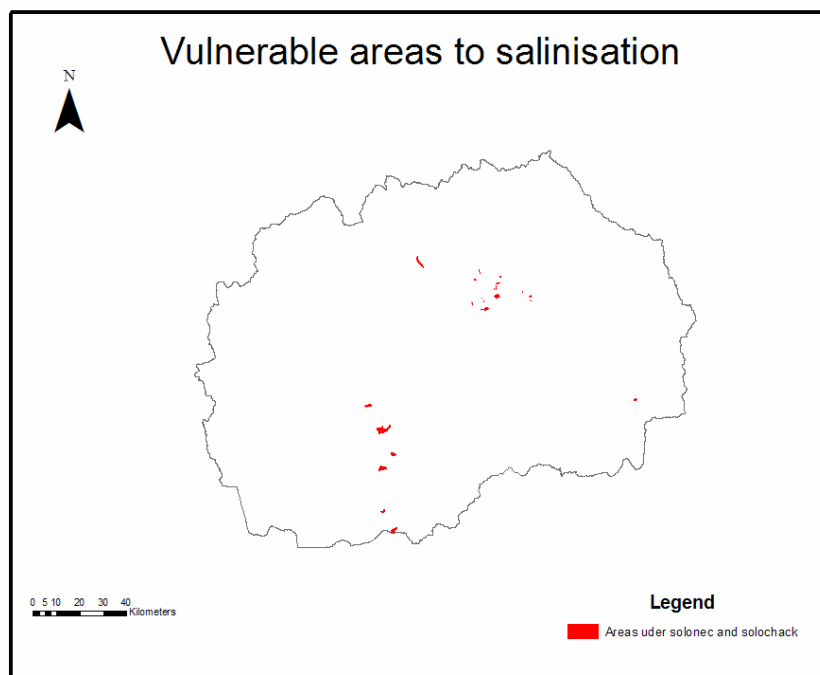
## **Addaptation measures**

Adaptation measures should be aimed towards mitigating the negative impact of the natural and human-induced factors leading to soil salinisation, which are enforced with the negative impact of the climate change.

These measures should lead at first place to control the level of the salt-rich ground water which in circumstances of high temperature, reduced rainfalls tend to reach the soil surface due to the increased evaporation and evapotranspiration. These measures mainly refers to:

- reducing the quantity of surface and ground water that inflows from the surrounding hilly areas, through afforestation and terracing. This will lead to improvement of the hydrological status of the valleys prone to salinisation.
- drainage of micro-depressions in the valleys will evacuate excess water and decrease the level of the ground water in the valleys
- precise irrigation with small and accurate quantities of water which will preserve the desirable level of ground eater and will maintain the soil moisture to field capacity and suppress the unfavourable ascedent movement of groud water and accumulation of salts in the surface layers.
- irrigation with quality water with low content of salts in it, and evacuation od salt-rich wastewater from the vulnerable zones with building of waste water treatment plants and drainage systems
- agrochemical melioration of saline soils is a standard measure for remediation of saline soils and if possible should be implemented in any occasion.

**Map 12. Vulnerable areas to salinisation**



## **SOIL COMPACTION**

Soil compaction occurs when soil is subject to mechanical stress often through the use of heavy machinery or overgrazing, especially in wet soil conditions. In sensitive areas, walking tourism and skiing also contribute to the problem.

### *Identification of factors related to soil compaction*

The factors that can lead to the application on soil of a mechanical stress, such as the use of heavy machinery, or the passage of draught or grazing animals or of human beings, causing soil compaction will vary according to soil wetness. Each factor should be characterized by i) the mechanical stress applied to the soil and ii) the duration of application in relation to the soil moisture content.

For agriculture and forestry, the main harm comes from the use of machines which have become heavier and heavier since the middle of the 20th century. Compaction of the soil is caused directly through the passage of wheels, tracks or rollers.

Other agricultural practices, such as irrigation and drainage, can also exacerbate soil compaction by modifying the soil moisture content. It is also important to take account of the field operations in some countries, especially application of fertilisers and spreading of slurry using heavy tankers.

Forestry machinery is also becoming heavier and more powerful, with axle loads that can reach 300 kN. Several studies have shown that the problem of compaction in forest systems is equivalent to that of agricultural systems.

### *Characterisation of sensitivity of soil to compaction*

To assess the sensitivity of soil to compaction, it is necessary to be able to predict the degree of soil compaction due to an applied stress and thus to determine the critical stress above which soil will be compacted. Soil compactibility depends on soil mechanical properties which are variable in time with soil water content.

In the absence of an appropriate model and sufficient information about soil mechanical properties, assessment based on expert knowledge can be made using other soil properties, such as soil texture, organic matter content, structure, bulk density, etc. unfortunately due to a lack of data bases with long time series for these parameters we are not able to support our expert knowledge with any realistic field data regarding soil compaction and even more the negative impact of climate change on this soil indicator. Generally, soils with large amounts of clay (>35%) are more susceptible to deformation than sandy soils, but the fact that sandy soils naturally have a larger proportion of coarse pores than clay soils can make them more susceptible to significant compaction.

For mineral soils, organic matter decreases vulnerability of soils to compaction in all textural categories. For this reason depletion of organic matter from any reason including climate change can significantly emphasize the problem of soil compaction in areas where soils have heavier texture.

Soils with single grain, granular and weakly developed blocky structure are susceptible to compaction. This assessment must be based on the knowledge of the soil behavior to loads given by field experience.

The critical periods for field operations can be determined using different methods:



- climatic zoning with characterization of seasons in terms of wetness;
- climatic water balance based on rainfall and potential evapotranspiration–PET;
- simple soil water balance based on available water capacity, rainfall and PET (irrigation can be included; per day or per 10-days).
- crop growth models for annual or perennial crops, or forests.

Models can be used to estimate the soil water balance. To account for climatic variability, data that cover at least 20 to 30 years should be used. The problem of spatial variation of climate must be taken into account, for example in the choice of meteorological stations.

*Risk assessment of soil compaction: common criteria*

In the following table (Tab. 13) the common criteria for identifying the areas prone to soil compaction are listed for all EU member states. This table can give a good basis for organizing of the future monitoring in Macedonia as well as a guide for us how to organize the existing data in identifying the vulnerable areas to soil compaction.

**Table 13 Minimum data required information to identify area at risk for compaction**

Common criteria	Type of information	Data Quality Tier 1	Resolution Tier 2
	statistical data about agriculture and		
land use	forestry: crop types and forest areas, types of farming systems (annual crops, vineyards, animal breeding, etc.), type of forests	NUTS 3	NUTS 4
farming and forest systems	typology of farming systems or forestry systems in relation to land use data	expert knowledge	survey data
land cover	localisation of agricultural and forest areas, etc. using data such as CORINE land cover	250 m	100 m
slope	Digital Elevation Model	250 m	90 m
SMU/STU delineation	National Soil Geographical Data Base	national	regional
STU topsoil and subsoil texture	texture class or mean silt, clay and sand content	texture class	particle size
STU description	bulk density, other parameters according to availability in soil inventories: water retention, organic matter content, structure, hydraulic conductivity, air capacity	pedotransfer functions or rules	measurements and soil morphological descriptions from representative soil profiles
climate	rainfall and PET	average year, data on a month or 10-day basis NUTS 3 or 50 km	20 to 30 years one day basis 10 km

Source: Common Criteria for Risk Area Identification according to Soil Threats, JRC IAC Handbok, 2006

## **Adaptation measures**

Adaptation measures for the areas vulnerable to soil compaction as a result of climate change should be focused towards measures which will preserve and improve the soil mechanical properties and ensure that the variation of the soil water content are in reasonable limits.

Main focus should be paid to the application of the best agricultural practices with regards to: soil cultivation (on time and reduced tillage), application of organic fertilizers for increasing of SOM in the topsoil, timely irrigation with modern techniques for preserving of the soil water content and diminishing of the negative impact of increased evapotranspiration due the climate change. In addition, the appropriate land use and crop rotation can significantly diminish the negative effect of climate change on soil compaction. In the areas identified as a vulnerable to compaction heavy machinery should be avoided in the agricultural practice. Field examinations of the water content should be performed on a regularly base for determining the most appropriate time for cultivation. An constant monitoring for collecting of necessary data as indicated in Table??. should be organized in the vulnerable areas and will enable future modeling of the negative influence of climate change on this soil indicator.

## **Soil Pollution**

There is soil pollution with nitrates, phosphates, sulphates, pesticides, organic pollutants, heavy metals, oil. There is no regular and long-term monitoring system. Some incidental measurements of soil pollution around certain industrial complexes have been conducted, and these results are relevant only for those localities.

## **Pollution from agriculture**

The data indicate that fertilizer use has been declining over the last ten years, and there were rapid declines in the 1990-93 periods, because of the phasing out of input subsidies, import constraints, and the financial difficulties the farmers faced. Nevertheless, fertilizer use remains quite high. Fertilizer consumption in the agricultural co-operatives was higher than in the private sector, because of the financial incentives and subsidies offered by the co-operatives. Consumption of mineral fertilizers declined from 43 000 tonnes (1982) to 24 000 tonnes (1992) and finally reach 11000 t (2005). In such an approach there is a feeling that over-fertilization is not a problem of land degradation and possible source of desertification in the country. The present situation is that some crops are very profitable (some early vegetables, some fruits, some other vegetables, etc.). Farmers are maximizing inputs in order to maximize the yield from the unit area. In such cases very high fertilizer rates are applied. Having in mind that in such a situation farmers are not interested in crop rotation, because other crops have a much lower profit, the situation is getting very dangerous in terms of land degradation. There has been little thorough analysis of the impact of fertilizer use on soil and we can say there is no available data to estimate situation.

Organic manure production totals about 3 million tonnes, of which about 40 % is from sheep, 40 % from large ruminants and pigs, and 20 % from poultry. Organic manure satisfies about 30 % of the total fertilizer demand. But availability of manure is a big problem. Animal production is located in a few areas only. The moving of manure from one to other area is going to be very expensive and not profitable for farmers. So even though manure has a very positive effect on soil in agricultural production there is a risk of pollution in areas where it is over-produced and a

shortage in other areas. A serious investigation should be conducted to determine the real situation in the country.

Pesticide consumption has declined dramatically over the past decades, from 2 706 tonnes in 1983 to 659 tonnes in 1993 and to 300 t in 2005. Herbicide consumption has similarly declined. Analysis suggests that there are few problems in Macedonia regarding the retention of pesticide chemical residuals in vegetable products, partly because pesticide use is much lower than in Western Europe, and partly because standards are respected.

Such a situation is a result of the economic circumstances (poor farmers) and is not due to public awareness of the negative effects of pesticides. The situation is similar regarding other production inputs, namely, over-application for profitable crops and almost no application for crops with a low profit.

**Table 14. Arable area, use of fertilizer and agrochemicals for period 2000-2005**

Year	Arable area (000 ha)	Use of fertilizers in t	Use of Agro-chemicals in t	fertilizer use kg/ha Arable land	Agro-chemical use kg/ha Arable land
2000	598	16.416	308	27,45	0,52
2001	612	9.953	333	16,26	0,54
2002	577	10.593	245	18,36	0,42
2003	569	10.074	222	17,70	0,39
2004	560	9.931	273	17,73	0,49
2005	580	11.000	300	18,97	0,52

Source: Agricultural Report, Ministry of Agriculture, Forestry and Water Economy, 2005 and Statistical Yearbook 2006

Data presented in table shows minimal use of fertilizers and agrochemicals per unit area going as low as 16,26 kg/ha of fertilizers in 2001 and 0,39 kg/ha of agro-chemicals in 2003. Previously was stated that average numbers are not clear indication of not existing problem of soil pollution and some cases of over fertilization do exists in the country. Common practice of cleaning of spraying equipment on the field cause problems of pollution with agrochemicals.

### **Pollution from municipal waste**

There are about 25 known landfills in the country which cover and directly degrade around 200 ha. However, with the exception of the Drisla landfill in Skopje, landfills are not well designed. Leakages are not drained properly and they pose a hazard with the on-site generation of explosive gases. Also, these landfills are constructed typically on alluvial or karst soil, creating a potential for groundwater contamination through the migration of leachates. There is no systematic monitoring programme and as a result, the effect of the landfills on the groundwater, soil, and air remains unknown. Typical municipal wastes contain 25 % ash and construction wastes, 24 % paper, 20 % food wastes, 11 % plastic, 5 % glass and porcelain, 4 % textiles and leather, 3 % metals, and 8 % other kinds of wastes.

In smaller towns and villages, wastes are disposed of in an unplanned manner at different locations around the town. Quite often these wastes are disposed near lakes, rivers, and

streams and as a result they pollute the surface water. The landfill Vardariste in Skopje and other landfills in Tetovo, Gostivar, Berovo, Pehcevo, Mavrovo, Ohrid, and Struga, etc., are potentially harmful to the environment, especially the groundwater. In addition, it is estimated that about four million tonnes of animal wastes are improperly disposed of creating a health hazard.

The total area covered by 25 official landfills is about 120 ha, but the total area under the several hundred 'wild' landfills is more than 200 ha.

A number of landfills have been used up from 70-100 % of their total storage capacity, and they would be ameliorated. Instead, new landfills will be constructed and new agricultural or forest land will be covered with waste.

## **Pollution from Industrial and Hazardous Waste**

Large quantities of industrial and hazardous wastes are generated in mining, metallurgical, fertilizer, and chemical industries as well from power plants. Due to their toxic nature, management of such wastes becomes extremely important so that they do not affect human health and the environment. Presently, the slag disposal areas for the lead and zinc smelter in Veles and for the 'Jugohrom' operations in Jegunovce, near Tetovo create serious potential for soil and groundwater contamination. Proper waste management is required in the ferro-nickel plant of Fenimak which generates about 430 000 tonnes of slag per year and at the thermal power plant in Bitola which has an ash pond of more than 1 000 ha. Smaller industries often dispose of their wastes off-site in areas that affect the environment. In the past, slag from disposal sites have contaminated water flows (Zletovska Reka, Bregalnica, and Vardar) degrading nearby soil, underlying the need for proper management.

Soil pollution from industrial waste has been a serious issue. The annual production of ash and slag averaged 1.2 millions tonnes in the 1990-95 period. Managers of mines have not always discharged their responsibilities regarding adequate disposal of industrial waste. The regulations specifying merely that waste should be discharged on-site, are not clear and lead to environmental concerns. Monitoring and regulation of industrial waste is inadequate. Soil analysis in the Veles area has indicated excessive levels of lead and zinc in surrounding soils, leading to the contamination of vegetables. Further, illegal landfills and indiscriminate dumping of municipal waste, together with a lack of appropriate regulations or enforcement, have led to soil and water contamination. Again, monitoring to ensure proper disposal of municipal wastes is inadequate.

There are no special provisions to handle medical wastes, which are often radioactive and can lead to contagious diseases. In addition the disposal practices of other radioactive wastes generated in the country is unclear.

The Rzanovo mine presents a negative example, where the landfill was not ameliorated. This landfill belongs to the river Blastica and 'Tikves' reservoir catchment area. At the mouth of the river Blastica to the reservoir, the depth of deposits is 18 m. Most of those deposits came from the landfill (mine tailing).

There are no exact data on area degraded by industrial and hazardous waste. Evaluations are that at least 6 000 ha are contaminated by this waste.

We are not aware of the consequences from NATO's war against Yugoslavia. Our capital, Skopje lies 15 km from the border to Yugoslavia (Kosovo). The mouth of the river Lepenec (with 95 % of the catchment area in Kosovo) into river Vardar is located in Skopje. Caused by erosion processes, a lot of contaminated sediments produced in Kosovo, are transported to

Macedonia. It is logical that surface water and groundwater are contaminated. There are arable lands along the river Lepenec in Macedonia and farmers use water from the river for irrigation. Probably those lands are contaminated by groundwater and irrigation water.

**Soil sealing** - As a result of modernization, urban growth, human needs, and migration processes, soil sealing is a big problem. A lot of high-class agriculture land was sealed with different infrastructural objects. It is evident, widening of the city on higher-class land. Typical examples are Skopje, Bitola, Kumanovo, and Tetovo. There are industrial plants located in the agricultural zones. There are new roads and other infrastructure constructed in the agricultural zone. Besides soil sealing, all these structures are sources of soil pollution too. Of the total territory, some 50% belong to the agricultural sector (a total of 1,291,251 ha). Since the 1960s, 18.6% of the land has been lost or about 0.5% of agricultural land as a constant annual loss (Report on Capacity Self- Assessment within the Thematic Area of Land Degradation and Desertification in frame of Project Self-Assessment of Country Capacity Needs for Global Environment Management prepared by Ministry of Environment and Physical Planning and UNDP, 2003).

### **State in EU**

The Common Agricultural Policy reinforces the respect of standards of good agricultural and environmental conditions referring to protection of soil from erosion and maintenance of soil organic matter and soil structure.

Soil degradation processes such as desertification, erosion, decline in soil organic matter, soil contamination (e.g. by heavy metals), soil sealing, soil compaction, decline in soil biodiversity and salinisation can cause soil to lose its capacity to carry out its main functions. Such degradation processes can result from inappropriate farming practices such as unbalanced fertilisation, over-abstraction of groundwater for irrigation, improper use of pesticides, use of heavy machinery, or overgrazing. Soil degradation may also result from abandonment of certain farming practices. For example greater specialisation towards arable farming has frequently been accompanied by abandonment of traditional crop rotation systems and manuring with green legumes, practices that contributed to the restoration of soil organic matter content.

The sixth environment action programme emphasises the need for an EU strategy on soil protection. This would supplement various national soil protection programmes that address the specific needs of topographic and climatic conditions. The Commission's communication "Towards a thematic strategy for soil protection" sets out the building blocks for EU action to arrest soil degradation. It maps national actions and identifies the gaps that could be filled at EU level, as well as outlining possible actions including new legislation related to the use of sewage sludge in agriculture and compost, a proposal for soil monitoring legislation and a timetable for these.

Agri-environmental measures offer opportunities for favouring the build-up of soil organic matter, the enhancement of soil biodiversity, the reduction of soil erosion, contamination and compaction. These measures include support to organic farming, conservation tillage, the protection and maintenance of terraces, safer pesticide use, integrated crop management, management of low-intensity pasture systems, lowering stock density and the use of certified compost.

With the 2003 CAP reform, the reinforced cross-compliance includes respect of standards of good agricultural and environmental conditions referring to protection of soil from erosion and maintenance of soil organic matter and soil structure.

Erosion, loss of organic matter, compaction, salinisation, landslides, contamination, sealing... Soil degradation is accelerating, with negative effects on human health, natural ecosystems and climate change, as well as on EU economy. At the moment, only nine EU Member States have specific legislation on soil protection (especially on contamination).

Different EU policies (for instance on water, waste, chemicals, industrial pollution prevention, nature protection, pesticides, agriculture) are contributing to soil protection. But as these policies have other aims and other scopes of action, they are not sufficient to ensure an adequate level of protection for all soil in Europe.

For all these reasons, in September 2006, the Commission adopted a comprehensive EU strategy specifically dedicated to soil protection.

The strategy is one of seven Thematic Strategies that the Commission has presented. The other strategies cover air pollution, the marine environment, waste prevention and recycling, natural resources, the urban environment and pesticides.

The Thematic Strategy for Soil Protection consists of a Communication from the Commission to the other European Institutions, a proposal for a framework Directive (a European law), and an Impact Assessment.

### **Findings and Recommendations**

Some of the findings and recommendations were presented as adaptation measures to most important soil degradation processes.

In order to establish proper soil protection and sustainable use of soil as very valuable non-renewable resource in the country several important measures should be undertaken:

Preparation of soil map and other maps needed for determination of soil status (vegetation map, land use map etc)

Establishing of soil monitoring in the country

Revision of law on inheritance (splitting of plots to several sub plots in this process)

Revision of law on property taxes and setting up higher tax for land that is owned and not used

Establish clear competences and responsibilities among institutions dealing with soil and land resources especially in term of soil protection (erosion, soil organic matter loss, salinization, sealing, compaction, pollution, etc.)

Prevent land use changes, agricultural land in other land categories, especially conversion of irrigated agricultural land in urban land

Promote Good Agricultural Practices with special emphasis on soil protection

Improving land Cadastral

Building of capacities for rehabilitation of soil

Promote soil conservation practices (reduced tillage, zero tillage)

## **Agriculture and pesticides**

### **Introduction**

For a longer period pesticides were considered as very useful tool in agricultural practices. Use of pesticides was even promoted as a very good tool for achieving higher crop yield. More advanced research put a lot of attention on pesticides as source of environment pollution. Some papers state that all recent organic mass in Macedonia contain DDT residues in certain level. Despite pollution of the environment, pesticides can create problem with food safety issues (residues) and can create problems with exportability of Macedonian food products, especially if their unsustainable use continue.

Fortunately awareness of negative effect of pesticides in the country is high and even some agricultural products are considered as risky due to high number of spraying during their growing. This situation is not based on real facts, but is very good example of high awareness.

However, their use does involve risk because most have inherent properties that can make them dangerous to health and the environment if not used properly. Human and animal health can be negatively affected through direct exposure (e.g. industrial workers producing plant protection products and operators applying them) and indirect exposure (e.g. via their residues in agricultural produce and drinking water, or by exposure of bystanders or animals to spray drift). Soil and water may be polluted via spray drift, dispersal of pesticides into the soil, and run-off during or after cleaning of equipment, or via uncontrolled disposal.

### **State in Macedonia**

Pesticide consumption declined dramatically in the beginning of transition period from 2 706 tones in 1983 to 659 tones in 1993. (Report on Capacity Self- Assessment within the Thematic Area of Land Degradation and Desertification, 2003). Further declining appears and in last 5 years agrochemicals use varies from 222 t in 2003 to 333 t in 2001 (Agricultural Report, 2005) In 2005 agrochemical use is 300 t. (data presented in table 14). If we try to present this data to agrochemical use per hectare of arable land it is about 0,4-0,5 kg/ha. Low consumption of agrochemicals is a result of the economic circumstances (poor farmers) and is not due to public awareness of the negative effects of pesticides. The situation is similar regarding other production inputs, namely, over-application for profitable crops and almost no application for crops with a low profit.

Pesticides are mainly used for perennial crops by private farmers and for most of the crops in case of agrokombinats. It is well known practice of very big number of spraying in apple production and in grape production, due to high profitability of these crops. Analysis suggests that there are few problems in Macedonia regarding the retention of pesticide chemical residuals in vegetable products, partly because pesticide use is much lower than in Western Europe, and partly because standards are respected.

According results of the Agricultural census in 2007 herbicides are used on area of 172 329,72 ha, insecticides on area of 110988,44 ha, fungicides on area of 57674,26 ha and rodenticides on area of 10359,98 ha. These areas are not minor and even though average consumption of agrochemicals is very low, there is certain risk of misuse of these toxic materials. Also there is risk of appearance of residues in food products that can have negative impact on food safety in the country as well as on exportability of domestic food products.

Due to process of European integration Macedonia establish National Phytosanitary Laboratory that is responsible for most of analyses related to plant diseases, use of pesticides and their effects on crops. This laboratory is still not fully operational. Despite this several institutions are responsible for investigation of physical and chemical properties of pesticides (Faculty of Agricultural Sciences and Food, Institute of Agriculture) and investigation of pesticides efficiency in the biological experiments (Faculty of Agricultural Sciences and Food, Institute of Agriculture, Goce Delcev University). These investigations are compulsory for registration of pesticides in the country. Process of registration is expensive and long-lasting and there is not interest of companies to register new pesticides for such a small market. Use of principle "me too" seems as better solution for our market of plant protection materials.

Legislation in this field is complete. There is law on plant protection and complete secondary legislation. There is list of registered products for plant protection in the country and the list is regularly updated.

Due to low capacities for determination of pesticide residues in the country there is not clear view on state neither in terms of food safety issues.

The Good Agricultural Practices (GAP) are not established in the country and there is not tool to control use of pesticides in the country.

In last period integrated pest management became very important issue. UNDP supported program for pest control in Resen area<sup>1</sup>. Several monitoring points were established and risk of appearance of some insects and diseases are monitored through mini meteorological stations and pheromone traps. The project developed system for announcing of risk for appearance of some pest and in project area number of sprayings dramatically decreases. In same time certain number of farmers was trained for use of this equipment and nowadays farmers and farmers associations in Resen are running whole system. There is intention of up scaling of these system to whole Resen area (most important apple growing region in the country) and in other parts of the country.

Despite this UNDP and GEF are financing project for education of selected number of farmers in GAP. Also in Gevgelija region through some project activities certain number of farmers was certified to use GAP in their production. It is necessary to establish GAP regulative in the country and to apply it in order to minimize risk of uncontrolled use of agrochemicals.

Organic farming is one of the production systems that minimize use of agrochemicals. Organic farming became more important when the Law on Organic Production was adopted in 2004. The Law regulates the production, processing, marketing and labelling of organic production. This law is applied to all types of agricultural products intended for human consumption and animal feeding, where methods of organic production are implemented. The basic aims are human health protection, biological diversity protection, consumers' protection, guarantee of safety, food monitoring and quality. In 2004, Ministry of Agriculture, Forestry and Water Economy prepared programme for the instigation and development of organic agricultural production, which was implemented in 2005. The funds for instigation and development of organic farming production in 2005 amounted to 6,000,000 MKD as incentive measure in frame of support of agriculture budget.

After the publication of the Programme in the beginning of 2005, 417 producers (legal and physical entities) with arable land of 783 hectares and around 3,200 hectares of woodlands, pastures and non-cultivated fields registered through the Agency for Development of

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<sup>1</sup> UNDP/GEF Project: „Decreasing of Impact of Agricultural Activities on Environment in Prespa Lake Region”, 2005



Agriculture by the end of March 2005. The registration was conducted for farmers to become eligible for using of incentive measures (partial coverage of transition and certification cost).

Creation of certification body for Organic Farming in the country was supported by PSO programme of Holland Government. That body named as Incebo. There is second certification body BalkanBioCert. Certification bodies undertake process of certification of organic production (certify that all measures of organic production are undertaken).

## **State in EU**

Pesticides used in agriculture are usually referred to as plant protection products. They protect plants or plant products against pests. They are widely used in farming for their economic benefits — to fight crop pests and reduce competition from weeds, thus improving yields and protecting the quality, reliability and price of produce.

The EU thus seeks to ensure their correct use, it regulates in order to minimise their detrimental environmental impact and informs the public about their use and any residue issues.

There are EU regulations covering the placing of plant protection products on the market, the placing of biocidal products on the market and fixing maximum residue levels in food. EU legislation regulates the marketing and use of plant protection products and their residues in food.

Council Directive 91/414/EEC states that active substances cannot be used in plant protection products unless they are included in a positive EU list. An EU programme of evaluation to create this list is underway. Most of the active substances under evaluation are pesticides but many - such as growth regulators, pheromones etc - are not. All plant protection uses are covered; not just those in agriculture. Pesticides used in other areas, for example as veterinary drugs or as biocides, are covered by other legislation. Once a substance is included in the positive list Member States may authorise the use of products containing them.

Pesticides residues in food are regulated by four Council Directives: 76/895/EEC, 86/362/EEC, 86/363/EEC and 90/642/EC. Regulation (EC) No 396/2005 consolidates and amends these. The legislation covers the setting, monitoring and control of pesticides residues in products of plant and animal origin that may arise from their use in plant protection.

The maximum levels set are those consistent with good agricultural practice in Member States and third countries. The levels are set after an evaluation of any risks to consumers of different age groups and they are only set if they are considered safe. The levels are intended to facilitate trade and are not toxicological limits. The exceedence of a maximum level is more an indication of an incorrect use of a pesticide than a risk to the consumer. Nonetheless, exceedence is closely monitored, evaluated and communicated to the authorities in the Member States through the Rapid Alert system for food whenever there is a potential risk to consumers.

The EU also regulates to protect water quality in respect of pesticides. The water framework directive provides an integrated framework for assessment, monitoring and management of all surface waters and groundwater based on their ecological and chemical status. The directive requires measures be taken to reduce or eliminate emissions, discharges and losses

of hazardous substances, for the protection of surface waters. By 2001 33 priority substances had been listed, out of which 13 were substances used in plant protection products.

Agri-environmental measures offer support for commitments on keeping records of actual use of pesticides, lower use of pesticides to protect soil, water, air and biodiversity, the use of integrated pest management techniques and conversion to organic farming. The EU's sixth environment action programme addresses the need to encourage farmers to change their use of plant protection products. The Commission communication "Towards a thematic strategy on the sustainable use of pesticides" follows this up and suggests several possible measures such as establishing national plans to reduce hazards, risks and dependence on chemical control. Following a consultation process with stakeholders the Commission will make proposals for a strategy to improve pesticide use in agriculture. Detailed information on the EU thematic strategy on the sustainable use of pesticides can be found on the "Sustainable use of plant protection products" website.

The reinforced cross-compliance established by the 2003 CAP reform includes the respect of statutory requirements arising from the implementation of EU regulation covering the placing of plant protection products on the market.

## **Findings and recommendations**

Increasing of Integrated pest management practices in the country as a tool to minimize use of pesticides

Applying of "me too" policy in registration of pesticides that can be used in the country. The approach what is good for some EU country with similar environment should be good for me is method to minimize cost of registration of new less toxic formulation of pesticides in the country, instead to stick to already registered very toxic substances and formulations.

Increasing organic farming in suitable area as technology of crop production without use of pesticides

Accept list of forbidden substances from EU and prevent illegal import of these pesticides on the market (some of forbidden substances are considered as very good pesticides and farmers like to use them).

Increasing of awareness among farmers for use of modern less toxic, biodegradable pesticides

Promotion of good agricultural practice among farmers in term of plant protection

Train farmers for treatment (storage, disposal etc.) and use of hazardous and toxic substances as pesticides are

Promotion of proper protection of farmers in using of pesticides and proper maintaining, cleaning and treatment of spraying equipment

Spreading of system for information of farmers when to spray and what type of pesticide to use (announcement of condition for appearance of some disease or pest) that already exist in Resen area

Promoting regular control of pesticide residues in term of food safety issues

## **Agriculture and nitrates**

### **Introduction**

Nitrates are widely used in agriculture as fertilizer due to very positive effect on crop yield and crop development. Due to their negative electricity nitrates are not absorbed by soil particles, but usually they are dissolved in soil solution. Their movement in the soil is freely with water and usually the pollution of ground water with nitrates is going with deep percolation of the water (leaching). To have this situation intensive rainfalls should take place. Even though Macedonia is very arid country such intensive/prolonged rainfalls can appear and there is risk of leaching of nitrates in ground water. Having in mind that irrigation is common practice in Macedonian agriculture risk of leaching of nitrates is even higher with irrigation water, especially in case of over irrigation. During irrigation process there is run-of water that can transport nitrates to the recipients and pollute the environment.

Despite fertilizers nitrate source can be and animal farms and manure.

### **State in Macedonia**

Macedonia up to now did not put attention on nitrates. Agriculture is big user of nitrates, but due to already stated facts of decreasing of use of fertilizers in the country it is assumed that there is not risk of pollution of waters with nitrates from agricultural sources. Nevertheless some agricultural practices in the country surly contribute to pollution of ground water with nitrates. Some profitable crops are over fertilised. Application of manure is usually in wet autumn winter period when leaching can appear. Fertilization is usually done in one, rarely in two portion. The biggest amount of nitrates is applied when crop is not developed and request for nitrates is very low. This practice is very risky, especially for winter wheat (the most important crop in the cropping pattern in the country) when nitrates are applied in late autumn and early spring, when crop is very small and there is biggest portion of rainfalls. Manure management and storage is not according standards and leaching of nitrates is very feasible. Codes of Good Agricultural Practices are not established. Management of waste water/sludge from pig/poultry farms is not on desired level and frequently water close to these farms is polluted, even though it is not reported because these river/water bodies are not part of regular monitoring scheme. There is more unsustainable agricultural practices that contribute to pollution with nitrates, but unfortunately there is not reports in official documents for such pollution.

The biggest problem to apply nitrate directive is that ground water monitoring system in the country is not operational for a longer period. Present situation is no monitoring - no problem. In certain cases there is evidences for pollution of ground water with nitrates but as a result of control of potable water from wells used for water supply in rural areas. The most common source of nitrates in ground water are agricultural activities and problem in the country exist.

Situation with monitoring of surface water shows in some cases concentration of nitrates above maximal allowed level, but it can not be dedicated to agricultural pollution, because in most cases urban waste water is delivered in water bodies without any treatment. It is hard to distinguish if nitrates are result of waste water or from agricultural activities.

Anyhow process of eutrofication, especially in some artificial lakes (reservoirs) is obvious and pollution of water with nitrates is obvious as well as with phosphates. Certainly some of the nitrates are coming from agricultural sources and it is necessary to start with some measures to improve existing situation.

Nevertheless even if problem do not exist EU directive on nitrates should be applied as soon as possible in the country in order to prevent appearance or to reduce already existing pollution.

## **State in EU**

The EU legislation on nitrates aims at reducing water pollution by nitrates from agricultural sources and at preventing further pollution. The EU's nitrates directive was introduced in 1991 with two main objectives in mind: to reduce water pollution by nitrates from agricultural sources and to prevent further pollution. The directive is managed by Member States and involves: monitoring of water quality in relation to agriculture; designation of nitrate vulnerable zones; establishment of (voluntary) codes of good agricultural practice and of (obligatory) measures to be implemented in action programmes for the nitrate vulnerable zones. For these zones, the directive also establishes a maximum limit of nitrogen from livestock manure that can be applied per hectare: 170 kg N/ha per year.

Codes of good agricultural practice cover such activities as application periods, fertiliser use near watercourses and on slopes, manure storage methods, spreading methods and crop rotation and other land management measures. Action programmes must include obligatory measures concerning periods of prohibition of the application of certain types of fertiliser, capacity of manure storage vessels, limitations to the application of fertilisers (on steep slopes; to water-saturated, flooded, frozen or snow-covered ground; near water courses), as well as other measures set out in codes of good agricultural practice.

Implementation of the directive by Member States is a complex process. So far, only a minority of Member States have fully applied the directive and the Commission has opened a number of infringement proceedings against Member States for non-implementation. The linkage between good farming practice and respect of statutory environmental standards (including those relating to the nitrates directive), as established in the framework of the EU's rural development policy, may contribute to improved implementation by Member States.

With the 2003 CAP reform, respect of statutory requirements arising from the implementation of the nitrates directive is included within the framework of the reinforced cross-compliance measures.

Water pollution by nitrates has been worsened by the introduction of intensive farming methods, with increased use of chemical fertilisers and higher concentrations of animals in smaller areas.

Water pollution by nitrates is causing problems in all the Member States. The sources of nitrate pollution are diffuse (multiple discharges, difficult to locate), and the main polluters - farms - are sensitive to anything which affects the economic viability of their activity.

The 1980s saw a progressive worsening of the situation (nitrate concentrations in water rose by an average of 1 mg/l per year) owing to the growth of intensive livestock farming (chickens, pigs) in areas already saturated, and of intensive crop-growing involving chemical weedkillers and overfertilisation.

The Frankfurt Ministerial Conference of 1988 examined water protection legislation. The participants stressed that the legislation needed improving, and this resulted in the adoption of the Directive on urban waste water and the Directive on nitrates.

The Member States must identify, on their territory:

- surface waters and groundwater affected or which could be affected by pollution, in accordance with the procedure and criteria set out in the Directive;
- vulnerable zones which contribute to pollution.

The Member States must establish codes of good agricultural practice to be implemented by farmers on a voluntary basis, as defined in Annex II to the Directive.

The Member States must establish and implement action programmes in respect of vulnerable zones. These must include the measures prescribed in the codes of good agricultural practice and measures:

- to limit the spreading on land of any fertiliser containing nitrogen;
- to set limits for the spreading of livestock effluent.

The Directive authorises Member States to take additional measures or to reinforce the action programmes in order to attain the objectives of the Directive.

The Member States must monitor water quality, applying standardised reference methods to measure the nitrogen compound content.

Provisions on adaptation of the annexes to scientific and technical progress are also included.

Member States must report regularly to the Commission on implementation of the Directive.

The Commission notes that only four Member States met their transposition obligations by the set deadline (20 December 1993): Denmark, Spain, France and Luxembourg. Most of the Member States have introduced codes of good agricultural practice, though the Commission feels it is important to examine their content once again and to assess the consistency of codes applying to regions with similar features. The Nitrates Directive allows Member States to be exempted from the obligation to designate specific vulnerable zones where action programmes are set up at national level. Some Member States have made use of this exemption (Denmark, Germany, Luxembourg, Netherlands and Austria). At the time of the report, most Member States had yet to designate vulnerable zones in accordance with the Directive (Belgium, Greece, Spain, Portugal, Finland and the United Kingdom).

The introduction of action programmes to help vulnerable zones is the key element of the Nitrates Directive, as the programmes should impose compulsory restrictions on farming activity. They should have commenced on 20 December 1995. In fact, only Denmark, Germany, Luxembourg, Austria and Sweden notified their action programmes to the Commission on 30 July 1997.

The Commission believes it is too early to determine the real impact of the Directive on nitrate pollution on account of its delayed and sometimes incomplete transposition. Accordingly, no revision of the Directive is planned following the presentation of the report.

All the Member States have transposed the Directive, set up a monitoring network, drawn up a code of good practice and designated vulnerable zones (apart from Ireland). The monitoring networks indicate that over 20% of groundwater in the EU and between 30 and 40% of lakes and rivers are showing excessive nitrate concentrations. Nitrogen from agricultural sources accounts for between 50 and 80% of the nitrates entering Europe's water. The impact of the Directive's implementation will only be felt in a few years' time, though positive results are already starting to be seen in some regions.

## Findings and Recommendation

There are not any measures for implementation of Nitrate directive in the country. It is assumed that due to low level of nitrogen input there is not risk of pollution of water with nitrates. Even though there is not report of pollution of water with nitrates from agricultural sources it is recommended to apply measures recommended by EU member states in order to prevent this pollution. In order to limit the losses linked to agricultural activities, the main types of actions that the Nitrates directive promotes (in annexes II-codes of good practice, and III-actions programmes) simultaneously concern:

- Crop rotations, soil winter cover, catch crops, in order to limit leaching during the wet seasons.
- Use of fertilisers and manure, with a balance between crop needs, N inputs and soil supply, frequent manure and soil analysis, mandatory fertilisation plans and general limitations per crop for both mineral and organic N fertilisation.
- Appropriate N spreading calendars and sufficient manure storage, for availability only when the crop needs nutrients, and good spreading practices.
- "Buffer" effect of non-fertilised grass strips and hedges along watercourses and ditches.
- Good management and restriction of cultivation on steeply sloping soils, and of irrigation.

Despite using of EU recommendations it is necessary to re-establish ground water monitoring as soon as possible in order to be able to find out if there is problem with nitrates or not.

## **Agriculture and water**

### **Introduction**

Limiting factor of crop production in republic of Macedonia is water. As factor in minimum water reduce yield of agricultural crops and irrigation is assumed as best practice for increasing of crop yield. Some crops can not be efficiently planted without irrigation (some vegetables, orchards etc.). Any how irrigation have positive effect on crop yield and farmers income and it is widely appreciated in the country.

Irrigation in Republic of Macedonia is well known practice from ancient times. The big improvement was done in last 6 decades with building of irrigation schemes that cover more than 160 000 ha.

Unfortunately irrigation is not always based on sustainable practices. Over irrigation is common practice and it increase risk of pollution of waters with agrochemicals. In last period over extraction of ground water for irrigation purposes became problem, especially in Resen and Strumica area. There is clear evidence of depletion of ground water in Resen and last year most of the farmers deepened their wells due to decreased ground water level. There is appearance of several other environmental issues related with irrigation (irrigation erosion, salinisation, transport of the pollutants etc) but economical benefits of irrigation are very high and sometimes environmental issues are neglected. Most of these problems are result of bad irrigation scheduling and bad management of the water in agriculture.

According some sources about 80% of water in the country is used in agriculture

### **State in Macedonia**

#### **Water Resources**

There are four major catchments in Macedonia: Vardar, Strumica, Crn Drim, and Juzna Morava.

The river Vardar catchment area covers 80.4 % of the total territory of Macedonia. Over the territory of the country, the River Vardar has a length of 302.6 km and is the longest river in the country. Its source is near the village of Vrutok, at 683 m above sea level. The average annual flow for the period of 1960-1991, measured at the gauging station in Skopje is 63 m<sup>3</sup>/s. The average annual volume of discharged water at the border with Greece is accounted for by approximately 4.57 x 10<sup>9</sup> m<sup>3</sup> / annum.

The Strumica catchment area covers an area of 1 649 km<sup>2</sup>, or 6.5 % of the total territory of Republic of Macedonia. Average annual volume of discharged water is approximately 132 x 10<sup>6</sup> m<sup>3</sup> / annum. This area is the poorest in water resources.

The Crn Drim catchment area covers the catchment areas of the Prespa and Ohrid lakes and the catchment area of the Crn Drim with its tributaries within the territory of Macedonia to the Macedonian-Albanian state border. The Crn Drim catchment area covers an area of 3 359 km<sup>2</sup>, or 12.9 % of the total territory. Over the territory of the country, the river Crn Drim has a length of 44.5 km. Average annual volume of discharged water is approximately 1.64 x 10<sup>9</sup> m<sup>3</sup>.

Since the catchment area of Juzna Morava is 44 km<sup>2</sup> it does not have any major impact on the available water resources in Macedonia. The source of the river Morava is in Macedonia and it belongs to the Danube catchment area.

The surface inflowing waters of Macedonia are the following rivers: the Lepenec, the Pcinja, and the Elaska. Available water quantities from these inflowing waters are 1 014 x 10<sup>6</sup> m<sup>3</sup>/annum. The outflowing surface waters are rivers Vardar, Strumica, Crn Drim, Cironka and Lebica. Available water quantities from outflow waters are 6 360 x 10<sup>6</sup> m<sup>3</sup>/ annum. It has been estimated that 84 % of the available water quantities in the country are domicile waters and only 16 % are outside waters. In the future all the plans should be based according to available domicile waters that amount to about 169.5 m<sup>3</sup>/s or 5 346 x 10<sup>6</sup> m<sup>3</sup>/ annum in an average year.

The total registered number of springs in the country totals 4 414; of which 58 have a capacity of over 100 l/s. The capacity of all registered springs amounts to 31.43 m<sup>3</sup>/s or 991.90 x 10<sup>6</sup> m<sup>3</sup>/ annum. Out of these springs, only three are located in the area of middle flow of the River Vardar, while the remaining are in the western regions. In the River Treska catchment area there are 18 springs. Eastern Macedonia or the left side of the river Vardar is poor with water. Only seven springs with the capacity of over 10 l/s have been registered.

There are three natural lakes in Macedonia: Lakes Ohrid, Prespa, and Dojran. All of them are shared with the neighboring countries. The largest lake is Lake Ohrid with total volume of 50 683.3 x 10<sup>9</sup> m<sup>3</sup>. The water surface covers an area of 348.8 km<sup>2</sup>. The Macedonian part of the water surface area is 229.9 km<sup>2</sup> and the maximum depth is 285 m. The total area of Lake Prespa is 274 km<sup>2</sup> (the Macedonian part is 176.8 km<sup>2</sup>) and the maximum depth is 52.4 m. Lake Dojran's total area amounts to 43 km<sup>2</sup> (the Macedonian part amounts 27.4 km<sup>2</sup>) and maximum depth is 10 m. During the last fifteen years there has been a significant decline in the water levels of both Lake Prespa and Lake Dojran. Also, 19 large and over 100 minor reservoirs have been constructed with a total volume of 1 854 x 10<sup>6</sup> m<sup>3</sup> of water. As to the catchment areas, 13 big dams have been built in the Vardar catchment area, and three dams in each of the Strumica and Crn Drim catchment areas.

Groundwater resources exist in the country, but it can be stated that there are insufficient data about its availability and quality. Aquifers mainly exist in the main valleys and in the karst region in the western part of the country. Observation and examination of groundwater have not been performed continuously. More detailed examinations have been performed in the 'sixties and 'seventies of the 20th century when hydro-geological units for the rivers were defined. According to the examinations and exploitation of groundwater some data about the static volume have been assumed: for Polog – 193 x 10<sup>6</sup> m<sup>3</sup>; for the Skopje valley 925 x 10<sup>6</sup> m<sup>3</sup>; for the Kumanovo valley – 675 x 10<sup>6</sup> m<sup>3</sup>; Krivopalanecka valley – 114 x 10<sup>6</sup> m<sup>3</sup>, Berovsko Pecevska valley – 360 x 10<sup>6</sup> m<sup>3</sup>; for Ovce Pole – 256 x 10<sup>6</sup> m<sup>3</sup>, for Strumica valley – 850 x 10<sup>6</sup> m<sup>3</sup>; and for Gevgelija – Valandovo valley – 342 x 10<sup>6</sup> m<sup>3</sup>.

The total water resources of Macedonia are estimated at: 18.8 x 10<sup>9</sup> m<sup>3</sup> from rainfall (with a 733 mm average rainfall); 6.22 x 10<sup>9</sup> m<sup>3</sup> discharged from the catchment areas; 0,52 x 10<sup>9</sup> m<sup>3</sup> groundwater; and 0.42 x 10<sup>9</sup> m<sup>3</sup> from the largest springs. The annual resources per capita are about 2 600 m<sup>3</sup>/ annum. It can be stated that this amount is below the quantity of 3 000 m<sup>3</sup>/ annum per capita as a determined limit for sustainable development of a country.

The water quality condition indicates that the natural balance of the rivers has already been disturbed due to pollution by organic matters, heavy metals, pesticides, toxic and organic compounds. The pollution is high downstream from towns where the industries are located,



due to the discharging of waste waters (industrial and communal) into rivers without treatment. The pollution is lesser in those sections that pass through less densely populated areas, but even there pollution levels sometimes exceed limits set by categorization of the watercourse and the determined Maximum Allowed Concentration (MAC) by the existing water quality regulations. The condition of groundwater quality is not being systematically observed. It can be stated that the quality of groundwater is similar to the surface water quality of a certain region. Disturbance of groundwater quality is possible near the existing landfills, mines, wild dumps, and near certain industries. The water from the springs is of a good quality. Water pollution is evident only in surface and ground water especially in the area of Skopsko Pole.

Some of the hydrological events have a direct impact on land degradation. Extreme hydrological events, such as drought and floods, might be the most important factors for land degradation. Maybe the most important are the high intensity rainfall with short duration that occurs in a small catchment area. They cause intensive erosion at the attacked area and produce localized flooding followed by structural damage. These kinds of events happen very often in the territory of the Republic Macedonia. Also, intensive rainfall with long duration (for example with a duration of 24 hours and longer) causes the occurrence of flooding (more about these events is written in Section VI). Flood damage on land might happen as a result of the water energy (damage of the river bed and structure) and deposited sediment on agricultural areas, drainage systems, etc.

Drought as a hydrological event has a negative impact on water resources. The river discharge is below the annual average, the level of surface water in the lakes and reservoirs decreases, and also the level (and quantity) of the ground water resources decreases. The shortage of water has a direct impact on land degradation. Water shortages are often followed by the decreasing of the quality of surface and ground waters. Low water quality is another reason for negative impact on the environment.

## **Water Management**

The major use of water sector in Macedonia is irrigation. About 106 irrigation schemes (both large and small) have been built covering a project-designed area of 163 693 ha. of fertile arable land, i.e., 40.9 % of the area that may be irrigated. More important are the six largest schemes, which cover more than 10 000 ha. each. The irrigation schemes were mainly constructed in the period between 1958 and 1980. Taking into consideration the very long exploitation period of the existing irrigation schemes and the part of the network which has not been constructed yet, as well as the fact that the infrastructure has not been properly maintained, the possible area for irrigation is reduced to 126 617 ha. (77.35 %, can be irrigated within the frames of project designed areas). Almost all big irrigation schemes are supplied with water from reservoirs. Usually the reservoir dominates the irrigated area and enables irrigation by gravity. The main distribution lines are open concrete canals or pressurized pipelines. The primary and secondary pipeline network usually consists of pipelines or earth-built canals where surface irrigation methods are practiced.

The prolonged exploitation of irrigation schemes has an impact on the irrigation schemes' condition. So, really, an irrigated area is smaller than the actual possible area for irrigation. For example in 1987 the total irrigated area was 82 582 ha. or 67.5 % of the possible area for irrigation and it is the maximum value of the irrigated area. The ratio between the irrigated area and the area possible for irrigation continually decreases reaching the minimum irrigated

area of 15 075 ha in 2004. In last 5 years irrigated area is between 15 000 and 35 000 ha what is completely unsustainable.

The total irrigation requirements (in an average dry year) for the project designed area of 163 693 ha. accounts for approximately  $899\,335 \times 10^6 \text{ m}^3 / \text{annum}$ . This represents 25 % of the total water quantity discharged from the river network in Macedonia during an average dry year. For the present moment water demands for the water supply of population are assessed at  $207,99 \times 10^6 \text{ m}^3 / \text{annum}$ , for tourists at  $6,258 \times 10^6 \text{ m}^3 / \text{annum}$ , and for industry at  $274,147 \times 10^6 \text{ m}^3 / \text{annum}$ . These facts prove that irrigation sector is the biggest user of water in the country.

The need for building drainage systems and flood control structures has been present for a long time in many regions in Macedonia; as was obvious in the regions of Skopsko Pole, Pelagonija, Strusko Pole, Strumicko Pole, Kocansko Pole, and Ovce Pole. Over moistening of the soil appears also in the areas of the irrigation systems as a result of the uncontrolled water regime of the river flows, as well as the irrigation itself. It is necessary to construct and set in function drainage systems within the existing irrigation systems in order to provide suitable moisture for the soil in the course of the entire year. The configuration of the terrain of the irrigation systems in Macedonia is characterized by the inclination of the terrain (average slope of the terrain is greater than 1 %) at more than 50 % of the total irrigated area. As a result, one part of the water at the irrigated area (provided through the irrigation system or by precipitation) penetrates into the soil, while the other part represents a surface leakage (run off), thus preventing over-moistening of the soil. At less inclined areas, the water is retained for longer resulting in over-moistening of the terrain. Such is the case with the irrigation system Bregalnica in the region of Kocani, covering an area of 6 000 ha., Ovce Pole with 1 700 ha., and the irrigation system of Prespansko Pole with 1 800 ha., etc.

In 1965 in Macedonia the following drainage systems were built: Pelagonija covering an area of 54 150 ha., Skopsko Pole with 6 600 ha., and Strusko Pole with 2 680 ha. During 1975 Strumicko Pole, a drainage area of 9 000 ha., Bregalnica 7 700 ha., Prespansko Pole 1 800 ha., and several others were all built. The total area covered by drainage systems in Macedonia is 82 195 ha. at the present moment.

The total water resources of Macedonia are estimated on:  $18.8 \times 10^9 \text{ m}^3$  from rainfall (with a 733 mm average rainfall),  $6.22 \times 10^9 \text{ m}^3$  discharged from the catchments areas,  $0.52 \times 10^9 \text{ m}^3$  underground water and  $0.42 \times 10^9 \text{ m}^3$  from the largest springs. More than 67 % of the water resources from rainfall are consumed as evapotranspiration that is equal to an amount of 500 mm per year. The water resources from rainfall are significant, but in areas where the irrigation schemes have not been constructed yet, they do not enable stable agricultural production. This is the case in central and eastern part of Macedonia. The problem with rainfall is the uneven spatial and temporal distribution over the country, showing more favorable conditions in the western part. The rainfall is minimal in the central part of the country where the potential for agricultural production is more favorable. It can be noticed that there is a lack of rainfall in the warmer part of the year. The temporal distribution presents long drought periods and high intensity rainfalls, which constitute at the same time a threat to crops and which are prone to soil erosion phenomena.

According to the Spatial Plan of the Republic of Macedonia current water demands for irrigation, water supply of municipalities, and industry, fisheries, and biological demands can be met in an average year and in a typically dry year, for example, with the probability of appearance of 25 %. In the years with less rainfall than the typical dry year, the total water demands, at the present moment, cannot be satisfied.

Maximum values of the irrigation water requirements and maximum water supply demands usually occur at the same period of the year. This period happens to be in the warmer part of the year when there is not enough water to satisfy all demands. There is a possibility for the occurrence of a conflict situation between agricultural and non-agricultural users especially in drought periods. In the forthcoming period irrigation will need more water. It is not only irrigation that needs more water. Due to urbanization and industrialization, competition for water between irrigation and other water users has become and will become the focal point because they have to share limited water resources.

So, it is important to mention the necessity for proper water resources management especially in the forthcoming period when the climate changes are expected to have an influence on the water resources in the country.

The water management sector in Macedonia is today facing many problems. These problems are of an organizational and financial nature. The old Water Management Organizations (WMO) are liquidated and new ones were established. Problem is that new ones are not fully operational. The water users associations (Water communities (WC) according to positive law) are not established on whole irrigated territory. Most of already established WMOs and WCs have not enough resources to undertake responsibility of organization of irrigation process. This situation should be resolved as soon as possible in order to establish fully operational institutional setup for operation of irrigation. The financial situation of the water management organizations and water user associations is very weak so irrigation schemes are operated inefficiently.

There are rather high water losses in the irrigation schemes (except the irrigation scheme Strezevo). They are assumed at 20 % to 40 % of the water at the intake structures. The main reasons for such high losses of water in the conveying structures and network irrigation systems are: the long period of exploitation of irrigation schemes, improper exploitation of main canal and the other parts of irrigation network, utilization of surface irrigation methods (as methods of irrigation with low efficiency).

It is necessary to mention that often, despite the extremely low water price, the users do not pay for consumed irrigation water. This is a significant reason for the inefficient utilization of the irrigation water, small incomes of the institutions dealing with irrigation schemes, and improper maintenance of the irrigation network and structures.

Payment of the water fee can be noticed as a big problem in the water sector in the last decade. The percentage of the collection of the water fee is low. It depends on the size and the type of irrigation system that is managed by the water management organization, the cropping pattern, and whether the water users are private farmers or state owned enterprises. Farmers in Macedonia are traditionally private; the average size of the farm is small and they decide by themselves what crops they will plant. Another reason for the low percentage of payment of the water fee is a lack of measurement devices for the consumed water. As a result of not having enough money that comes from the very low collection of the water fee, irrigation systems can not be managed properly there are big problems with regular operation and maintenance of these systems.

Besides payment of the water fee, getting the 'right' water price and allocating water efficiently is very important. This question happens to be significantly important as water scarcity becomes more than a problem. Pricing water efficiently might be a measure that will help to meet the increasing demand. As a pressure on water resources increases, more countries are adopting water-pricing mechanisms as their primary means of regulating the consumption

of irrigation water. The way to allocate water efficiently is to get the 'right' water price. Water-pricing methods are sensitive to the social, physical, institutional, and political setting. To assess the costs and benefits of a particular irrigation project, the pricing method must be prepared according to the local circumstances.

According to the current legal framework, especially to the Law on Water and the Law on Environment and Nature Protection and Improvement, water resources and water management on a systematic level are present in several ministries. The main responsibility in this sector lies with the MAFWE. The responsibilities of this ministry are related to agriculture, forestry, and water management, monitoring and research of the conditions of waters, maintenance and improvement of the water regime, and other activities mentioned in the Stakeholder matrix. The MAFWE sets the water resources policies for Macedonia. The Water Economy Administration is a body of the MAFWE founded for the implementation of the following activities: professional and other activities within the activities performed by the ministry that especially require organization and autonomy in activities, direct realization of legal regulations and other general regulations in the area of water management, supervision in the implementation of the law on waters and other regulations based on this law. It should be mentioned that the MAFWE gives its agreement to programme for protection from the harmful effects of the water together with Ministry of Defence and with the MEPP establishes an operational body for co-ordination of the activities in emergency cases. Beside MAFWE, MEPP performs continuous measurement and monitoring of the condition and change of the water and land quality, defines the type of monitoring, methodology and monitoring parameters and protection of waters from pollution and other activities connected with water. Also, the Ministry of Economy performs activities connected with groundwater. It can be assessed that the major weakness of the sector is duplication and overlapping of activities between relevant ministries.

It can be assessed that the present situation in water resources and water management sector is a result of a lack of integral water resources management performed by a governmental body. The new text of the proposal of the law on water proposes management of water resources by a governmental body that will perform activities on a river basin basis.

The decreased level of irrigated areas in the country is resulting with decreased crop yield, decreased total production and has a very bad impact on socio-economic environment in rural areas. During last decade several important projects in rehabilitation of irrigation in the country took place. The biggest one was World Bank project on Rehabilitation of Irrigation amounting 36 million dollars. The project covered physical rehabilitation of 3 irrigation schemes (Bregalnica, Tikves and Tetovo) and structural reforms. Even though during the project duration decreasing of irrigated area was obvious. The project of rehabilitation of irrigation in Southern Vardar Valley was undertaken as well. Unfortunately there are not real results, despite physical reconstruction of the schemes.

One of the biggest problems in irrigation sector is that most of the activities are undertaken without farmers participation. Farmers feel establishment of water communities as pressure, not as their benefit. Being member in water community for them was only additional obligation. That's why farmer's participatory approach in rehabilitation of irrigation schemes and irrigation sector should be implemented. Final results of these rehabilitation should be increased irrigation area in the country, but it is possible only if farmers use water in their fields. They need some other support (equipment, knowledge, know-how, inexpensive credits etc) for establishing proper irrigation on their fields. Else water will flow through rehabilitated

channel network and will not be used by farmers. Final result is very low efficiency of use of irrigation water.

Irrigation efficiency in the country in general is very low. On the system level lot of the water is flowing in the network and frequently it is not used by the farmers. Also there is mismanagement on the field level. Common practice used in surface irrigation creates very low water use efficiency, very often below 50%. Almost half of the irrigated area is irrigated by surface irrigation. Sprinkler irrigation has efficiency of about 70%. Using of micro irrigation is one of the best available practices for increasing of water use efficiency and overcoming of environmental problems related with irrigation. Water use efficiency is very high (more than 90%). Unfortunately not all crops are suitable for these techniques. Usage of micro-irrigation (drip and microsprinkler irrigation) is rapidly increasing in the country especially for vegetable, orchards and vineyards. Fertigation is becoming more popular and some of the users of micro irrigation started with use of this technique and achieve excellent results. This technique allow proper timing of irrigation water and fertilizers in soluble form when crop needs and with proper amount given with application excellent results can be achieved in term of crop yield as well as in environmental protection.

Sustainability of irrigation process can be achieved only if interested parties in irrigation sector (water communities and new Water management organizations) find mutual interest and cooperate in this process. There is big need of rising of awareness among farmers about benefits of new organization in irrigation sector. Also there is urgent need of education of both sides how to organize irrigation in new framework. Recently UNESCO supported establishment of Training Center for Irrigation and Agricultural Water Management at Faculty of Agricultural Sciences and Food in Skopje. This center offer training programs in modern irrigation, irrigation scheduling, fertigation, flow measurement and other topics of interest for WMO and WC and these resources should be used for rehabilitation of irrigation in the country.

## **State in EU**

Agriculture is a significant user of water resources in Europe, accounting for around 30 % of total water use. In southern Europe (where it is a fundamental input) irrigation accounts for over 60 % of water use, in most countries; in northern Member States it ranges from zero to over 30 %. The quantity of water used for irrigation depends on factors such as climate, crop type, soil characteristics, water quality, cultivation practices, and irrigation methods. Either as an artificial addition to natural availability, or as a compensation for seasonal variability of rainfalls, irrigation allows improvement of the crop productivity and reduction of the risks associated to dry periods, and makes it possible to cultivate more profitable crops.

However, irrigation is also the source of a number of environmental concerns, such as over-abstraction of water from subterranean aquifers, irrigation driven erosion, soil salinisation, alteration of pre-existing semi-natural habitats; and, secondary impacts arising from the intensification of the agricultural production permitted by irrigation.

The Commission communication "Pricing policies for enhancing the sustainability of water resources" indicates the basic principles for water policies, with a view to promoting sustainable use of water resources. It stresses the need for water pricing policies to reflect all the different types of cost associated with the provision and use of water. This principle is fully embedded in the water framework directive, which requires Member States to ensure, at the latest by 2010, that water pricing policies provide adequate incentives for users to use water

resources efficiently and that the various economic sectors contribute to the recovery of the costs of water services, including those relating to the environment and resources.

Under rural development measures, the CAP provides support to investments for improving the state of irrigation infrastructures and allowing farmers to shift to improved irrigation techniques (e.g., drop irrigation) that require the abstraction of lower volumes of water. And, agri-environmental schemes cover commitments to reduce irrigation volumes and adopt improved irrigation techniques.

With the 2003 CAP reform, respect of statutory requirements arising from the implementation of the groundwater directive is included within the framework of the reinforced cross-compliance.

The EU also regulates to protect water quality in respect of pesticides and nitrates.

### **Findings and Recommendation**

Water in agriculture is used on unsustainable manner due to unfinished reform of irrigation sector, improper pricing of the water, low level of payment for the water, low level of know-how of agricultural producers in irrigation principles and practice, shortage of equipment (finances) for applying of modern irrigation techniques, neglecting of agricultural producers as key stakeholder in irrigation process, improper irrigation scheduling etc.

The rehabilitation of irrigation schemes should be done using farmers participatory approach.

The investment in rehabilitation should be adequately transferred toward agricultural producers in order to be able to invest in improvement of irrigation on their fields.

Increasing of knowledge about modern irrigation among of farmers, water communities and water management organizations

Increasing of awareness among farmers that participation in water communities is of their benefit, not only method to push them to pay for used water.

Proper pricing of the irrigation water, measure of used water, paying only for used water, increasing of the collection of fees for used water are essential for making all stakeholders to start thinking about increasing of water use efficiency.

Proper irrigation scheduling (application of water when needed and in requested amount) should be spread as common practice in the country based on soil water measurement or using pan evaporimeters in order to prevent leaching and over irrigation to prevent pollution of ground water.

Replacing of surface irrigation with sprinkler or drip irrigation, especially in areas with higher slope in order to prevent irrigation erosion, run off, water logging and pollution of environment with agrochemicals

Increasing of water use efficiency on all levels (farm, distribution network) through better utilization of the water, improvement of irrigation network, flow measurement, negotiation on water delivery among all interested stakeholders etc.

Prevent over exploitation of ground water through licensing of drilling wells and introducing of payment for use of ground water.



## *Plants biomass production and bio fuels*

Prof. Zoran Dimov, PhD

Skopje, January 2008

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### ***Plants biomass production and bio fuels***

Energy crops: current status and future prospects

Concern about global warming in recent decades has stimulated interest in using biomass for energy. Biomass energy is close to “carbon neutral”, that is to say, it produce energy while only releasing carbon to the atmosphere that has been captured during the growing cycle of the plant, rather than emitting carbon that has been located away from the atmosphere in fossil reserves for millions of years.

Bioenergy currently contributes 13,4% (IEA Statistics, 2005) of world primary energy use and currently is used mainly in Africa, Asia and China through use of wood and dung in rural areas as a fuel for heating and cooking. The impetus to invest in technology to use biomass for energy stemmed initially from the need of countries to substitute for imported coal, oil and gas with a locally produced fuel to either ensure security of supply or to improve trade balances. The development of the maize ethanol and soybean biodiesel market in the central USA as an example of the former. The US responded to the decline in its crude oil reserves and production rates, and its increasing dependency of oil imports, by investing in bioethanol production from maize, which also stimulated its agricultural economy. The conversion of Brazil’s entire Otto cycle private car fleet in the 1980s to run on ethanol manufactured from the fermentation of cane sugar is an example of the latter. Ethanol was later partly displaced by gasoline as Brazil developed its offshore reserves but remains as a 20 – 25% blend in all gasoline today.

The pattern of energy use in the world is changing with the successive industrialization of the economies of South East Asia and Brazil, and more recently with the increasing pace of the industrialization of China and India. This has driven an increase in the demand for energy, and hence for fossil fuel, at the rate of 3% yr<sup>-1</sup> (World Oil, 2005). The rate which conventional oil production can be increased has been reduced by the lack of refining capacity, and the fact that nearly 50% of the world’s proven and probable conventional light crude oil reserves have already been consumed (USGS, 2004). This flat topping in the availability of oil has been compensated for by increasing availability of natural gas and new reserves of cheap coal. Natural gas has been increasing its share of the energy supply mix as the infrastructure and technology of its transportation is put into place both by pipelines, liquefaction and conversion to methanol. In developed economies, gas has displaced both oil and coal, while coal use has increased in developing economies, particularly in China. At the same time the use of nuclear energy has stagnated because of public concerns about waste storage and disposal.

The use of bio fuels for transport has increased in energy terms, but decreased in terms of total percentage energy use. An increase of price in fossil fuel will further encourage the development of alternative sources because higher energy prices will lead to carbon neutral energy sources, which include biomass, becoming increasingly economic. The development of technology to utilize biomass as a source of energy has advanced on many fronts, from the production of transport fuels such as biodiesel from vegetable oil



and bioethanol from sugars, starch and cellulose rich crops, to the use of woody biomass to fuel integrated gasification combined cycle plants. The technologies have been shown to be effective, but their large-scale application has previously been limited by commercial economics. They have found applications, however, where national interests have created the political environment to facilitate the financial or tax regime to allow the technology to be used.

Many countries have ambitious, near term policy objectives for bioenergy (IEA, 2005). The available global economic potential from biomass residues and wastes, is estimated to be around 100 EJ yr<sup>-1</sup> (World Energy Council, 2004). Increasing the biomass potential will require changes to agricultural and forestry production and the active growth of dedicated energy crops. Hall & Rosillo-Cale (1988) estimated 2900 EJ of potential biomass energy was available, of which 270 EJ could be utilized on a sustainable basis at competitive prices. Hoogwijk (2004) analysed the use of biomass for 17 different scenarios and showed its “research focus” potential by 2025 – 2050 was between 67 and 450 EJ, whereas the “demand driven” potential was between 28 and 22 EJ. The global technical potential of bioenergy is therefore large and could provide around 200 – 400 EJ yr<sup>-1</sup> at competitive costs by 2050 (IPCC, 2001).

Energy crops can take many forms and can be converted to a number of different products. Many crops species are multipurpose in that they can be used to produce more than one type of energy product, for example, hemp (both oil and solid biomass) and cereals (ethanol and solid biomass from straw). Some of the more common energy crops are listed below.

Oil crops: (e.g. oilseed rape, linseed, field mustard, hemp, sunflower, safflower, castor oil, olive, palm, coconut and groundnut). Vegetable oils can be used directly as heating fuels or refined to transport bio fuels such as biodiesel esters.

Cereals: (e.g. barley, wheat, oats, maize and rye). The grain can be used to produce ethanol and the straw can be used as a solid fuel. They can also be grown and harvested as a whole crop (grain plus straw) before the grain has ripened and used as a solid or for biogas production feedstock.

Cellulose crops: (e.g. straw, wood, short rotation coppice (SRC) etc.): The hemicellulose can be reduced to sugar by acid or enzymatic hydrolysis and then fermented to produce ethanol. This has been pioneered in Sweden where the ethanol was used by specially modified Ford Focus vehicles that can run on any mixture of ethanol and gasoline by adjusting the engine management parameter based upon sensing the exhaust gas composition.

Solid energy crops (e.g. cardoon, sorghum, kenaf, prickly pear, whole crop maize, reed canary grass, miscanthus and SRC willow, poplar and eucalyptus): These crops can be utilized whole to produce heat and electricity directly through combustion or indirectly through conversion for use as bio fuels like methanol or ethanol.

Increasing bioenergy demand in future will be met to a greater degree by the active production of biomass crops from either surplus productive or marginal lands. Low production costs give significant potential for biomass production in the former USSR, Oceania, East and Western Africa and East Asia. It is estimated that in the long term (2050) about 130 – 270 EJ yr<sup>-1</sup> of energy crops may be produced at costs below US\$2GJ<sup>-1</sup> (equivalent to the current highest cost level of coal; Hoogwijk, 2004). Such low costs presume significant land productivity improvements will occur over time

together with technical learning and capital-labor substitution. Commercial energy crops are already grown extensively in Brazil (sugar cane for ethanol), USA (maize for ethanol) and Europe (oilseed rape for biodiesel) but such land use is often heavily subsidized and may involve unsustainable agricultural practices (OECD, 2004). It is likely that bioenergy cropping systems of the future will have primary, secondary and even tertiary uses, propelling bioenergy systems into mainstream markets for bio products such as grain and pharmaceuticals that may help to improve financial viability in future (Perlack et al., 2005).

### Bio fuels for transport

Global bio fuel consumption in 2002 was between 0,35 EJ (IEA, 2004) and 0,50 EJ (UNDP, 2004). This has potential to rise to over 50 EJ in 2050 based on economic estimates (Fisher & Shrattenholzer, 2001). Biochemical and thermochemical conversion technologies can convert CO<sub>2</sub> neutral biomass feedstocks into carbon containing bio fuels such as biodiesel, dimethyl esters and Fischer-Tropsch liquids as well as to hydrogen. The primary feedstock for ethanol production worldwide remains sugar or starch from agricultural crops, and its primary use is as an oxygenate within gasoline at 5 – 22% blends.

For ethanol the cost of the raw material is usually between 25% and 40% of total production costs. The wide range is due to the local price of feedstock being impacted by local agricultural subsidies and hence is between US\$22-61 dry t<sup>-1</sup> in Europe and US\$12-18 dry t<sup>-1</sup> in North America (S & T<sup>2</sup>, 2004). Because of the recovery of distillers grains for animal feed as a coproduct, ethanol from cereals has an average price of around US\$0,32 L<sup>-1</sup> (S & T<sup>2</sup>, 2004). Ethanol from sugar cane is down to US\$0,20 L<sup>-1</sup> in Brazil and since 1999 has remained below the equivalent Rotterdam gasoline price (Goldemberg et al., 2004). The estimated cost of producing bioethanol from wood varies between US\$0,50 L<sup>-1</sup> and US\$0,76 L<sup>-1</sup> within lower costs coming from plants with capacities above 600 000t yr<sup>-1</sup>. (S & T<sup>2</sup>, 2004).

The costs of producing biodiesel from vegetable oils range between US\$0,62 L<sup>-1</sup> and US\$0,80 L<sup>-1</sup> with higher crop production costs found in countries with restricted growing seasons and high food demand (AEA Technology, 2003). Used cooking oil and animal fat feedstock's produce cheaper biodiesel at around US\$0,40 L<sup>-1</sup> - 0,60 L<sup>-1</sup> (S & T<sup>2</sup>, 2004). More efficient interesterification processes will reduce these costs further (Korbitz et al., 2004).

The EC Bio fuels Directive of 2003 required a voluntary market share of 5,75% bio fuels for each member state by 2010. Other countries (including Netherlands, India, China, Thailand and New Zealand) and individual states in the USA and Canada have since established mandatory bio fuels targets and yet others have removed excise taxes. Such policies should see additional capacity for bioethanol and biodiesel production development.

Growing energy crops is a nontraditional land use option which may boost farm incomes and the rural economy in general (Askew & Holmes, 2001). A number of annual and perennial species convert solar energy into biomass relatively efficiently. High yielding vegetative grasses, short rotation forests and C4 plants when grown on a commercial scale can produce over 400 GJ ha<sup>-1</sup> yr<sup>-1</sup> under good growing conditions, leading to

positive input/output energy balances for the overall system. Correct species selection to meet specific soil and climatic site conditions can result in even higher energy yields. (Sims et al., 1999). To exemplify what can be achieved as a result of traditional species selection, the average saccharose yield of sugar cane grown in Brazil for bioethanol production increased by 10% to 143 kg t<sup>-1</sup> of fresh cane (70% moisture content, wet basis) between 1990 and 2001.

Energy crop production has a number of other potential cobenefits relating to social, environmental and economic aspects of production (see table)

Social aspects	Environmental aspects	Economic aspects
<ul style="list-style-type: none"> <li>- Improved access to basic services (pumped water, electric lighting).</li> <li>- Creation of jobs, livelihoods.</li> <li>- Increase of labour, power, access to resources</li> <li>- Pride and independence</li> <li>- Support for rural communities</li> <li>- Improved social cohesion</li> <li>- Reduced dependency on imported oil</li> </ul>	<ul style="list-style-type: none"> <li>- Reduce pressure on finite natural resources.</li> <li>- Reduce landfill waste and associated issues.</li> <li>- Protection of groundwater supplies.</li> <li>- Reduced dryland salinity and soil erosion.</li> <li>- Maintenance of logging sites in a clean state for reforestation.</li> <li>- Increased terrestrial carbon sinks and reservoirs.</li> <li>- The return of derelict land into production with enhanced biodiversity.</li> <li>- Improved quality of degraded soils if grown as riparian strips.</li> <li>- Quality of waterways and lakes can be improved by reducing nutrient loadings.</li> <li>- Reduced GHG emissions via fossil fuel substitution.</li> </ul>	<ul style="list-style-type: none"> <li>- Concentrated sources of biomass (e.g. residues from sawmills, landfill gas), can already compete with fossil fuels.</li> <li>- Trade of “carbon credits” will impact the economics of biomass and other energy systems.</li> <li>- \$/GJ of biomass delivered to the conversion plant gate will be secure if contracted for the medium to long term.</li> <li>- Cycling of goods and services within the local economy instead of outsourcing keeps money in the economy.</li> </ul>

In spite of the large potential for biomass and the significant cobenefits available, there are often practical difficulties when implementing bioenergy projects. These result particularly from its dirty and low technology image by the public; the challenge to secure biomass fuel supplies; its relative low-energy density compared with fossil fuel; the high demand for water and nutrients by some energy crops; and the difficulties for conversion plants in achieving economies of scale when using widespread feed stock, negotiating financing and contractual arrangements, and obtaining resource and planning consents. Climate change effect in some regions from more frequent or extreme droughts, floods, typhoons, etc. may also impact on future biomass production potential.

## Biomass action Plan in EU

Energy is key in helping Europe achieve its objectives for growth, jobs and sustainability. High oil prices put the spotlight on Europe's increasing dependency on imported energy. The Union needs to respond strongly to this challenge. The central importance of energy policy in helping Europe to meet the challenges of globalization was confirmed by the Union's heads of state and government at the informal Hampton Court summit in October 2005.

With this in mind, the Commission is carrying out a fundamental review of its energy policy. This will be subject of Green Paper in spring 2006, with three main objectives – competitiveness, sustainability and security of supply.

Essential elements of this policy are, within the context of stronger economic growth, the need to reduce energy demand; increase reliance on renewable energy source, given the potential to produce them domestically and their sustainability; diversify energy source; and enhance international cooperation. These elements can help Europe to reduce dependence on energy imports, increase sustainability and stimulate growth and jobs.

## Biomass potential

The EU currently meets 4% of its energy needs from biomass. If it made full use of its potential, it would more than double biomass use by 2010 (from 69 mtoe in 2003 about 185 mtoe in 2010) – while complying with good agricultural practice, safeguarding sustainable production of biomass and without significantly affecting domestic food production.

In the Commission's judgment, the measures in this action plan could lead to an increase in biomass use to about 150 mtoe in 2010 or soon after. This is less than the fuel potential; it is in line with the indicative renewable energy targets.

## Costs and benefits

It follows from several scientific and economic studies that this increase in biomass use could bring the following benefits in 2010:

- diversification of Europe's energy supply, increasing the share of renewable energy by 5% and reducing reliance on imported energy from 48 to 42%;
- a reduction in greenhouse gas emissions of 209 million tones CO<sub>2eq</sub> a year;
- direct employment for up to 250-300 000 people, mostly in rural areas. Different studies produce widely different figures;
- potential downward pressure on the oil price as a result of lower demand of oil.

Assuming fossil fuel prices about 10% lower than today's, the directly measurable cost can be estimated at € billion per year - € billion for transport bio fuels and €3 billion for biomass in electricity generation (biomass in heating is often cost-competitive). This is equivalent to an increase of about 1.5 cents per litre of petrol or diesel and 0.1 cents per kWh of electricity.

Benefits can also be expected in extending the EU's technological leadership in this sector. These benefits can be expected to be obtained without additional pollution or other forms of environmental damage.

The Commission is assessing the contribution that renewable energy could make to the energy mix by 2020. This action plan could underpin and increase in renewable energy's contribution by 2020.

#### Implementation of the bio fuels directive

As in electricity generation, a framework is set by Community legislation: the biofuels directive, which sets as reference values a 2% market share for biofuels in 2005 and 5.75% share in 2010.

The 2005 reference value will not be achieved. There is substantial variation in Member State's efforts; if all Member States achieve the targets they have set, biofuels will attain a share of only 1.4%.

To implement the directive, many Member States are relying on fuel tax exemptions. These are subject to state aid control. In line with the guidelines on environmental state aids, the Commission has taken a generally favorable attitude to the notifications received. However, a number of practical problems have arisen. A number of Member State have recently turned to bio fuels obligations, requiring fuel supply companies to incorporate a given percentage of bio fuels in the fuel the place on the market. Bio fuels obligations seem a promising way of overcoming difficulties with tax exemptions and ensuring that targets are achieved cost-effectively. They also make it easier to give favorable treatment to second-generation bio fuels, which Commission encourages.

#### Balancing domestic production and imports

Bio fuels and their raw material are traded on world market. An autarkic approach to meeting the EU's needs is neither possible nor desirable. However, the Union has some discretion about how far to encourage domestic production or imports. Annex 10 describes the current situation as far as trade bioethanol is concerned. Annex 11 assesses three routes to a 5.75% market share for bio fuels:

- Minimum share for imports
- Maximum share for imports
- Balanced approach

The Commission prefers the balanced approach. Therefore, it will:

- Propose the amendment of standard EN14214 to facilitate the use of a wider range of vegetable oils for biodiesel, to the extent feasible without significant ill-effects on fuel performance;
- Address the issue of amending the bio fuels directive so that only bio fuels whose cultivation complies with minimum sustainability standards count towards its targets;

- Maintain market access conditions for imported bioethanol that are no less favorable than those provided by the trade agreements currently in force;
- Pursue a balanced approach in ongoing free trade agreement negotiations with ethanol-producing countries/regions. The EU must respect the interests of domestic producers and EU trading partners, within the context of rising demand for biofuels;
- Support developing countries that wish to produce biofuels and develop their domestic markets. This is particular importance in the context of the sugar reforms.

### Common Agricultural Policy – CAP

The 2003 reform of the CAP means that income support for farmers is no longer linked to the crops production. As a result, farmers can respond freely to increasing demand for energy crops. This reform also introduced a special “aid for energy crops” and maintained the possibility of using mandatory “set-aside” land for growing non-food crops (including energy crops). (Set-aside area has rapidly become a major contributor to non-food area in the EU – 17% in 1993/94 and even 44% in 1995/96. Recent estimates show stabilization at some 20%. Rapeseed covers about 80% of non-food area under the set-aside scheme, Alain Joaris, Eurostat).

In the past, only a limited range of energy crops could benefit, through the set-aside regime, from support. The reform paved the way for farmers to grow more energy crops, including short rotation coppice and other perennial crops. Decisions about the appropriate energy crops to grow are the best taken at a regional or local level. The Commission will finance an information campaign about the properties of energy crops and the opportunities they offer. Fast-growing wood, in particular, needs a changed approach because farmers have to tie up land for several years and at least 4 years must pass before the first harvest.

### Forestry

About 35% of the annual growth of wood in EU forest is not used. In many countries there is only a limited market for small size thinning, which can be used to produce heat and electricity. Most of the unused resources are in small private holdings, making their mobilization difficult. Some countries have tackled this problem by setting up supply chains coupled to existing plants, and by supporting the organization of logistics systems, forest owner cooperation and transport. The Commission will seek to disseminate the lessons learnt from this experience and support similar initiatives in other countries.

### Waste

Waste is an underused energy resource. The Commission is developing a thematic strategy on the prevention and recycling of waste and preparing a proposal on the revision of the waste framework legislation. Options under consideration include:

- Promotion of waste management techniques that reduce the environmental impact of using waste as a fuel;
- Taking a market approach to recycling and recovery activities;
- Developing technical standards to enable recovered materials to be considered as a goods (making it easier to use them for energy purposes);
- Encouraging investment in energy-efficient techniques for the use of waste as fuel.

### Animal by-products

Animal by-products not intended for human consumption are increasingly being recovered for energy, especially in biogas and biodiesel. Technological and scientific progress constantly leads to the development of new production processes. The Commission will review the regulatory framework for the authorization of such processes, so that new sources of energy may be opened up, while a high level of protection for public and animal health is maintained.

### Standards

European standards for solid biomass fuels are needed to facilitate trade, develop markets and increase consumer confidence. The European Committee for Standardisation (CEN) is working on them. The Commission will encourage it to give high priority to this work.

### Improving the supply chain

A European trading floor for pellets and chips has been initiated with support from the EU Intelligent Energy for Europe programme. Volumes are low. The Commission will look at how the results can be improved, with a view towards an EU-wide trading system (if technically and economically feasible).

### National biomass action plans

National biomass action plans can reduce investor uncertainty by assessing the physical and economic availability of biomass of different kinds, including wood and wood residues as well as wastes and agricultural crops, identifying priorities for the types of biomass to be used and how biomass resources can be developed, and indicating the measures that will be taken at national level to promote this. They can also be linked to consumer information campaigns on the benefits of biomass. Regions can usefully do the same thing. The Commission encourages the development of national biomass action plans.

### EU financial support for biomass energy

Many of the regions assisted by the structural and cohesion funds have high potential to pursue economic growth and employment creation or stabilization through biomass. This is particularly true for rural regions and Eastern Europe. Low labour costs and high

resource availability can give these regions a comparative advantage in the production of biomass. Supporting the development of renewable and alternative energy sources such as the production of biomass is therefore an important objective for the structural and cohesion funds as set out in the Commission's proposal for Community strategic guidelines for cohesion. These funds can support the retraining of farmers; the provision of equipment for biomass producers; investment in facilities to produce biofuels and other materials; and fuel switching to biomass by electricity and district heat producers. The Commission calls upon Member States and regions, when preparing their National Strategic Reference Framework and operational programmes, to ensure that the potential benefits of biomass have been thoroughly taken into account.

Investment on or near farms, for example in biomass processing, can be supported through the rural development policy, as can the mobilization of unused biomass by forest holders. The Commission has proposed Community strategic guidelines for rural development which emphasis renewable energy in general and biomass supply chains in particular. The Commission encourages Member States to take up these opportunities for the development and diversification of the rural economy through their national rural development programmes. The Commission proposes a specific ad hoc group to consider biomass opportunities within these programmes.

#### State aids

Official support for biomass production and use must be comply with Community state aid policy. The Commission can authorize investment aid and operating aid on the basis of the Community guidelines on State aid for environmental protection. The rules in these guidelines take into account the beneficial effects that energy produced from biomass may have compared to energy production on the basis of fossil fuels. Aid for investments in assisted areas may be found compatible with the common market under the guidelines for national regional aid. There should not be undue distortions of competition.

#### Research

The Commission's proposal for Seventh Framework Programme gives a high priority to biomass research. It includes several actions with a biomass component.

Some of the most important areas of work will be:

- The development of an industry-led "bio fuel technology platform";
- The bio-refinery concept, getting the most out of all parts of plants;
- Research into second-generation bio fuels, where a substantial increase in Community funding is expected.

The Commission will consider how best to take forward research into the optimization of agricultural and woody crops for energy purposes, and into conversion processes.



## Conclusion

Europe needs to break its dependence on fossil fuel. Biomass is one of the main alternatives. Cost effective measures in favour of biomass need to be developed at European level to:

- Draw maximum advantages from national and local innovation;
- Provide a clear way forward for major industries organized on a European scale;
- Share burdens fairly

Energy cropping is becoming better understood but it must be ecologically sustainable environmentally acceptable to the public, and the delivered costs need to be competitive with fossil fuels.

Overall, bioenergy is envisaged to maintain its position as the highest contributor to global renewable energy in the short to medium term with dedicated energy crops set to provide a large proportion of the biomass feedstock in the coming decades. Costs vary widely due to the complex characteristics of the resource, their site specificity, national policy, labour cost and efficiency of the conversion technologies used, but they are expected to continue to decline over time. Future opportunities for energy crops include development of biorefineries, atmospheric carbon “scrubbing” and the growing trend towards small scale, distributed energy systems leading eventually perhaps towards a hydrogen system.

## Status in R. of Macedonia

As a result of its strategic decision, the economic growth of the Republic of Macedonia beside everything should be based on ecology acceptable and sustainable development mainly in the agriculture and electricity as the branches which have tight connection and are twine between each other.

On a world level, many years rearward are used for looking of alternative decisions which are not risk for the environment, not need the high energy demand specially the mineral oil and unsuitable chemical energy. The solution in many cases is find in biodiesel production and it use in agriculture and wider.

Biodiesel is oil for engine produced from oilseed rape or other vegetable oils using esterification with methanol. Its characteristics are same as mineral diesel and can be used “clean” (replaced the mineral diesel) or in combination with mineral oil. More rigorous ecological standards which are implement in the recent years, give the strong support of its production and utilization in many countries in the world.

Today, the usage of biodiesel and mixture of biodiesel and mineral diesel is common practice where adding the 5% of biodiesel in standard mineral oil is not underline at all.

The biodiesel production in Europe is continuously increasing. While in 1991 its produced was 110 000 t, in 1998 this production is around 1.366 000 t and 2 050 000 t in 2003. The new data (2005/06) shows that only Germany produced more than two million t/yr.

From the researches which are made in 28 countries about the reasons of biodiesel production, the most frequent answers are as follows:

Uses of restorable sources of energy – 92%  
Environment protection – 85%  
Uses of surplus of agricultural products – 80%  
Scientific interest – 68%  
Political reasons – 59%  
Governmental (State) interest – 35%  
Decreasing the unemployment – 26%  
Decreasing the export of mineral oil – 23%

The stuff for biodiesel production is vegetable oils but also animal fats and oils from the restaurants and household which becomes sludge. Anyway, the most important raw material (for European conditions), is the oil from oilseed rape and sunflower. The others participate very little with inoperable contribution:

Oilseed rape – 82,82%  
Sunflower – 12,59%  
Oil palm – 1,33%  
Soya – 1,17%  
Beef fat – 0,02%  
Sludge oil – 0,52%  
The rest – 1,05%

Macedonian agriculture (including hunting, forestry and fishery) is the third largest sector offer services and industry in the past ten years. Agriculture has in the average contributed around 12 percent of the formation of National GDP and if agro processing is included it reaches 16 percent.

The agricultural land amounted 1,26 million ha or about 49% the total land area from which 577 000 ha or 44,2% is cultivated land. From the total cultivated land 473 000 ha is arable land and gardens (82%), 53 560 ha are meadows (10%), 27 103 ha vineyards (5%) and 15 600 ha orchards (3%). Each year one third of the arable land is estimated to be fallow. In the period 2000 – 2005 industrial crops are covered 26 000 ha (5,4% of arable land). The most planted crops are: tobacco – 18 480 ha, sunflower – 5370 ha, oilseed rape – 249 ha and poppy – 159 ha. In the years 2004 and 2005 sugar beat was sown on approximately 1700 ha, but in the last two years, according the policy from the only sugar factory in Macedonia, sugar beat is not planted or is grown on negligible 40 – 50 ha

The situation under (with) oil crops

Looking globally and according many agricultural experts in the world, the oil crops are one of the most valuable traded agricultural commodities. Despite the continuously increasing of the sowing areas which in the last 15 years are enlarge for 24%, their presence in R. of Macedonia have alarming status. So far, sunflower is the main oil crops but fact is that area under sunflower has significant deprecation (30 417 ha in 1992; 5300 ha in 2006). As the reasons for this situation we can mention the low average yield from

the unit area connected with unused of the genetic potential from the varieties/hybrids in our agro-ecological conditions, absence or minimal subsidies for oilseed production, using of old machinery, competition with not refined oil from export etc.

#### Oilseed rape in Macedonia

The oilseed rape is not unknown crop in Macedonia and it is grown mainly for forage purposes as animal feed. Its utilization for the needs of oil industry (consumption oil), began from 1982. In the period 2001 – 2005 the area under oilseed rape for seed production was 640 ha (average), with minimum 34 ha in 2001 and maximum 1041 ha in 2004. The average yield/ha is 1,8 t.

#### Sowing areas, yield/ha and total yield from oilseed rape in Macedonia

Oil rape	2001	2002	2003	2004	2005	Average
Area ha	34	1000	886	1041	240	640
Yield t/ha	3,2	0,3	0,8	2,2	2,7	1,8
Total yield t	110	274	767	2284	660	

Despite many positive characteristics its present is very limited even:

- Biologically is very good crop in triple crop rotation: wheat – oilseed rape – corn;
- The obtain seed yield is very stable which is on the level of 1,8 t/ha (but also 2,2 t/ha in 2004 and 2,7 t/ha in 2005)
- The oil from oilseed rape satisfied the most rigorous nutritive standards. The meal as a by-product can be used for all categories of domestic animals with out any modification and limitation.

#### Advantages and disadvantages for growing oilseed rape and sunflower in Macedonia

Advantages	Disadvantages
- Mostly suitable climatic conditions - Even in dryness years the yield could be very stable	- Extremely dryness years
- System of irrigation ditch	- Unkempt irrigation ditch - Unused irrigation ditch
- Available mechanization	- Outdated mechanization
- Experience of the farmers	- Absence of practice the novelty in the process of production
- Cooperation between the farmers	- Lack of association for the growers of oil crops
- Exist the capacity for processing: consumption oil, biodiesel	- Used only crude oil

The cost (price) system is one of the reasons why the oil crops occupied small part of arable land in R. of Macedonia. Abolish the guarantee price in 1994; abolish the

subsidies for fertilizers, pesticides and premium in 1997, made their huge decrease. Till 2003 there were no direct measures for supporting the oil crops production. In 2004 according the law for support the agriculture development, a grant – 2870,00 den./ha was applied as financial support to compensate the increased costs within process of production which was however abolish in 2005. Regarding import customs taxes, they are 15% for sunflower seed, 5% for peanuts, no taxes for oilseed rape, soya, sesame, flax, hemp and castor bean, 15% for the refined sunflower oil, 10% for the olive oil and no taxes for crude vegetable oils. (the law is dedicate for crude sunflower oil but there are no reasons to have differences for other vegetable oils).

### Measures for stimulate oilseed rape production as a base for biodiesel production

The question of spreading the areas under oilseed rape as stuff for biodiesel production is not a wish of individuals or groups. It must be strategic and government priority, of course if the projection on a longer period is not make through the import of biodiesel or import of crude vegetable oils which can be refined to satisfied domestic needs. So far Macedonia as a country is not obligate to fulfill the regulations from the EU in the part of bio fuels, but status as a candidate-country enforce its fast overhaul in this sector.

What could be the advantages for increase the areas under oilseed rape?

- Introducing the third field crops (beside the wheat and corn) which can insure the stable income for the Macedonian farmers, better use of the agricultural machinery and better profitability of the agriculture production;
- Creation of new jobs;
- Better use of wilderness;
- Decrease the air pollution as a result of better burn of biodiesel and no sulphur emission;
- Decrease the risks of water pollution using the biological degradable fuel.

Our projections says that for Republic of Macedonia where total diesel consumption is estimate on around 100 000 t/yr, the capacity of 10 000 t/yr of produced biodiesel will be realistic and optimal. For this quantity 10 000 t of crude oilrape oil is need to insure which can be obtained during processing of 25 000 t oilrape seed. With average yield of 2 t/ha (averages from the last 5 years in Macedonia), the sowing areas under oilseed rape should be on the level on 12 500 ha. Last year the Macedonian biggest petrol company Makpetrol opened the capacity with initial phase of 25.000 tons of biodiesel annually, with the aim of achieving 30.000 tons in future. The primary raw material for biodiesel production is raw rapeseed oil derived from rapeseed. Another 2-3 companies from abroad announce their investments in this sector in the near future.

Therefore the Ministry of Agriculture, forestry and water economy of R. of Macedonia must to find way:

- to stimulate and subsidize the production of oilseed rape which could not be declarative and symbolic (for example, the subsidies in Croatia is 308 €sowing ha of oilseed rape with guarantee ransom price of 0,16 €/kg). According to the program for subsidies the agriculture and rural development for 2008, the MAFW will support the oilrape growers with 100 €sowing ha.

- implement the custom regulation standards where the price of biodiesel should be lower or the same with mineral diesel,
  - stimulate the scientific and research work through the creation of new varieties of oil rape and implement the novelty of growing oil rape which will improve the energetic efficiency and ecology acceptability in the total chain of production,
  - enlarge the pallet for possible oil crops for biodiesel production (beside oilseed rape and sunflower) which will lead to better quality and cheaper production.
- The biodiesel production should be part of the system where several subjects like: Ministries of agriculture and ecology, companies for biodiesel production, farmers and research institutions should be work together. Only this linkage will ensure disposable effect.

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## **AGRICULTURE AND GENETICALLY MODIFIED ORGANISMS**

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## AGRICULTURE AND GENETICALLY MODIFIED ORGANISMS

### INTRODUCTION

At the beginning of the XXI century forty million hectares are greened annually with cultures that are genetically modified. US have about 70%, followed by Argentina, Canada, China and Australia. The highest percentage, about 54%, belongs to the soybeans that are ingredients in over than 20.000 products. The corn has 28%, cotton, and beet with 9% each. The number of the submitted applications for new GMO events is also an indicator about the interest for GMO research in the EU. Namely, in France in the last ten years 496 applications were submitted, in Italy 281 and in Germany 192. These three countries are leaders in the GMO application in the agricultural production. The different approach between the US and Europe can be observed through the numbers of commercialized and released GMO. In the US there are 72 GMO issues that are approved for use in human food and animal feed, while this number in EU is 29. The public opinion in EU makes such an uncommunicative attitude about the GMOs. Beside the genetically modified plants, there are plenty of genetically modified microorganisms that are used for production of pharmaceuticals, hormones, vaccines and enzymes.

The genetic modification is actually incorporation of the DNA sequence in the organism that usually does not contain it. According to this, GMO is an organism that has a stable incorporated external sequence. Usually it is inside the nucleus of the cell, but sometimes the genetic modification could be done also on a mitochondrial level. Identification of the presence of this insert could be done in any part of the same organism no matter is the new gene expressed in that part or not.

The genetic modification and creation of transgenic organism is started in the eighties of the last century. The technique was initially performed on bacteria especially on *Escherichia coli*. As a model plant was used mostly *Arabidopsis*, that is not important for agricultural production, but was used for this purpose because of its ability to grow fast. After these initial attempts some modifications in plants that have an importance for the market were created.

Today the animal species are also subject for genetic modification. The regime for their creating and breeding are much more strict due to the risk of their release in the environment.



## **FROM A CONSTRUCT - TO A COMMERCIALIZATION**

### ***Case study – Roundup Ready Soya***

The recent agricultural production practically can not be envisaged without the use of pesticides, besides the influence for producing the food without using the chemicals - also called organic or sustainable agriculture. One of the targets of the genetic engineering is also creating the lines that will be tolerant on herbicides that are commonly used in the agricultural production against weeds. Such a kind of herbicide is the glyphosate that has a wide range effect, but can not be used during the vegetative period due to the loss of the selectivity toward the cultures. That means that the glyphosate has an inhibitory influence also to the culture that should be protected from the weeds. The genetic modification in this case should provide glyphosate tolerance of the culture. This herbicide is chosen due to its remarkable environment performances, the fast binding with the soil, the rapid degradation and the low toxicity upon the fishes, birds and mammal. According to these glyphosate properties it belong to the E category of pesticides, that are considered as non-cancerogene for the humans.

The soybeans were chosen as a culture for the incorporation of the glyphosate resistant gene, and was called Roundup Ready Soya (RRS). The commercialization of the RRS was achieved ten years after the beginning of this research. By reason of the inhibition of the EPSPS – the enzyme that is important in aromatic aminoacids synthesis, the glyphosate can express its effect. The plants, bacteria and fungi contain EPSPS gene contrary to the animals. Due to the incorporated glyphosate tolerant EPSPS gene, the RR soybeans are completely unventured by the glyphosate treatment. The EPSPS gene is isolated from the bacteria *Agrobacterium sp. CP4*. On account of this fact the protein is called CP4 EPSPS. This gene is introduced in a host genom by the particle gun bombardment method, that is actually method of shooting the isolated gene impregnated on a titanium microbullet into the genom of the host. The location of the inserted gene should be additionally determined.

After the completed process of transformation the plant is breded in a lab conditions in order to determine does the new event have an expected quality that should be the result from the transformation. In this case, the Roundup Ready Soybeans show the glyphosate tolerance, that means this herbicide can be used during the vegetative period without any negative effects on the soybean plants.

Some additional analysis include 450 parameters that show no significant digress in quality and quantity of the following nutrients: carbohydrates, fatty acids, proteins,

humidity, ash and particularly on aromatic aminoacids. Simultaneously the analysis of the presence of antinutrients as: lectins, phytoestrogens, stachiosa, raphynosa and phyta was done and no retreats compared with the parent line were detected.

The next step in the process of commercialization is a testing of the transform's influence on humans and the environment. At this point the allergenicity of the soybeans was the topic. This kind of analysis was necessary because of only one protein that could be found in the new event that is different from the parent line, and take just 0.02% from the total soybeans proteins. It do not show any activity in the flour and in any other processed products. Despite its molecular weight that is in the range of the molecular weights of the allergens, it do not show any allergen effect. The experiment with simulation of the digestion of these soybeans in mammals and birds was done simultaneously. It shows that this protein can be very quickly unbulit in the digestive system of the mammals and birds without causing any morpho-physiological changes of the organs. All these experiments were done on guinea pig, chicken, cattle, cat and quail.

The last point is making about 300 experiments at open field to check the RRS breeding in the nature. The experiments show that the RRS is also normally developed under the natural conditions without any significant influence on the soil and the beings living there. It must be stressed that after the end of all these experiments, neither on genetically modified plant can not remain to grow in the next generations, neither is allowed to be crossed with the conventional plants.

After ten years hard work and all these analysis, the soybeans were commercialized as GMO event with code 40-3-2 or usually found as RRS.

### **GMOs IN INTERNATIONAL CONTEXT**

The Cartagena Biosafety Protocol is afforded on a basis of the fifteenth principle of the Rio Declaration on Environment and Development, often shortened to Rio Declaration. The focus of this Protocol was to establish a legal framework for a secure transboundary movement, dealing with GMOs and their use that could not cause a negative effect on the human health and the biodiversity as well.

The exceptions are the GMOs used for production of pharmaceuticals for humans that are under the regime of other documents and international agreements.

The Cartagena Biosafety Protocol also predicts an establishment of the specialized international institution that will coordinate the activities for creating, dealing and use of GMOs among the countries that signed the Protocol. To reach this point, the Clearing

House was established. The Secretariete of the Protocol was also formed after the Cartagena Biosafety Protocol was signed and is serving as a body for its implementation.

The most important but administrative part of the Protocol is acting on the evaluation and risk assessment. The risk assessment is done based on the annex number 3 of the Protocol referring on the use of the available techniques for identification and evaluation of possible negative effects of the GMOs on human health and the biodiversity itself.

### **EU'S POINT OF VIEW ON GMOs**

Soon after the Cartagena Biosafety Protocol was signed, on March 12, 2001 the European Parliament adopted the Directive 2001/18/EC for placing GMOs on the market. The EU members through this Directive established an internal infrastructure that will be qualified for this topic. The main body is the Regulatory Committee, with two instrumental bodies - the Scientific and the Ethic Committee.

In comparison with the Cartagena Biosafety Protocol, this document is more detailed regarding the creating, dealing and the use of GMOs. Also, the following documents (annexes) are dedicated in details about the conditions, competences and risk assessment while releasing GMOs on the market. There are very precisely determined parts referring on the techniques for creating GMO and non-GMOs, principles for risk assessment, GMO labelling, additional information in the process of commercialization, criteria for different procedures regarding GMOs, guidelines made by the experts, and monitoring plan and tables of concordance as well. All these documents are made by the EU in order to improve the biosafety and were important to establish a legal framework about GMOs. Using this legal frameworks the countries started preparing a national regulatory rules related with this field.

### **GMO CONTROL**

The verification of the successfully finished transformation process can be done in four ways:

- by phenotype characterization
- on a protein level
- on a RNA level
- on a DNA level

The phenotype characterization is a quite simple and longlasting procedure due to the need to have a completely developed organism in order to follow particular morpho-physiological properties, the adaptibility etc.

The verification method on a protein level is based on a immuno methods that actually consider new protein identification and quantification in a fresh plant material. As the product of the new modification is the protein that is not expressed in each part of the organism, the verification of the successfulness on a protein level is a bit limited. The principle of this immuno assay called ELISA (Enzyme Linked ImmunoSorbent Assay) started with a fact that the new protein act actually as an antigen that helps to create new antibodies that are used afterwards for testing of the new gene. These antibodies are add in the protein extract and will attach to the antigene. This complex is afterwards detected by adding a special substrate that give a signal that is quantified by spectrophotometry.

Detecting GMOs on RNA or DNA level is more precise and accurate than working with proteins. The techniques are based on hybridisation of the amplified region from DNA with a specific probe that is designed by the template of the particular GM event. The multiplying of this region from DNA is done by PCR (Polymerase Chain Reaction) in three subsequent steps for denaturizing, that means unwrapping the two DNA chains, annealing of the primers, that are actually attaching of two oligonucleotides that are used to determine the start and the end position of the desired product, and the last step is the elongation process that is performed with a help of the thermostable enzyme Taq Polymerase. All three steps are repeated in about 30-40 cycles in order to produce millions of copies that will serve as a material for work. All these precise and efficient techniques for GMO detection have a very high importance for commercialization and the use of GMO.

## **REPUBLIC OF MACEDONIA AND THE RECENT SITUATION REGARDING GMOs**

The agricultural production itself is not sufficient to cover all the needs for food, that is a main reason why the country is importing different products as meat, corn, soybeans, feed, final products etc. The position of the country in the region and the lack of a system for GMO control as well, are reasons that Republic of Macedonia is an ideal place for distribution and production of these types of products.

The EU members already have an established system for the possible presence of GMO in all products that are imported in the Union. As a result, many goods from the other continents have a ban for marketing and sale in the countries members of EU.

The whole situation intrudes the necessity of urgent establishment of the system that will provide monitoring and controlling of the imported products and raw materials.

The Ministry of Environment and Physical Planning in 2002 ask for a Biosafety Study that was elaborated by the chief of the Biochemistry and Molecular Biology Laboratory. This Study comprehend all existing modifications, the creation process, the safety levels depending on a modification type and the host organism, and also the current situation in Macedonia at that time.

In 2004 the members of the Laboratory were nominated as members of the National Coordinative Committee (NCC) for Biosafety, established by the Ministry of Environment and Physical Planning in the frame of the project "Development of the National Biosafety Framework in Republic of Macedonia" financed by UNEP-GEF (United Nations Environment Programme – Global Environment Facility). The produced document include the current situation and regulations that have a thread with biosafety, the use of GMO, the intended use, releasing on the market and the monitoring system by one side, and the activities of the Ministry of Environment and Physical Planning, Ministry of Agriculture, Forestry and Water Management, Ministry of Health and Ministry of Economy and the mechanisms for involving the public and the improvement of its enlighten.

The follow up the these activities of the team from the Biochemistry and Molecular Biology Laboratory was the next phase of the project that results with an produced GMO Law, that unfortunately is still in the Parliament procedure.

The cooperation of the Biochemistry and Molecular Biology Laboratory with the International Atomic Energy Agency (IAEA) within the project for Upgrading the Food Safety System in the Republic of Macedonia is focused on the establishment of a system for GMO control in different food products, seeds and feed as well.

## **PROFILE OF THE GMO LABORATORY WITHIN THE FACULTY OF AGRICULTURAL SCIENCES AND FOOD**

The Laboratories are settled on 108 m<sup>2</sup> in nine different rooms. Beside the basic equipment which include pH meters, balances, stirrers, incubators, pipettes, refrigerators etc., the laboratory possess also a specific equipment for applying of the molecular techniques as a thermal cyclers, UV/VIS spectrophotometer, centrifuge with a cooling system, water bath with a shaker, power supply and chambers for electrophoresis, blotters, UV illuminator with a camera, GBOX system for documentation of gels, membranes or bacterial colonies and appropriate IT equipment with necessary software packages. The Laboratories are also equipped with the automatic DNA analyzer ABI 3130 four capillary system and Real-time PCR ABI 7500 for the precise quantification of amplified products of interest.

The laboratory employees are the experts of biology, biochemistry and agronomy. The leader of the group has an experience in the field of applied genetic modifications and their use in the agricultural production and the production of recombinant enzymes as well that could be used in different ways. The leader and two group members already attend a four month course regarding the gene manipulation in agriculture at the Applied Biochemistry Department within Osaka Prefecture University, Osaka, Japan. These members are also professionally trained to perform qualitative and quantitative analysis for GMO detection in food samples and seeds. The training was realized by the International Atomic Energy Agency in two different institutions in Germany and Slovenia. The rest of the team is also intensively trained for performing any stage of these analytical techniques.

In the frame of the project activities the laboratory collaborate with the following institutions: Pharmaceutical Faculty Skopje, Research Centre for Genetic Engineering and Biotechnology within the Macedonian Academy of Sciences and Arts, Japanese International Cooperation Agency (JICA), Gesellschaft fuer Technische Zusammenarbeit (GTZ), IAEA (International Atomic Energy Agency), Istituto di Zootechnico - Univerisita della Tuscia in Viterbo, Italy, Institute National de la Recherche Agronomique (INRA) in Nantes, France, Agricultural Faculty in Oslo, Norway, Osaka Prefecture University, Japan, International atomic Energy Agency (IAEA), Institute of Health and Consumer Protection (IHCP), Italy, the National Biology Institute in Ljubljana, Slovenia,

Lebensmittel Institute in Braunschweig, Germany, Veterinary Institute in Oldenburg, Germany.

The GMO Laboratory within the Faculty of Agricultural Sciences and Food with its technical capacities and the trained staff is the only one authorized laboratory by the Food Agency in Republic of Macedonia for performing the GMO analysis of food samples and establishment of this system as well.

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# Agriculture and biodiversity Animal Genetic Resources

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**ABBREVIATIONS USED:**

**AnGR** – Animal Genetic Resources

**CBD** - Convention of Bio Diversity

**DNA** – Deoxyribonucleic acid

**EU** – European Union

**FAO** – Food and Agriculture Organization

**GEF** – Global Environment Facility

**MAFWE** – Ministry of Agriculture, Forestry and Water Economy

**MoEPP** – Ministry of Environment and Physical Planning

**NGO** – Non Governmental Organization

**RM** – Republic of Macedonia

**SEBI 2010** - Streamlining European Biodiversity Indicator 2010

**UNDP** – United Nations Development Programme

## 1 INTRODUCTION

Continuous increasing of the human population of the world, as well as increase of their economic power is making great pressure in the agriculture and food production to meet the demands. In general these increases in production are realized by intensification of production systems towards high-input high-output systems. The genetic resources for these intensive production systems are based on chosen species where only a few varieties, breeds and lines are in use, which are developed by a limited number of multinational breeding companies. Continuously, many varieties/breeds and recently developed varieties/breeds and lines are set aside from the primary food production chains in the intensification of agricultural production and in the global concentration of breeding activities. At the same time, traditional breeding using natural species is often neglected, although it often offers the best solutions for the existing conditions in a given environment. As a result of this tendency, many varieties and breeds have not been able to endure under this modern capitalistic onslaught and have been lost as genetic resources. This trend is still continuing, and there are estimates which show that, worldwide, about 30% of domestic animal breeds have permanently disappeared.

## 2 THE STATE OF GENETIC DIVERSITY

In the Republic of Macedonia indigenous or native breeds exist, completely adapted to the circumstances and conditions in particular geographical locations. However, there are some recently introduced and continually imported breeds with various successes.

### 2.1 LOCALLY ADAPTED BREEDS

Few indigenous breeds can be determined in: cattle, sheep, goat and porcine (Table 1). As in the country there is no introduced system of recognizing, monitoring and recording of farm animals, almost nothing has been done for prevention of indigenous breeds.

Table 1 Locally adapted breeds in Republic of Macedonia

Species	Breed	Population state
Cattle	Busha	Stable
Sheep	Karakachanska	Critical
	Ovchepolian	Stable
	Sarplanian	Stable
Goat	Local goat (Macedonian)	Stable
Porcine	Local pig	Unknown

As it was reported in FAO's World Watch List (Second edition) 1995, the Farm Breeds in cattle, sheep, goat and porcine have been presented.

#### Cattle breed

Busha breed is spread in mountainous regions. During the last 30 years various crosses with differed breeds occurred (Simmental, Hereford, Montafon and Tyrol grey). Most of them were without any continuous programme and consequently without beneficiaries.

Busha breed is dominant in the cattle population with more than 54%<sup>1</sup>. However, in item Busha it is also accounted all crosses of Busha with other breeds as Simmental, Montafon and Tyrol Grey. Busha is spread all over the countries of Former Yugoslavia, with similar morphological characteristics and production. The color of the animal can be grey, yellow, red or black. The live weight of adult animal is about 400 kg (males) and 200-300 kg (females). The presence of upward and forward horns is expected. It is late matured well-adapted durable animal in poor conditions, disease resistant and can survive the winter period with small amount of grain. It is used for milk and meat production, but also as draught power.

#### Sheep breeds

There are three Pramenka type breeds in the Republic of Macedonia, Ovchepolian, Sarplanian and Karakachanska. The first two breeds (Ovchepolian and Sarplanian) are broadly used in sheep production.

Ovchepolian sheep: it is white animal with black spots on the head. It is spread in east and central part of the country, and accounts for 60 % of total sheep population. Rams are horny with live weight up to 60 kg. Average weight of ewes is between 35-45 kg.

Sarplanian sheep: is fully in white color, a bit lighter than Ovchepolian sheep. It is located in west mountainous area of the country, at Sar Planina (the name of the strain is linked to this mountain). This strain accounts close to 30 % of the sheep population. Similar to other indigenous breeds, these are very resistant to the difficult conditions, different parasites and harsh landscape.

Karakachanska sheep: is characterized by black or black-brown color. Estimated population size is lower than 1000. This strain is kept under nomad system. The name came from the Karakachans, Balkan nomad people. It is considered that due to their extremely conservative livestock traditions, Karakachans have saved the most primitive and pure domestic forms of animal breeding. However, this tradition has being abandoned over the years and nowadays a pure Karakachanska sheep can hardly be found. This sheep is very temperament animal, very dynamic in mountain area, durable and resistant.

#### Goat Breed

Local goat (Macedonian): The population is increasing but without any differentiation. It could be white, grey, or in mix colors with typical long hair. The production is very variable as well as the body size and condition. It is usually kept on family farms individually, 1-3 goats, or in small flocks (less than 30). A number of crossbreeds have been produced with French Alpine and Sannen bucks. Today different types of animals can be morphologically identified.

#### Porcine breed

Local pig: The focus should be placed on the local pig. This breed is present both in the central and in the eastern part of the country. There is no knowledge on the current status of the population and production data are not available. The authority has not shown any particular interest for it. The field survey and data collection is urgent as a first step of determination, registration and possible conservation of this population.

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<sup>1</sup> Annual Report MAFWE, 2005

## 2.2 CONTINUALLY IMPORTED BREEDS

Over the last 30 years many breeds have been introduced in the country. However, before the transition period the import was not under requested conditions. In most of the cases the imports failed, but there are some successful trials. The imported breeds that have significant influence to the production are listed in the Table 2

Table 2 List of imported breeds

Species	Breed	Current status
Cattle	Holstein Frisian	In use on most dairy farms
	Simmental	In use on small dairy farms
	Montafon	In use in mountainous areas
	Tyrol grey	In use in more durable mountainous areas
Sheep	Merinoladshaf	In use for lamb production improvement
	Awassi	Improvement of milk production
Goat	French Alpine	In use for improvement of the local population
Pig	Yorkshire	All breed are used in the production scheme of large farms.
	Landrace	
	Duroc	

All of the recently imported breeds are used by farmers with various efficacies. In the intensive production systems, those breeds are giving high productivity, but in less intensive systems, the productivity can be even less than local breeds.

## 2.3 THE STATE OF UTILIZATION OF ANGR (USE AND DEVELOPMENT)

Although there has been a recent trend toward intensification and specialization, particularly with livestock and vegetable production, private farms tend to be highly diversified and grow a comparatively large number of crops. This diversification is partly due to a tradition of self-sufficiency in basic food needs and partly a risk-aversion strategy in response to climatic variation and unreliable markets. Typically, the smallholder farmer plants cereals, vegetables, fruit trees and livestock for self-sufficiency and, for cash crops, a similar mix, plus tobacco and grapes. There is some geographical specialization within private farming wherein lowland or valley farmers mainly grow arable, fruit tree and vegetable crops for sale, primarily in the local market, while in the hill and mountain areas, livestock predominates.

Virtually all-individual farms maintain some livestock, principally dairy cattle and sheep, which are an important source of farm income. Cattle are kept primarily for milk production, with herd size typically lower than 10 cows (91% of the farmers<sup>2</sup>). Sheep, mostly indigenous, wool-dairy types and some crosses are used for spring lamb and subsequent milk production. A flock of 100 ewes would be considered large. Extensive shepherding is common in summer. Poultry for domestic egg supply is a feature of all private farms, though an increasing number of commercially oriented broiler and egg laying units are seen in the private sector. A similar situation exists with pigs, where aside of 7 large intensive farms are present, some 60%<sup>3</sup> of the population is in private farmers. Private farmers with mixed arable and livestock enterprises plant alfalfa, maize

<sup>2</sup> Veterinarian Directorate, 2005

<sup>3</sup> National strategy for agriculture and rural development, MAFWE, 2007

and other forage crops and typically graze their large ruminants on lowland meadows and small ruminants on extensive upland pastures. The use of improved pasture for livestock grazing is not common.

#### 2.4 THE STATE OF CONSERVATION OF ANGR

Some interest exists in the country with regards to the locally adapted breed. However, it is still far from general policy of protection of indigenous livestock biodiversity. Up to now, the only action supported by the government is the ex-situ conservation of Karakachanska sheep, the most endangered breed. The government fully supports the collection of the animals but less support has been provided for additional activities. Currently a flock of 60 ewes and 10 rams exists. The animals are collected from 7 villages in central part of the country that can be determined as almost abounded area. The farmers were old and intend to stop farming and move into urban area and the animals were bought in order not to be slaughtered. Animals are sited in one location only. Some provisional monitoring of the animal has been done mainly in terms of avoiding inbreeding and maintaining the flock structure. All animals were introduced in the book register and tagged. The first determination of plasma protein and hemoglobin polymorphism was done, and later on analyses of the DNA polymorphism and micro-satellites structure. Moreover, the team is looking for possibilities in cryo-preservation of the spermatozoa, ovaries and embryos. The facilities and human resources exist in the country but at the moment there are some obstacles in providing financial sources.

On the other hand several projects are running under GEF Small Grants Programme, where also proposals related to biodiversity were considered. Currently three small projects are running, one in relation of in-situ conservation of the Ovchepolian local sheep breed in terms of their sustainable use, intervention to protect water buffalos from extinctions, and the most recent one, related to sustainable use of Busha cattle in Maleshevo region. All projects are donated with approximately US \$ 20000. Currently, forth project is under preparation related to in-situ conservation of native pig breed in Eastern part of the country. Latest has been already short listed and can probably be financed in 2008.

Recent political development (approximation towards EU) at least is giving some perspective to AnGR. Namely, in the recent new law for Agriculture and Rural Development (Adopted by the parliament in November, 2007) an official status of Agricultural biodiversity has been given. In addition, a small chapter has been given to Genetic Resources, in the National Strategy for Agriculture and Rural Development (approved by DG Agriculture in EU, in December, 2007) where AnGR were mentioned, generally extracting information from the Biodiversity Strategy and Action Plan<sup>4</sup>. In the latest review of Animal production Law (that is adopted by the parliament on January, 4<sup>th</sup>, 2008) is giving frame for action in AnGR. In the law, protection of AnGR is defined as public service, where the government should be responsible for ensuring environment and condition for all actions.

Currently two ongoing actions will support the legal status of AnGR, the preparation of National Action plan in AnGR supported by MAFWE (should be completed until the end of 2008), and development of national indicators for genetic resources (a working group was established in the frame of MoEPP in autumn 2007).

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<sup>4</sup> Ministry of Environment and Physical Planning, 2004

### 3 CRITICAL ANALYSIS OF ANGR IN REPUBLIC OF MACEDONIA

The perspective for a breed depends to a great extent of its present and future function(s) in livestock systems<sup>5</sup>. A change in livestock systems may have great impact on the use of breeds. Livestock system development is driven by many external and internal factors like:

- the presence of ecosystems suitable for animal production;
- the country's policies for the use of animals;
- the prevalence or outbreak of diseases;
- the political (in)stability;
- the available infrastructure;
- the possibilities for introduction of exotic breeds;
- the changes in the human population;
- the changes in the country's economy.

All this issues can influence the status, trends and risks for AnGR.

#### 3.1 PROTECTION

The existence of locally adapted breeds has been happened in close interaction between specific genes, environment and socio-economic conditions that occurred in the region. Hence, from the protection aspect, protection of the breeds can be in-situ and ex-situ. The experience gained in case of Karakachanska sheep, where for the last several years only few times supports from the government were received and from the other countries<sup>6</sup>, regarding ex-situ conservation of breeds suggest that as a method it can be used in only extreme situation, whenever, all other possibilities has been exhausted. Furthermore, through in-situ conservation programs, the sustainability and longevity of the breeds can be ensured.

Ex-situ should be considered as a tool for ensuring safe conservation of genes through cryo-preservation of semen, ova and embryos, as well as tissues, DNA or DNA sequences.

The advantages of in-situ conservation can be seen on:

- preservation of the habitats and ecosystems where the animal production has been realized;
- continuous work on breeding programs ensure finding solutions for added value products, since they are vital for economic logic of the production;
- through their development, breeds are also adapted to new circumstances and will be more resistant to unfavorable conditions (climatic changes);
- those systems on long runs are cheaper and can be renewed if there is a need for.

However, problems can occur in cases of infection disease outbreaks, political crisis (civil war, starvation, etc), but needs to be prevent with predefined and strictly

<sup>5</sup> Oldenbroek, 2007. Utilization and conservation of farm animal genetic resources. Wageningen Academic Publishers.

<sup>6</sup> FAO, 2007. The State of the World's Animal Genetic Resources for Food and Agriculture.

committed breeding programs. On the other side, dramatic changes of economic situation in the country can affect protected breeds, through increased demand for cheap food that will provoke unexpected mating with exotic breeds and spoilage of autochthonous genomes.

For the purpose of Sustainable development, it is strongly recommended that AnGR should be preserved through in-situ programs, where vitality of the locally adapted breeds can be ensured by development of specific and value added products, certified by geographical region. In cases where such products can not be identified or economical viability of the breed can not be foreseen, additional measures can be utilized e.g. environmental, cultural and traditional values should be explored.

### 3.2 SUSTAINABLE USE OF ANGR

The agricultural sector, and particularly animal production, should primarily ensure food for the inhabitants of country. Due to various reasons, the quantity of animal products in general has been decreasing during the last decade, and it is genuine to expect that the production will be increased. Last few years there is a clear tendency of improvement of the quality of animal products, which are still below the requirements of EU standards. In order to meet those standards, the direction toward fully specialized farming has become obvious, where fast results would be expected by importing exotic breeds and adopting modern technology. Hence, in most of the cases it will negatively reflect on maintain of the locally adopted breeds. However, there are some opportunities to develop own recognized products particularly in sheep sector. Namely, sheep sector is one of the most vital one and very close to the traditional farming. Lamb production is export oriented and is considered as strategic one. This production is mainly based on locally adapted breeds, but often crossed with imported breeds (Merinoladshaf and Awassi). Sometimes, crossbreeds are used for replacement stock, which produce loss in genetic resources. Having in mind the globalization tendency, that also cannot avoid RM, it is feasible to predict that two main directions will be forthcoming.

First one, the production which utilizes cheap grassland resources on the principles of low-input production, and second one, the highly modernized production based on the intensive farming in large commercial farms. The newly emerged competition will probably push out small-scale family farms in favor of those who still base their production on high inputs, or products for niche market.

A positive turn of events may however be influenced by changes in demand for different kinds of products, through the expansion of the scale of products in accordance with the world trends. This is primarily reflected in increased diversity of pork products, while beef seems to be more resistant. On the other hand, sheep and goat milk is processed into various types of cheese, with continuous impairment of their quality and marketing. These changes are partly linked to the imported breeds (particularly in pig production) while in small ruminants locally adapted breeds are still predominant.



Alternative strategies for utilization, development and conservation of AnGR as respond to the changes in demand of animal products can be foreseen through sustainable and environmental friendly animal production, reached trough traditional farming.

The profitability of such production can be reached by offering higher value products to the market, labeled as organic or regionally recognized. Currently no national project has been identified in order to offer some solutions for on-farm conservation, particularly due to the fact that the success of such project requires broad socio-economic analyses, regional development programs and involvement of different experts.

### 3.3 INSTITUTIONS

Beside MAFWE and MoEPP as a national competent authority in management, conservation and protection of the AnGR and biodiversity, other institutions related to the subject (research, advisory, rural development, management, education and public awareness) are:

- University “St. Cyril and Methodius“, Faculty of Agricultural Sciences and Food, Department of Animal Science.
- University “St. Cyril and Methodius“, Institute of Animal Science
- University “St. Cyril and Methodius“, Veterinarian Institute
- University “St. Kliment Ohridski“, Faculty of Biotechnology
- Livestock & Veterinarian Center “Todor Velkov”
- Extension Service
- Federation of Farmers.

Most of the knowledge is linked to experts that are working with different livestock species. There is no systematic work in field assessment, surveys, recognition, determination and data collection.

All initiatives are made by experts concentrated in Department of Animal Science at Faculty of Agricultural Sciences and Food in Skopje, that only express knowledge, understanding and will to work on protection of AnGR.

Besides basic knowledge of animal genetics and understanding the needs for AnGR conservation, a laboratory for DNA molecular characterization and restriction fragment polymorphism (RFLP) exists at the Department. Due to the lack of financial resources, lack of capacities of the staff and trained people inside the MAFWE and other institutions and perhaps not enough aware, protection of animal genetic resources in the country is not a priority<sup>7</sup>.

### 3.4 MONITORING AND INVESTIGATION

In replay to the decision of the seventh conference of the parties of CBD on evaluation of progress and addresses the major threats to biodiversity, it was agreed a process

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<sup>7</sup> Capacity Self Assessment within the Thematic Area of Biodiversity, UNDP (2004)

setting up SEBI 2010. The process has to ensure measures in support of the agricultural biodiversity, to contribute reaching the 2010 target of halting the loss of biodiversity. In that manner in 2004 EU got on power a political decision for agriculture “Measures in place to ensure the conservation and availability for use of genetic resources, and in-situ conservation (varieties, breeds and races) promoted”<sup>8</sup>. Since many national systems are set independently, an effective monitoring in the agriculture should be placed through “Effectiveness of rural development and key market policy reform measures (single farm payment, cross-compliance, national envelopes etc) for biodiversity monitored and evaluated”. The indicator set for AnGR, has been accepted by SEBI 2010 working group for genetic resources (autumn 2007). The same indicator should be use in all countries of Pan-Europe, and for RM, too.

For the purpose of reaching target 2010, national institutions need to establish of system that will ensure inventory, characterization, conservation and valorization.

The research activities are much more interested to explore AnGR, perhaps due to the common tendency of high research interest for the locally adapted breeds. Moreover, all those activate the need this to be managed into general objective support of the characterization and conservation of locally adapted breeds. The forthcoming research projects should take special attention to the impact assessment of risks and destruction in AnGR, and possible beneficial outcomes, in order to promote production and food that origins form local domestic animals. Determine limits for the use of biological resources. Organize experimental farms with traditional agricultural production.

### 3.5 PUBLIC AWARENESS AND EDUCATION

Actions for public awareness have not been taken in terms of promotion, fairs of local breeds, traditional product promotion, clearing house mechanisms, promotion the values of old-fashioned local breeds, integrated programs for promotion of healthy food, ethnological values, traditions and culture, promote locations appropriate for eco-tourism, etc. Currently, in order to improve the knowledge for the AnGR, particularly genetic aspects of conservation, the Curricula of Animal Production Course at the Faculty of Agricultural Sciences and Food, offers the course of Domestic Animal Biodiversity to regular students. Moreover, Department of Animal Science at the Faculty of Agricultural Sciences and Food has prepared laboratories for short courses.

### 3.6 LEGAL BASE

The national legislation related to AnGR management is regulated by several acts that are under process of supervision, approximation and adoption toward EU legislation. Basically there are few important acts:

- Convention of Bio-Diversity (CBD), Rio De Janeiro, 1992, ratified from the parliament in 1997.
- Agriculture Law, (2007), principal act of the government in the field of Agriculture.

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<sup>8</sup> Biodiversity and the EU - Sustaining Life, Sustaining Livelihoods, Malahide, Ireland (2004)

- Veterinary Health Law (2007)
- Animal Welfare Law (2007)
- Animal Production Law (2008)

All of the laws are currently adapted to EU legislation. However, annexes to Animal Production Law should be prepared during 2008 that will be full adapted aspects of AnGR to general EU Council Regulation (EC) No. 870/2004.

### 3.7 INCENTIVE MEASURES

Outlining national policy, strategy and management plans for the conservation, utilization and development of AnGR, national incentive measures urgently need to be established. Legal base for it has already incorporated in the national legislation and needs to be finalized. Incentive measures should be focus on

- Promote the necessity for agro-biodiversity conservation among decision-makers of macroeconomic policy, as a heritage that should ensure continuous food production;
- Create favorable conditions within the administrative framework for development and implementation of measures for support of agro-biodiversity protection;
- Promote the use of appropriate technologies for agro-biodiversity protection;
- Promote the values of agro-biodiversity to domestic and foreign tourists in order to increase the economic value of these food production and ensure sustainability for a longer period;
- Promote public awareness for the value of agro-biodiversity and ensure incorporation of that value in the education process;
- Support capacity building in the institutions, as MAFWE, MoEPP, Research and education institutions, NGOs, Extension service, Federation of Farmers.

## 4 EXECUTIVE SUMMARY

The State of Genetic resources and their conservation in the farm animals

Similar to other countries, there are locally adapted farm animals in Republic of Macedonia. They are fully accustomed to the conditions of breeding. However, in the past 50 years new, more productive exotic breeds were imported which were either thoroughbred (purebred) or crossed with the local populations.

Locally adapted breeds:

**Cattle:** Busha is a local breed of cattle found in highlands and mountain areas. During the last 30-40 years it was crossed with many imported breeds. According to the official statistic data the Busha participates with 54% in the total number of cattle.

**Sheep:** There are 3 sheep breeds in RM: Karakachanska, Ovchepolska and Sharplaninska. The Karakachanska variety is included in the group of endangered species according to the FAO classification (2000), and the other two varieties are largely present in the sheep production.

**Goat:** Local goat (Balkan) breed has never been under serious research. Although its number is increasing, it is difficult to make a clear distinction what kind of population it is. The goats come in different colors (white, gray, multicolored), with outstanding long hairs and sword-like horns.

**Pig:** Local pig is bred on grazing in the Eastern part of RM. It is used under traditional grazing production system in very endurance region, but for a clear distinction a more studios approach is needed, including field and laboratory research.

For the period of last 50 years a lot of breed has been introduced in the country.

Imported breeds that have significant influence to the production are:

**Cattle:** Holstein Frisian, Simmental, Montafon and Tyrol gray;

**Sheep:** Merinoladshaf, Awassi;

**Goat:** French Alpine

**Pig:** Yorkshire, Landrace, Duroc

All of the recently imported breeds are used by the farmers with different efficiency. Generally, in case of cattle and pig production the breeds are used in intensified production systems with moderate success.

The real danger for the AnGR in RM will become obvious in near future, unless the urgent work is started in direction of inventory, characterization, conservation and valorization of still available genetic resources. The concept of modernization in livestock production is a priority of the government and neglect importance is given to autochthon breeds' conservation.

Some interest exists in the country with regards to the locally adapted breed that is still far from general policy. The only action supported by the government is the ex-situ conservation of Karakachanska sheep. Some provisional monitoring of the animal has been done mainly in terms of avoiding inbreeding and maintaining the flock structure, as well as determination of plasma protein and hemoglobin polymorphism and DNA polymorphism and micro-satellites structure. It is needs for cryo-preservation of the spermatozoa, ovaries and embryos.

Several projects are running under GEF Small Grants Programme, where also proposals related to biodiversity were considered. Currently three small projects are running, one

in relation of in-situ conservation of the Ovchepolian sheep breed in terms of their sustainable use, intervention to protect water buffalos from extinctions, and the most recent one, related to sustainable use of Busha cattle in Maleshevo region. All projects are donated with approximately US \$ 20000.

#### Protection

From the aspect of protection of AnGR, it can be in-situ and ex-situ. The experience gained in a country and those from other countries, ex-situ conservation can be used only in extreme situation, or as a tool for ensuring safe conservation of genes through cryo-preservation of semen, ova and embryos, as well as tissues, DNA or DNA sequences. It is recommended that AnGR should be conserved through in-situ programs, where vitality of the locally adapted breeds can be ensured by development of specific and value added products, certified by geographical region or through various incentives (e.g. environmental, cultural and traditional values).

#### Sustainable use of AnGR

In order to meet of EU requirements for food standards, the direction toward fully specialized farming will be a tendency, where it should be expected import of exotic breeds and adopting modern technology. This will negatively reflect on maintain of the locally adopted breeds. But, the opportunities for developing recognized products from geographical origin (particularly in sheep sector) can be a solution. Hence, two main directions will be forthcoming: (1) the production based on grassland resources and (2) the highly modernized production based on the intensive farming in large commercial farms. The newly emerged competition will probably push out small-scale family farms in favor of those who still base their production on high inputs, or products for niche market. Alternative strategies for utilization, development and conservation of AnGR as respond to the changes in demand of animal products can be foreseen through sustainable and environmental friendly animal production, reached trough traditional farming.

#### Institutions

Currently experts that only express knowledge, understanding and will to work on protection of AnGR are concentrated in Department of Animal Science at Faculty of Agricultural Sciences and Food in Skopje. Legal institutions need continuous work on capacity building.

#### Monitoring and investigation

Due to strategic direction to access EU, RM will have to implement a system that will ensure inventory, characterization, conservation and valorization, besides others on AnGR. Moreover in that process, mobilization in research will be compulsory, towards impact assessment of risks and destruction in AnGR, and possible beneficial outcomes, promotion production and food that origins from local domestic animals, determination of limits for the use of biological resources, organizing experimental farms with traditional agricultural production, etc.

#### Public awareness and education

Actions for public awareness have not been taken in terms of promotion, fairs of local breeds, traditional product promotion, clearing house mechanisms, promotion the values

of old-fashioned local breeds, integrated programs for promotion of healthy food, ethnological values, traditions and culture, promote locations appropriate for ecotourism, etc. Currently, the Curricula of Animal Production Course at the Faculty of Agricultural Sciences and Food, the course of Domestic Animal Biodiversity is offered to regular students.

#### Legal base

The national legislation related to AnGR management is regulated by several acts that are under process of supervision, approximation and adoption toward EU legislation. All of the laws are currently adapted to EU legislation. However, annexes to Animal Production Law should be prepared during 2008 that will be full adapted aspects of AnGR to general EU Council Regulation (EC) No. 870/2004.

#### Incentive measures

Outlining national policy, strategy and management plans for the conservation, utilization and development of AnGR, national incentive measures urgently need to be established. Legal base for it has already incorporated in the national legislation and needs to be finalized. Incentive measures should be focus on: promotion of necessity for agro-biodiversity conservation; ensuring favorable conditions for development and implementation of measures for support of agro-biodiversity protection; promotion the use of appropriate technologies for agro-biodiversity protection; promotion the values of agro-biodiversity consumers for increasing economic value of these food production and ensure sustainability for a longer period; promotion of public awareness for the value of agro-biodiversity and its incorporation in the education process; support capacity building in the institutions, as MAFWE, MoEPP, Research and education institutions, NGOs, Extension service, Federation of Farmers.



# Agriculture and biodiversity Plant Genetic Resources

Prof. Sonja Ivanovska, PhD

Skopje, January 2008

## **STRATEGY FOR SUSTAINABLE DEVELOPMENT**

### **BIODIVERSITY**

#### **Diversity of plant genetic resources used for food and agriculture in Macedonia**

According to the analysis of biodiversity richness within the frames of the European continent, Republic of Macedonia is placed at the top of the list of states as a “European hotspot”. Out of 6530 systematic units of higher plants determined in the Balkan Peninsula, 3000 were located in Macedonia [3]. The immense biodiversity historically created in Macedonia is a result of its complex development. The differentiation of indigenous species, as well as the invasion of other area migrants played a significant role in its genesis.

Plant genetic resources for food and agriculture (PGRFA) are critical component of the overall biodiversity, due to the fact that globally, the largest part of the food production relies on some 100 plants and animal species. Therefore, international *fora* within the Global Plan of Action, undertakes many actions aimed to conservation and sustainable utilization of PGRFA. Diversity of crops and cultivars has always been significant in the Balkans, region known as “secondary origin” for many crops. Macedonia, as a crossroad between Europe and Asia, with large migration of nations during the past, became home for diverse types of crops in the past centuries. Several reasons have contributed to creation and preservation of these crop resources:

- Long history, with vivid fluctuation of nations living on this territory, introducing their own landraces.
- Continental to Mediterranean climate, with an average of 200 sunny days per year, enabling optimal conditions to grow a variety of crops, cultivars and ecotypes.
- Influence of the society structure: multi - ethnical, national, religious and social traditions, existing since ever in Macedonia. Some of the differences among various social groups are: traditional food and products, cultivated crops, agricultural practices and knowledge etc.
- Economic slowdown of the country. At the larger scale, and on economic basis, mostly declared varieties are cultivated. However, during the previous decade, large agricultural companies were few. Most of the farmers were small, with commonly fragmented parcels of land, producing agricultural goods for own needs, or for the local markets. This circumstance impart as constraint towards invasive spread of modern cultivars on the fields. The transitional period resulted in extensive agricultural practices with reduced usage of commercial varieties and hybrids. Consequently, long forgotten local varieties returned back in the home farms and gardens.



- Macedonia is primarily mountainous country. There are areas where old local forms of crops survived owing to the "crumbled" structure of farming. Because of the climatic, eco - geographic and soil conditions as well as fairly primitive agricultural practices, those areas for many years served as refugia for primitive forms of cultivated plants. In some isolated villages, very often without basic infrastructure, new technologies in agriculture were never implemented, including new cultivars. Those far villages have been regarded as least advanced rurally and, therefore, most likely are to provide old varieties and landraces. Local landraces competed successfully with new varieties in some cases. It should be noted that in these areas application of fertilizers and pesticides is very limited.
- Absence of strong breeding programs in Macedonia that would offer new cultivars to the farmers. For many crops there are not developed programs at all. The only efficient one is wheat breeding program and for this reason it is very difficult to find old wheat landraces.

Consequently, all these factors have contributed to development of many local landraces and populations maintained within the families or villages with generations. Many of them, maintained by the farmers, could be found today, mostly in the rural areas. This especially stands for small grains, vegetables and fruit crops, because even in the urban areas people grow their own traditional varieties and exchange their seeds on the local markets. It is very difficult to identify the quantity and quality of crop diversity, because those farmers are not registered and no statistical data are available. Landraces grown in Macedonia till present were not inventoried, nor were included in the breeding programs.

Historically, the percentage of different crops in the overall production varies from season to season. Some of the crops, like cotton, poppy, hemp or flax, that used to be economically important in the past, are not cultivated any more [5]. Cultivars, breeding lines and landraces of these crops are not preserved. In similar pattern many other crops are facing distinction. In certain crops only commercial varieties are cultivated, while landraces are lost. For most of the endangered crops no conservation measures have been undertaken in the past. Additionally, the knowledge on the use of plant genetic resources by traditional societies is now threatened with extinction.

Traditionally, the large scale production is carried out with commercial varieties, mainly with foreign origin. Only small part of the production is based on domestic cultivars, created by the research institutions in Macedonia. This stands nearly only for wheat, whereas 50% of the fields are sown with domestic cultivars.

The significance of the local varieties is well-known and globally recognized. They are well adapted to the specific environmental conditions and guaranteed not high, but stable yields, even in unfavorable years. Having in mind the era of global climate changes such material could be possibly used as the only one for successful fight with changes, especially with drought. Knowing that food security is one of the Millennium goals, their role will be even more important in the future. Landraces are usually grown extensively, with very low or no inputs, thus making them ideal for organic agricultural production. The exceptional taste, very often absent in the modern genotypes is another reason for

their maintenance and use, particularly for production of healthy and functional food. Most of all, the value of the landraces is recognized for their possession of certain genes for tolerance to biotic and abiotic stresses, which could be transferred into the commercial varieties through classical breeding methods, or through genetic engineering today. In certain cases these landraces represent some symbol or indicator of given social group, emphasizing its distinction. For these reasons, landraces should be preserved to maintain their economical, scientific, traditional, social and environmental values.

Beside the landraces, significant part of PGRFA are old and obsolete varieties, as well as advanced breeding lines created within the breeding programs in the past. This component of biodiversity created through adding value to the breeding material is a source of many positive genes and traits that were important in the given period of cultivation: tolerance to disease, color and shape of the fruit etc. If there is not well organized gene bank, such material is usually maintained only in the breeding programs as working collection. Therefore, it depends on the breeder's list and could be very easily lost.

Today, many crop genetic resources face extinction or severe genetic loss, but detailed information is lacking. The developed countries had lost tremendous part of their biodiversity long time ago, and in the meantime they postulated new trend of healthy and quality food. They collect old plant material very intensively. Organic production has been promoted, based on crop cultivation without use of artificial fertilizers and chemicals. Only old landraces are suitable for such type of production. They give stable yields in poor growing conditions, compared to the modern varieties that express their genetic yield potential only when inputs are intensive. Recently, landraces are used directly for organic production. This enables to the farmers to earn extra profit from the added value, through certification of their products.

### **Conservation of PGRFA in Macedonia**

Throughout the world, activities for conservation of plant genetic resources are undertaken continuously for many years. These activities resulted with numerous national and international collections of seeds and plantings. Information on the collected material is maintained in databases, available through internet for all interested users.

Before the independence of Macedonia, the activities related to PGR were carried out through Belgrade (capital of former Yugoslavia). During that time, 1969-1971, under the international project, financed by USDA, large amount of plant resources (mostly cereals, fruits and vegetables) was collected from different regions in Macedonia, mainly landraces and wild relatives. They were evaluated, documented and conserved in USA gene banks. A simple search in GRIN database identified over 1500 accessions collected in Macedonia during the period 1970-1972, belonging to the genera *Beta*, *Brassica*, *Cucumis*, *Cucurbita*, *Daucus*, *Foeniculum*, *Malus*, *Pyrus* and *Petroselinum*. In 1998 a request for assistance was made by the Institute of Agriculture in Skopje to IPGRI to repatriate vegetables and fruit accessions duplicated in the US. It was agreed that USDA

would assist in the repatriation of Macedonian germplasm, which will probably take several years, depending on the reproductive potential of the participating institutes.

However, not even one accession was conserved in Macedonia from that time. Working collections for breeding purposes were maintained in the trial fields only, but over the time, depending on breeders' interest, many of them were lost. Having in mind that only few breeding programs were really active in Macedonia, it is clear that the number of crops were not so high.

Following the independence of Macedonia in 1991, there were several attempts for reorganization of the gene bank activities. In the mean time the existing accessions were being maintained in the trial fields only, which largely contributed to the loss of biodiversity.

Since 2004, very few activities for conservation of agrobiodiversity have been undertaken in Macedonia. Having in mind that there are no significant breeding capacities in RM, it is obvious that the PGRFA maintenance was not driven by economical reasons.

The initial activities for conservation commenced in 1995 when the Institute of Agriculture in Skopje initiated collaboration with the Ministry of Agriculture, Forestry and Water Economy. As a result of those efforts several separate projects were financed by the Ministry, realized in 3 research institutes: Institute of Agriculture in Skopje, Institute for Southern Crops in Strumica and Institute for Tobacco in Prilep. Cold chambers for medium-term storage were built at each Institute. The created collections were consisted mainly of commercial varieties, many of them with foreign origin, and breeding lines [6].

The Institute of Agriculture in Skopje maintained in total 1642 accessions of 33 crops, or 1063 accessions of 6 cereal crops, 94 of 3 vegetable crops and 10 accessions of 8 forage crops. A field collection of 15 fruit crops with 324 accessions and 151 grape vine accessions was also created.

The Institute for Southern Crops in Strumica (since 2007 it belongs to the University Goce Delchev in Shtip and it is renamed in Faculty of Agriculture) maintained 226 accessions of 9 vegetable crops and 40 of 3 industrial crops (pepper, tomato, melon, peanuts, cotton and sesame), or 266 accessions in total.

The Institute for Tobacco in Prilep maintained 117 tobacco accessions. That makes a collection of 43 crops presented with 2025 accessions in total. These numbers stand for the years before 2005.

These collections were consisted of varieties, many of them with foreign origin, and some breeding lines. No landraces were preserved within the collection, except for small number of rice, tobacco and peanuts, collected long time ago for breeding purposes. Beside this negativity, there were other gaps due to lack of financials and not adequate governmental understanding. Accessions were not documented properly, passport data

were not complete, only few crops were characterized according IPGRI descriptors and the number of descriptors was rather small. The evaluation referred only to tolerance to some diseases. The seeds were not dried before storing, while the germination was not checked regularly. All data were not electronically stored and presented to any web page. Therefore, accessions were used only by domestic breeders as working material.

Project idea was to establish Central Gene Bank located at the Institute of Agriculture in Skopje.

In 2004 a SEEDNet project (South Eastern European Development Network for crop genetic resources) was initiated in the region. Eleven partners are participating in this project, out of which Macedonia played key role in project initiation and implementation. The activities and cooperation on a regional level are performed within the working groups on specific crops while they are agreed by the Steering Committee consisted by one member from each partner. SEEDNet was recognized by FAO as official organization/network for conservation of PGRFA in 2006.

Within this project many activities were undertaken on a national level. Facilities and infrastructure for conservation of PGRFA were upgraded in the first phase of the project. Interim National Committee was created by scientists, breeders and representatives from the Ministry of Agriculture, Forestry and Water Economy, and from the Farmers Association. They agree that Central gene bank would be located at the Institute of Agriculture in Skopje, where medium-term storage chamber with seed collection and field collections already existed before. Another room was adapted for long-term storage and 13 freezers were placed in it. Vehicle for collecting missions in mountain regions, equipment for seed drying and packing and other equipment for evaluation of the collections were provided by SEEDNet as well.

The activities are planned and realized each year by seven Working Groups (WG) on: WG on cereals, WG on forages, WG on vegetables, WG on fruits, WG on *Vitis*, WG on industrial crops and WG on MAPs. WG on documentation is currently in process of establishment. Most of the activities within the first phase of the project were inventory of the old collections and collection of landraces in the field.

The inventory showed some alarming results, especially of the seed collection. Germination and viability of the seeds were very low, far below the gene bank standards. It was decided that only accessions with Macedonian origin will be regenerated and maintained in the gene bank, while foreign varieties could be maintained by the breeders as working collection.

Botanical garden was also established for ex-situ conservation of medicinal and aromatic plants (MAPs), placed at the Faculty of Natural Sciences and Mathematics in Skopje.

In 2005 and 2006 some activities were undertaken for on-farm conservation. Many landraces were collected from the farmers that are currently in process of characterization

and evaluation. This will be followed by selection of farmers to participate in on-farm conservation.

As a result of the work financed by SEEDNet project, as well by other sources, following results were achieved in the period 2004-2007:

Seed accessions regenerated	344
Seed accessions at long term storage	579
Seed accessions with passport data	579
Seed accession data in EURISCO	337
Field accessions regenerated	424
Field accessions at long term storage	994
Field accessions with passport data	994
Field accession data in EURISCO	540

### **Legal basis for conservation and sustainable utilization of PGRFA in Macedonia**

Convention on Biological Diversity (CBD) was signed by Macedonia in 1998, and ratified in 1998. This was the first legally-binding document for Macedonia that created international liability and obligation to develop a national program for conservation of plant genetic resources. The International Treaty on Plant Genetic Resources (FAO Resolution 3/2001) is signed, but yet not ratified.

In 2002 a project was initiated by the Ministry of Environment and Physical Planning for the establishment of a National Program for biodiversity conservation. It was financed by the World Bank and realized by local experts. The project resulted with 2 documents, adopted by the Government in 2004: Country Study for Biodiversity of the Republic of Macedonia [3] and Biodiversity Strategy and Action plan of the Republic of Macedonia [2]. The status and the use of PGRFA capture only small part of the documents, but in any case they represent a legal frame and a good starting point, the same documents to be prepared for PGRFA only, by the Ministry of Agriculture, Forestry and Water Economy.

Macedonia has legal liability to protect the biodiversity used in agriculture and to use its potentials for rural development, according to the Law on Agriculture and Rural Development (in force from 1.1.2008). For that purpose Ministry compiles a list of endangered autochthonous crops. It is predicted that for recommendations for monitoring and analyses of each crop will be given, along with the measures for its conservation. Within the same Law general provisions are given for the gene bank operation: collection, recording, characterization, evaluation, regeneration, maintenance multiplication and exchange of the autochthonous or domesticated genetic material. However, within the Strategy for Agriculture and Rural Development no specific actions

are predicted for inventarization of crop diversity in the fields, registration and conservation, nether for its utilization.

Although agrobiodiversity is not specifically integrated within the Law on Organic Production, the maintenance of agrobiodiversity, traditional practices and cultural heritage in agriculture are planned within the Strategy for Organic Production (both documents are prepared by the Ministry of Agriculture, Forestry and Water Economy).

According to the Law for Seed and Planting Material (adopted in March 2006), Central Gene Bank is responsible for maintenance of all varieties that are officially in trade and for the conservation of landraces as well. This Law is followed by many by laws, some adopted in 2007, few in process of adoption, but no by law on the gene bank activities is worked out. Within the previous years very small amount of finances were provided from the Ministry for this purpose (only 500euros in 2007). The need for constant item in the budget intended for conservation of PGRFA is more than obvious.

Other documents that concern PGRFA are:

- Cartagena Protocol on Biosafety, signed by Macedonia on 26.7.2000 and ratified on 12/09/2005.
- National Biosafety Framework for Republic of Macedonia, prepared in 2004 by the Ministry of Environment and Physical Planning, published in 2005.
- Law for Protection of New Plant Varieties (Official Gazzete 84/4.7.2007). The Law is prepared according to UPOV 91, and Macedonia is currently in process of becoming UPOV member.
- Law on nature protection, prepared by Ministry of Environment and Physical Planning, adopted 22.6.2005.

### **Institutions involved in conservation of PGRFA in Macedonia**

Legal institutions responsible for supporting PGRFA conservation in Macedonia are: Ministry of Agriculture, Forestry and Water Economy and Ministry of Environment and Physical Planning. However, their policy and support is very inconsistent, in terms of finances provided for this goal in the previous years, in terms of issuing documents to be adopted by the Government, and in terms of human resources working in this field.

Therefore, it is urgently needed to build consistent item in the budget of the Ministry of Agriculture, Forestry and Water Economy intended for supporting PGRFA conservation activities, and for maintenance of the collections in the Central gene bank. Creation of a National Program with a Strategy and Action Plan is priority task to be initiated and supported by this Ministry. An office, or at least one officer for agrobiodiversity should be appointed within the Sector for Rural Development.

Governmental institutions that are participating in conservation and maintaining collections are as follows:

*Institutions that maintain collections*

- Institute of Agriculture, Skopje (Central Gene Bank, maintains the biggest ex situ collection, both seed and field)
- Institute of Tobacco, Prilep (maintains collection of tobacco)
- Faculty of Agriculture, Shtip (previous Institute for Southern Crops, Strumica, maintains collection of some industrial and vegetable crops)

*Institutions that participate in conservation of PGRFA with their resources*

- Faculty of Agricultural Sciences and Food, Skopje
- Faculty of Pharmacy, Skopje
- Faculty of Natural Sciences and Mathematics, Skopje

*Private cereal breeding company Agrounija, Skopje*

Beside GO, many NGOs, associations and farmers are participating in this actions, as well, on a temporarily basis.

**Fundaments for building National Program of PGRFA conservation in Macedonia**

The enlargement of the EU presents challenge for the rich natural heritage of the accession member states. The share of employment in agriculture is on average five times higher in the acceding countries than in the EU while agricultural land use covers about 50% of Europe's land surface.

However, when new member states enter the EU, they receive subsidies from the EU's Common Agricultural Policy (CAP) in form of area payments. There are concerns that the new soft money into the new member states directed for Rural Development and Structural Funds will destroy traditional landscapes. In light of EU-wide agricultural reforms, it would make a difference if farming not only produced food and fibers, but also more consciously contributed to safeguarding and managing the environment in rural areas, including providing employment, recreational services and a quality life for the population.

In Europe the use of traditional varieties is already being enhanced through providing incentives such as subsidies linked to the cultivated traditional crops and landraces. The results may give an opportunity to our society and the Government to consider similar management of the genetic erosion and high-input agricultural problems.

Despite past efforts by the Community to address the problem of biodiversity reduction or loss, the existing measures are insufficient to reverse the present negative trends. It is

therefore both essential and urgent for the Community to develop a strategy and take action towards the conservation and sustainable use of biodiversity. The Republic of Macedonia intends to incorporate its national strategy for PGRFA preservation within the general strategy of the EU.

National Program (NP) for PGRFA conservation in Macedonia should incorporate EU and FAO policies. As Macedonia is a member of ECP/GR, all activities incorporated in the NP should be synchronized with the activities of this body. NP should provide legal basis for long-term conservation and sustainable utilisation of the diversity of PGRFA in Macedonia and within the region through a well co-ordinated actions. Final goal for Macedonia is to participate equitably in national decision-making and benefit sharing of plant genetic resources.

The Strategy should incorporate support actions for collection of landraces from the farmers along with the traditional knowledge for their cultivation and maintenance. These landraces should be characterized and evaluated by the scientists, so that their value as a breeding material or direct agricultural material could be properly assessed.

There are several possibilities for sustainable utilization of the conserved material that will lead toward improvement of the agriculture in the country and development of rural areas.

Where active breeding program exists, material will be used in the hybridization schemes to incorporate some useful genes in the modern varieties and most of all to successfully cope with the global climate changes. Material in some cases could be improved directly by adding value with positive selection and with improvement of the agricultural practices and breeding methods applied by farmers. Very effective method to add value to the farmer's landraces is to organize certified organic production.

Another value of the conserved material is that some landraces that are already well-known in the region and broader could be used for direct multiplication. In case of very famous landraces or traditional products they should be protected by their geographic origin. In this case farmer's awareness on the potential of these landraces should be raised through brochures, campaigns, local fairs etc.

In this manner, farmers in the rural areas will recognize the value of the plant biodiversity they are maintaining. It will encourage them to have higher participatory approach in the protection of their plant material that will be included in the conservation programs carried out by the researchers. The results from this action will be used for establishment of local community agrobiodiversity systems that will contribute to sustainable seed supply and exchange. This system will have direct impact on improving food security and safety, based on the cultivation of a wide range of food crops.

The overall economic situation in rural areas will rapidly improve in such situation and it will influence on decreasing trend of rural population, especially young and female. These target groups from rural areas will get access to education and opportunity to



improve their living through increasing of their income. Finally such situation will contribute to eradication of poverty in rural areas where agriculture is the major source of income.

### **Strategy and actions to be undertaken for sustainable conservation and utilization of PGRFA**

All of the actions performed for conservation of PGRFA in Macedonia until present are performed within several projects, without official national program and strategy. Therefore they were very inconsistent in periods, depending on the objectives and budget of the projects. The actions are not systematic as well, lacking in serious support by the governmental policy. Many activities were duplicated, or were not properly realized. Results were very often presented to the public or to the farmers immediately after the project termination, without building a system for their continuous transfer and use.

There were several attempts to make an inventory [1,4,5] of the quantity and quality of PGRFA in Macedonia. They refer to a pilot regions, only meaning information is missing on the diversity in whole territory. In the meantime, some crops disappeared completely from the fields in Macedonia. Within the last 50 years many of the landraces and autochthonous populations were replaced by newly created varieties, mainly with foreign origin. This process was extremely progressive in wheat, barley and industrial crops. No specific measures were supported by the Government to protect these crops and landraces from further extinction.

Therefore the Strategy for sustainable conservation and utilization of PGRFA should comprise following actions:

#### *1. Raising awareness of the importance of PGR*

- On governmental level, to the governmental institutions responsible for policy creation: Ministry of Agriculture Forestry and Water Economy, Ministry of Environment and Physical Planning, Ministry of Economy, Ministry of Education and Science, Agency for Protection of Intellectual and Industrial Property and Chamber of Commerce. The role and importance of PGRFA should be explained to the representatives, so that they could initiate support measures in the ministries.
- On scientific level, to inform the scientific society on the realized activities and to provide their active participation in the further activities.
- On public level, including the farmers, to provide broader support and participatory approach in the conservation activities. All means for public informing could be used for this purpose.

#### *2. Development of National Programme for PGRFA conservation and sustainable utilization*

National Programme (NP) have to be developed by the Ministry of Agriculture, Forestry and Water Economy, and adopted by the Government. In this way it will represent legally-binding document which will enable sustainable support of the activities through the Ministry. For that purpose there is a need for establishment of an office for PGRFA within the Ministry. Within the NP stakeholders will be identified, along with their capacities, resources and responsibilities. A mechanism for monitoring of the status and performed actions should be established.

### *3. Managing of the Central Gene Bank (CGB)*

All activities regarding PGRFA should be coordinated through the CGB (placed at the Institute of Agriculture in Skopje). Currently, CGB with its activities is supported by the SEEDNet project. The manager and the other scientists and curators are employees of the Institute. This situation should be urgently changed as there are serious threats for the created collection to be lost after the project termination. At least five persons should be full-time engaged in CGB and financed by the Government to manage the ex situ collections (seed and filed), characterization, evaluation of the accessions, and upgrading and maintenance of the database. Duplicates of all other collections maintained and used at the other institutes should be placed in the CGB. Collection missions have to be organized through the CGB as well, in cooperation with the scientists from other institutions.

The need for governmental support of CGB is strongly emphasized, due to the fact that according to the Law on seed and planting material CGB is responsible for maintenance of the varieties which are in official trading system in Macedonia.

### *4. Building capacities for conservation and sustainable use of PGRFA*

Central Gene Bank is the institution with basic capacities, infrastructure, equipment and human resources for conservation of PGRFA. However, there are some serious problems coming out of the lack of financials and experts, especially in the field where SEEDNet is not providing support.

First of all, only one employee of the Institute is appointed to manage the CGB. Several breeders of the institute are working actively on PGRFA, among the other obligations they have in their institution. They are well in some areas of conservation. Further training for them and for other experts, from other institutions, is necessary. There is also an urgent need more young scientists to be employed at the Institute that could be appointed to manage the collections in CGB.

New equipment for implementation of proper agricultural practises is needed, as many treatments are currently done manually (for example, sowing, seed cleaning etc.). Agricultural machines are very old and non functional. New equipment should be provided for material evaluation, especially for chemical characteristics and genome analyses.

#### *4. Conservation of PGRFA*

Old collections are already in process of inventarization within the SEEDNet project. As their germination percentage is very low, regeneration is needed. All accessions originating from Macedonia should be regenerated and multiplied for storing in CGB. Having in mind that old collections had very few accessions of landraces, there is urgent need for collecting missions. They have to be organized systematically in all regions of Macedonia with participation of experts for different crops. These missions are excellent possibility, during collecting of material, to perform an inventory of the material grown on the farmer's fields. There are several stages to be followed for proper conservation of PGRFA: complete documentation of the material, characterization and evaluation according to IPGRI (International Plant Genetic Resources Institute) descriptors, and later on different approach of storing the material: for seed and field collection. Besides storing seeds in CGB, important landraces have to be conserved on-farm as well, to enable dynamic process of their adaptation in local climate. Finally, one of the stages that is most important for further use of the collections, is placing all information on the material in a database maintained by CGB. Database should be available, through internet, to the end users, mostly breeders, scientists and farmers.

#### *5. Sustainable utilization of PGRFA*

Once the material will be properly characterized and evaluated actions should be directed towards its sustainable utilization. This could be promoted on several ways:

- Breeding lines, landraces and wild relatives will be used by the breeders for hybridization schemes. They will have the opportunity to screen the available material conserved in the CGB through the database placed on internet. Depending on the interest for certain trait (tolerance to biotic or abiotic stresses, taste, quality, shape, colour) breeders will be able to use the material characterized with the specific trait. This will contribute to enlargement of the genepool of modern varieties, which will be more adequate for growing specific climates. Higher yields will be obtained due to reduction of losses caused by drought and diseases, while economic profit will be larger because of the decreased inputs and improved quality and taste.
- Landraces could be improved by adding value for some traits. In case when the landraces have excellent taste or tolerance to disease, but low yield, farmers in collaboration with the breeders/scientists could apply minor breeding or selection methods to improve negative traits.
- Landraces could be directly used for certified organic production. Very often farmers do not apply any chemicals when they cultivate landraces in their fields or gardens. This especially stands when the production is for own needs only. With the collaboration of experts for organic production they could organize such production which will lead to economic profit for the poor farmers and development of farmers organizations.
- For well-known landraces, agricultural products or traditional food obtained by such material, a procedure for their protection based on the geographic origin

- should be initiated. This will lead to creation of brand of Macedonian products and also to realization of increased profit in case of successful export of such products.
- Some landraces are used for production of traditional products, mostly decorative or for other purpose, than food. Collection and protection of such landraces and traditional knowledge will secure the life of those products. They could be promoted within the rural tourism that is very much in trend lately.
  - Conservation of landraces will secure the informal seed supply system, which is very often the only one in the rural areas. In the villages where farmers are not cultivating crops for the market, facilities for trading modern cultivars do not exist. Farmers usually save some seeds for the next season or the buy/exchange seeds on the local markets. This means that if hazard conditions take place (major frost, drought or disease, war, flood) farmers will lose the material. It will contribute to radical change of their livelihoods and habits and to serious food shortage. CGB in this case could intervene with multiplication of the conserved seeds and prevent severe regional destruction.
  - Traditional knowledge in case of medicinal and aromatic plants is very precious, having in mind the trend to use natural products as medicine and food. MAPs are very characteristic in their chemical compounds for certain microregions. Some of them could be found in few places only, with very small number of plants. They are endangered by extinction due to uncontrolled human collection, especially in the rural areas, where this is the only source of living for some people. Conserved MAPs are the only source for renewal of the extincted populations, meaning renewal of income source for huge number of habitants.
  - Collection and conservation of landraces, especially in the countries as Macedonia where there are not many strong breeding programs, will have the major role for introducing new crops on the market. Some of them are promoted today as functional food. This will contribute to satisfying customers needs and to improve the structure of the cultivation fields in the profitable agricultural production.

All these possibilities for utilization of PGRFA should be recommended to the potential end users by various means of campaign. The utilization itself needs to be systematically integrated and realized within the National Programme.

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**Agriculture sector core group**

**Report for Environmental integration  
into the future CAP, Cross  
compliance, Agri-environmental  
Measures and Agri-environmental  
indicators**

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**Skopje, January 2008**

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## List of Abbreviations

<b>AE</b>	Agri-environment
<b>AEP</b>	Agri-environment program
<b>AIS</b>	Agri-environmental information system
<b>CAP</b>	Common Agricultural Policy
<b>CBD</b>	Convention of Biodiversity
<b>DAD</b>	Domestic Animals Diversity
<b>DPSIR</b>	Driving forces - Pressures - State - Impact - Responses
<b>EAP</b>	Environmental Action Programme for Central and Eastern Europe
<b>EU</b>	Europe Union
<b>GAP</b>	Good Agricultural Practice
<b>GDP</b>	Gross domestic product
<b>GFP</b>	Good Farming practice
<b>GIS</b>	Geographical information system
<b>GHG</b>	Green house gases
<b>GMO</b>	Genetically-Modified Organisms
<b>IPARD</b>	Instrument for Pre-Accession for Agricultural and Rural Development
<b>IRENA</b>	Indicator Reporting on the integration of Environmental concerns into Agricultural policy
<b>LGS</b>	Local-self government
<b>MAFWE</b>	Ministry of Agriculture, Forestry and Water Economy
<b>MEPP</b>	Ministry of environment and physical planning
<b>ME</b>	Ministry of economy
<b>MH</b>	Ministry of health
<b>NARDS</b>	National Strategy for Rural and Agricultural Development
<b>NEA</b>	National Extension Agency
<b>NEAP</b>	National ecology action plan
<b>NGO</b>	Non-governmental organization
<b>WTO</b>	World Trade Organization



## Introduction

The concept of sustainable agriculture is a relatively recent response to the decline in the quality of the natural resource base associated with modern agriculture (McIsaac and Edwards 1994). Today, the question of agricultural production has evolved from a purely technical one to a more complex one characterized by social, cultural, political and economic dimensions. A wider understanding of the agricultural context requires the study between agriculture, the global environment and social systems given that agricultural development results from the complex interaction of a multitude of factors. It is through this deeper understanding of the ecology of agricultural systems that doors will open to new management options more in tune with the objectives of a truly sustainable agriculture.

## 1. Environmental integration into the future CAP

### Environmental integration into the future CAP of EU

#### History

Integration of environmental goals into agricultural policy began in the 1980s. Since then the CAP has been increasingly adapted to sustainability goals.

During the 1980s and 1990s the EU brought in policy measures to try to limit production of surplus products. A variety of measures was used (at first voluntary, then compulsory set-aside where farmers leave a percentage of their land uncultivated); fixed quotas on milk production, with penalties for overshoots; limits on the area of crops/numbers of animals for which a farmer could claim subsidies. Gradually these policies succeeded and surpluses were reduced. CAP reforms in the 1990s, partly resulting from the World Trade Organisation (WTO) agreement of 1995, reduced the capacity of the EU to use export subsidies (i.e. to compensate exporters for exporting products at world market prices which were lower than EU prices). As a result of these policy initiatives the EU has reduced its use of export subsidies while at the same time maintaining and even increasing its agricultural exports.

#### Concept

The complexity of the relationship between agriculture and environment harmful and beneficial processes, diversity of local conditions and production systems has conditioned the approach to environmental integration in the context of the CAP.

The new CAP's objectives include helping agriculture to fulfil its multifunctional role in society: producing safe and healthy food, contributing to sustainable development of rural areas, and protecting and enhancing the status of the farmed environment and its biodiversity. It has also been important for the EU to establish common rules for the approval of genetically-modified organisms.

The new, reformed common agricultural policy has clearly taken new consumer demands (91 % of EU citizens think it is a core activity of the common agricultural policy to guarantee safe food and 89 % consider environmental protection to be another key function).

The links between the richness of the natural environment and farming practices are complex. While many valuable habitats in Europe are maintained by extensive farming, and a wide range of wild species rely on this for their survival, agricultural practices can

also have an adverse impact on natural resources. Pollution of soil, water and air, fragmentation of habitats and loss of wildlife can be the result of inappropriate agricultural practices and land use. EU policies, and notably the CAP, are therefore increasingly aimed at heading off the risks of environmental degradation, while encouraging farmers to continue to play a positive role in the upkeep of the countryside and the environment.

Accordingly, farmers are no longer paid just to produce food. Today's CAP is demand driven. It takes consumers' and taxpayers' concerns fully into account, while giving EU farmers the freedom to produce what the market wants. In future, the vast majority of aid to farmers will be paid independently of what or how much they produce. In the past, the more farmers produced the more subsidy payments they received. Under the new system farmers will still receive direct income payments to maintain income stability, but the link to production has been severed. In addition, farmers will have to respect environmental, food safety and animal welfare standards. Farmers who fail to do this will face reductions in their direct payments (a condition known as 'cross-compliance'). Severing the link between subsidies and production (usually termed 'decoupling') will make EU farmers more competitive and market oriented. They will be free to produce according to what is most profitable for them while still enjoying a desirable stability of income.

The EU tries to help the environment by:

- offering financial assistance to encourage change by, for example, reducing the numbers of animals per hectare of land, leaving field boundaries uncultivated, creating ponds or other features, or by planting trees and hedges and so going beyond conventional good farming methods;
- helping with the cost of nature conservation;
- insisting that farmers must respect environmental laws (and laws on public, animal and plant health) and look after their land properly if they wish to qualify for direct income payments.

EU legislation on genetically-modified organisms (GMOs) has been in place since the early 1990s and extended and refined since then. The EU introduced specific legislation designed to protect its citizens' health and the environment (while also creating a unified market for biotechnology). There is an approval process based on a case-by-case assessment of the risks to human health and the environment before any GMO or product consisting of or containing GMOs (such as maize, oilseed rape or micro-organisms) can be released into the environment or placed on the market.

### *Rural development*

The future EU rural development policy (up to 2013) focuses on three key areas: the agrifood economy, the environment and the broader rural economy and population. The new generation of rural development strategies and programmes will be built around four axes, namely: axis 1, on improving the competitiveness of the agricultural and forestry sector; axis 2, on improving the environment and the countryside; axis 3, on the quality of life in rural areas and diversification of the rural economy; and axis 4, on Leader.

### *Community strategic guideline in improving the environment and the countryside*

To protect and enhance the EU's natural resources and landscapes in rural areas, the resources devoted to axis 2 should contribute to three EU-level priority areas:

biodiversity and the preservation and development of high nature value farming and forestry systems and traditional agricultural landscapes; water; and climate change.

The measures available under axis 2 should be used to integrate these environmental objectives and contribute to the implementation of the agricultural and forestry Natura 2000 network, to the Göteborg commitment to reverse biodiversity decline by 2010, to the objectives laid down in Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy [7], and to the Kyoto Protocol targets for climate change mitigation.

In order to meet these priorities, Member States are encouraged to focus support on key actions. Such key actions could include:

(i) promoting environmental services and animal-friendly farming practices. European citizens expect farmers to respect mandatory standards. But many also agree that farmers should be remunerated for signing up to commitments which go further, delivering services that the market will not provide alone, particularly when focused on specific resources of particular importance in the context of agriculture and forestry, such as water and soil;

(ii) preserving the farmed landscape and forests. In Europe, much of the valued rural environment is the product of agriculture. Sustainable land management practices can help reduce risks linked to abandonment, desertification and forest fires, particularly in less-favoured areas. Appropriate farming systems help to preserve landscapes and habitats ranging from wetlands to dry meadows and mountain pastures. In many areas, this is an important part of the cultural and natural heritage and of the overall attractiveness of rural areas as places in which to live and work;

(iii) combating climate change. Agriculture and forestry are at the forefront of the development of renewable energy and material sources for bioenergy installations. Appropriate agricultural and forestry practices can contribute to the reduction in greenhouse gas emissions and preservation of the carbon sink effect and organic matter in soil composition, and can also help in adapting to the impacts of climate change;

(iv) consolidating the contribution of organic farming. Organic farming represents a holistic approach to sustainable agriculture. In this respect, its contribution to environmental and animal welfare objectives could be further reinforced;

(v) encouraging environmental/economic win-win initiatives. The provision of environmental goods, particularly through agri-environmental measures, can contribute to the identity of rural areas and their food products. They can form a basis for growth and jobs provided through tourism and the provision of rural amenities, particularly when linked to diversification into tourism, crafts, training or the non-food sector;

(vi) promoting territorial balance. Rural development programmes can make a vital contribution to the attractiveness of rural areas. They can also help ensure that in a competitive, knowledge-based economy, a sustainable balance between urban and rural areas is maintained. In combination with other programme axes, land management measures can make a positive contribution to the spatial distribution of economic activity and territorial cohesion.

### *Environmental Policy*

Environmental policy rests on broad aims and principles, established in the Treaty and elsewhere. At a Community level these are developed into more concrete objectives; the SIXTH ENVIRONMENTAL ACTION PROGRAMME sets a binding framework for the period up to 2010. Individual measures specify more concrete objectives and standards to be reached. A significant number of Community environmental measures affect agricultural production and so establish standards which farmers need to meet; national and regional measures supplement and elaborate EU instruments. These standards are established almost wholly outside the CAP and are changing over time. They represent a pre-condition for an integration strategy and a starting point for considering how agricultural policy can help to deliver the desired environmental outcome. It is not the role of the CAP to set these standards but it can contribute significantly to their enforcement and the adjustment of the farm sector to society's changing expectations and requirements on the environment.

An integration strategy must respect fundamental principles, such as the Polluter Pays and recognise the challenge set by environmental standards - such as those which will arise from the implementation of the Water Framework Directive 2000/60. It should identify means within the CAP of supporting the attainment of these goals. For example possible mechanisms include cross-compliance and the verifiable environmental standards currently required for certain measures under the second pillar. Approaches can be taken in parallel, at Member State and EU level. Water policy should be a key concern over the coming decade.

Enhanced agricultural performance in this area will be a priority and an integration strategy should clarify the ways in which CAP policies can be developed and implemented to support the goals established in the Water Framework Directive and elsewhere. At present there is a severe shortfall in the implementation of many EU measures which relate to the farmed environment, including the Nitrates, Birds and Habitats Directives. Full and effective implementation of these measures would be an important starting point for a successful integration strategy. A clear reference level for agriculture is essential.

**The agri-environmental strategy of the EU CAP is aimed at enhancing the sustainability of agroecosystems. It sets specific objectives as: quality and balance use of water, agrochemicals risk reductions, reduction of degradation of soil, climate change and air quality and landscape and biodiversity preservation. Since Agenda 2000, the Common Agricultural policy has two pillars: the market and income policy and sustainable development of rural areas. The 2003 CAP reform brings better quality to environmental integration, with new or amended measures to promote the protection of the farmed environment in both pillars. As regards of the rural development policy compliance with minimum environmental standards is a condition for eligibility for support under several different rural development measures (support of young farmers, improving the processing and marketing of agricultural products). Only environmental commitments above the reference level of Good Farming practice (GFP) may qualify for agri-environmental payments.**

### **Environmental integration in agricultural policy in Republic of Macedonia**

Integration of agriculture in environmental protection is a very important objective of the R Macedonia's further development. Little attention has been given in the past to the

subject of agro-environment (biodiversity, agriculture and the environment), which has conversely increased importance in the EU Common Agricultural Policy over the years (agro-environmental measures are the only obligatory part of the rural development Acquis communautaire).

#### *National Strategy for Rural and Agricultural Development*

The objectives of the Macedonian agri-environmental policy should be to protect and improve physical, chemical and biological soil conditions, to reduce the water-related environmental problems in agriculture, to preserve traditional low input farming systems and traditional landscapes, to provide alternative use for areas with low potential, preserve valuable grassland habitats and arable land through extensive cultivation methods or landscape management on high nature value areas preserving and protecting biodiversity, sensitive habitat types and specific rare species and to provide effective tools for the implementation of the Nitrate Directive, Water Framework Directive and the future NATURA 2000 network.

The Ministry of Agriculture, Forestry and Water Economy prepared the Strategy for Approximation of the Macedonian Agricultural Food Sector with the Common Agricultural Policy (CAP) of the EU. This document provides the foundation for the future agricultural reforms that are yet to be implemented over the forthcoming period. Pursuant to the Strategy, the reforms in the agricultural sector will be implemented through three main pillars: policy reforms, institutional reforms and legislative reforms. Policy reforms are to be implemented through the following instruments: introduction of structural measures for rural development to enhance the competitiveness of the producers; **support to environmental protection in agriculture and of organic farming**; and increase in the state support to agriculture. In this context, according to the Decision taken by the Government of the Republic of Macedonia, the MAFWE, in the course of 2005, approached the development of Strategy and Law on Rural Development.

The National Strategy for Rural and Agricultural Development 2007-2013 (NARDS) has two interlinked purposes. The first one is to provide the Macedonian Government (and, more in particular, the Ministry of Agriculture, Forestry and Water Economy - MAFWE) and to the stakeholders (rural dwellers, farmers and their associations, producer groups and processors) a multi-annual reference material – strategy and a tool for the development of Macedonian agriculture and rural areas. The second one is to establish a base for supporting the drafting of the hierarchically lower level agricultural and rural development operational plans, in particular the Instrument for Pre-Accession for Agricultural and Rural Development (IPARD) plan, and for their discussion with the European Commission.

#### *Rural development policies -AXIS 2 - Agri-environmental measures and local rural development*

In order to establish an agri-environmental policy, the following activities should be implemented:

EU primary legislative regulations should be introduced in the Macedonian legal system, as well as specific regulation(s) should be developed for Good Agricultural Practice/Cross Compliance containing the minimum standards for average farming practice (minimum requirements for nutrient management, pesticide use, avoid of land abandonment, maintenance of permanent grasslands, etc). Once adopted these

regulations will be the baseline for agro-environmental payments and at the same time should be the minimum requirement for direct payments (agricultural support programme). A regulation should be developed for (pilot) AE support system containing objectives, measures, eligibility, beneficiaries, payment rates, selection criteria, monitoring, control and sanction measures.

MAFWE has to establish agri-environmental capacity within the Rural Development Department. An interdisciplinary AE working group should be established which should be the main panel for the establishment of AE policy and measures. This working group should involve officials from the MAFWE, MEPP, Ministry of Finance, Ministry of Health, Institute of Agriculture, Faculty of Agriculture and Food, NEA, farmers association and relevant NGOs. Different information material should also be developed for broader purposes.

MAFWE should establish an agri-environmental information system within AIS. This system should be the (information decision-making support) source for policy development and implementation of baseline data collection for AE policy planning (soils, water, biodiversity), GIS system for AE mapping, training material development, advisory system background, monitoring). The Agri-Environment Information System would also serve the obligatory reporting function about AE development to the European Commission. MAFWE (with other relevant Ministries) should prepare a set of monitoring guidelines and standards for soil and water, the establishment of a systematic operational agri-environmental monitoring program for soil, surface and groundwater and biodiversity, the designation of water bodies affected by pollution.

## IMPLEMENTATION PLAN OF PROPOSED POLICIES

### 3) Achieve sustainable resource management

Agro-environment	Leading Agency/ Partner	2007	2008	2009	2010	2011	2012	2013	Potential Sources of Financing
Establish Working group	MAFWE/MoEPP/MoF, MoH, MoSE								GoM
Enactment of EU primary legislative regulations	MAFWE								GoM funds
Prepare a set of monitoring guidelines and standards	MAFWE/MoEPP								
Establish AE Capacity in MAFWE, incl. Inspection	MAFWE								GoM, Bilateral Aid
Pilot AE Programs	MAFWE								GOM
Establish (part of IACS) AE GIS	MAFWE								GOM, bilateral
Implementation of AE Measures	MAFWE								GoM, IPARD

### *Environmental Policy -NEAP II*

The Republic of Macedonia, like other Central and East European countries in transition, has started the process of reform towards a market economy. As part of the economic development program, the Republic of Macedonia is shaping its environmental policies and identifying priority actions to protect human health and the environment and to utilize its natural resources in a sustainable manner. These policies and actions are consistent with the 'Environmental Action Programme for Central and Eastern Europe' (EAP), the document adopted at the Ministerial Conference in Lucerne in 1993.

In meeting its goals towards protecting the environment, the Government of the Republic of Macedonia has prepared the National Environmental Action Plan (NEAP I and II). The NEAPs were developed in a participatory manner with valuable inputs from different agencies, industries, municipalities, private sector organizations, and research

institutions, the public and nongovernmental organizations (NGOs). The Ministry formed working groups which were assigned to develop Thematic Papers on different aspects of the environment, e.g. air quality, water resources, agriculture etc.

*Further actions in Republic of Macedonia integration of agriculture in environmental protection toward their adaptation to CAP of EU*

According to the above mentioned, pre-accession countries like R Macedonia have to use certain mechanisms and policies in order to achieve integration of agriculture in environmental protection toward their adaptation to CAP of EU.

*Biodiversity protection*

Action at different levels is required to protect biodiversity losses from negative influences of agriculture. These are changes in agricultural, ecological, agricultural and social policies as well as in attitude towards civil organizations (NGO). At these stages of development R Macedonia has conducted few necessary steps:

Preparation of *country study* of Agriculture Policy and Biodiversity conservation which will summarize general agricultural situation, analyze environmental impacts and problems caused by agriculture, potential threats to biodiversity and possibilities of influencing agriculture policy to protect biodiversity. It has to refer on rural development strategy and sustainable development policy of rural areas.

Since Rio de Janeiro of 1992 and adoption of the Biodiversity Convention, numerous governmental and NGO undertakes intended to influence agriculture policy and draw recommendations which follow the stipulations contained in the CBD. Besides the Study of Biodiversity of the Republic of Macedonia, other *principles of CBD should be implementing* related to agriculture policy. For instance, conservation of agricultural genetics resources including the protection of endangered breeds of domestic animals according to FAO Program (DAD), should be permanently implemented (Ex situ and in situ conservation).

One of the very important objectives in that context is to provide *education of the farmers* for agri-environmental issues through different programs related to organic schemes of production maintaining traditional methods of farming, as well as to *Good Agricultural Practice* (GAP). It has to be mentioned that agriculture land accommodates a diverse *development of agri-environmental indicators* which provides contextual information concerning the diversity of agri-ecosystems supporting better understanding linkages between agricultural practice and harmful or beneficial effect to biodiversity.

*Reduction of waste generation from agriculture and improvement of agricultural waste management*

Farming produces by-products, some of which are potential pollutants of soil water or air. For better understanding of agriculture generated waste, definition of different types of waste derived from agriculture production by source and type should be established. For instance, EU list of wastes as agricultural waste defines: sludges from washing and cleaning, waste plastics, animal tissue waste, plant tissue waste, animal faeces, urine and manure, agrochemical waste, and agrochemical waste containing dangerous substances. Production of these by-products from agriculture should be minimized by application of GAP in waste management practice. GAP practice will: minimize non-usable wastes and dispose of them responsibly, store fertilizers and agrochemicals securely and in accordance with legislation, establish emergency action procedures to minimize the risk of pollution from accidents maintain records of storage and disposal

and recycle organic fraction of wastes. Priority on agriculture waste management should be given on preparation of Studies they will provide adequate information's about main streams of agri-waste generation, their quantification (especially from pig and poultry industries) and give clear pictures for regional generation of agricultural waste by type particularly in cases it include agrochemical containing dangerous substances, plastics, packing waste and ect.

#### *Agriculture and water protection*

Agriculture carries a high responsibility for the management of water resources in quantitative and qualitative terms. Target action to reduce pollution from agriculture source into both ground and surface water is preparation of *Strategy for management of consequences of agriculture* on pollution and depletion of water resources. Careful management of water resources and appropriate use of water for irrigation are basic criteria for GAP. The general *principles of GAP*, applied to minimize risks of pollution and depletion of water resources caused by agriculture are: manage ground and soil water by proper use, apply production inputs including waste or recycled products of organic practices that avoid contamination of water resources, protection of waters in respect of leaching of pesticides and nitrates, adopt techniques to monitor crop and soil water status, schedule irrigation, and prevent soil structure by adopting water-saving measures, manage water tables to prevent excessive extraction, promoting sustainable use of water resources and etc. Using framework of these guiding principles, detailed guidelines can be prepared with in specific agro-ecosystems. Other priority in this area should be to *restructuring legal and institutional* base for water management shearing the responsibilities across ministries and institutions (adoption of new law for water management) the integration of environmental concerns into agriculture policy.

#### *Agriculture and air protection*

There are three main sources of GHG emissions from agriculture: N<sub>2</sub>O (nitrous oxide) emission from soils, due to nitrogen fertilization, CH<sub>4</sub> (methane) from intestinal fermentation and CH<sub>4</sub> and N<sub>2</sub>O emissions. Even though the situation in R Macedonia with air pollution from agriculture is not critical (due to low stock density, relatively low usage of fertilizers), some of measures for mitigation of GHG should include: encouragement of more efficient fertilizer application to reduce overall use (GAP).

**EU primary legislative regulations should be introduced in the Macedonian legal system, as well as specific regulation(s) should be developed for Good Agricultural Practice/Cross Compliance containing the minimum standards for average farming practice (minimum requirements for nutrient management, pesticide use, avoid of land abandonment, maintenance of permanent grasslands, etc). Once adopted these regulations will be the baseline for agro-environmental payments and at the same time should be the minimum requirement for direct payments (agricultural support programme). A regulation should be developed for (pilot) AE support system containing objectives, measures, eligibility, beneficiaries, payment rates, selection criteria, monitoring, control and sanction measures.  
MAFWE should establish an agri-environmental information system within AIS.**



## 2. Cross compliance

### **Cross compliance in EU**

The 2003 CAP reform includes a reinforced cross-compliance as a standard sanctioning approach to be applied to selected statutory requirements in the field of the environment, food safety, plant and animal health, and animal welfare. In addition, cross-compliance will apply to the obligation of farmers to keep their land in good agricultural and environmental conditions.

The Agenda 2000 CAP reforms included the basic principle that Member States shall take environmental measures they consider to be appropriate in view of the situation of the agricultural land used or the production concerned. This principle has been incorporated in the horizontal regulation. Member States have had different options to implement such requirements. Among others they could have applied sanctions where farmers do not respect such conditions, which could have included the reduction or even the withdrawal of direct aids. Examples of environmental conditions applied are adherence to maximum stocking rates for cattle or sheep, compliance with specific conditions for the cultivation of sloping land, respect of maximum permitted volumes of fertilisers per hectare and compliance with specific rules concerning the use of plant protection products.

Concerning market and income policy, the cross compliance is the core instrument. The reform CAP 2003 reform also involves decoupling most direct payments from production. From 2005 (2007 at the latest), a single payment scheme will be established based on historical reference amounts. This will mean reducing many of the incentives for intensive production that have been associated with increased environmental risks. The second package of reform (2004) of market regimes for Mediterranean sectors has confirmed the change of direction taken by the CAP in 2003. For the sectors concerned (olive oil, cotton, tobacco and hops), a significant part of the current production-linked payments will be transferred to the decoupled single payment scheme starting in 2006.

As regards the rural development policy, compliance with minimum environmental standards is a condition for eligibility for support under several different rural development measures, such as assistance for investments in agricultural holdings setting-up of young farmers and improving the processing and marketing of agricultural products. Moreover, only environmental commitments above the reference level of Good Farming Practice (GFP) may qualify for agri-environment payments. The support to less-favoured areas also require the respect of the codes of GFP.

**Cross-compliance will apply to the obligation of farmers to keep their land in good agricultural and environmental conditions.**

**As regards the rural development policy, compliance with minimum environmental standards is a condition for eligibility for support under several different rural development measures, such as assistance for investments in agricultural holdings setting-up of young farmers and improving the processing and marketing of agricultural products.**

### **Cross-compliance in Republic of Macedonia**

Cross compliance approach is still not in place. Such of requirements are not incorporated in existing agriculture and rural development policy and legislation.

In the framework of the rural development policy, Code of GAP for Republic of Macedonia is under the preparation. The document is aimed to establish a reference levels of GAP that would be starting point in developing agri-environment measures in agriculture policy.

**Cross compliance approach in R Macedonia is still not in place. Such of requirements are not incorporated in existing agriculture and rural development policy and legislation. Recognizing the importance of integration of environmental concerns into agriculture production practices, many laws must contain provisions that relate to environment and they must also clearly define the division of responsibilities between ministries and institutions. In this regard, it should be noted that environmental commitments above the reference level of Good Farming Practice (GFP) may qualify for agricultural benefits in Republic of Macedonia.**

## **3. Agri-environmental Measures**

### **Agri-environmental measures in EU**

Agri-environment schemes offer farmers voluntary, multi-annual contracts where they are paid for delivering environmental goods and services which go beyond the 'reference level' of good agricultural practice in the country or region concerned. The earliest such schemes were established in the 1980s and first received community cofinancing under Regulation /85, as part of EAGGF guidance funds for structural measures. The schemes were made accompanying measures to the CAP, cofinanced by EAGGF guarantee funds and compulsory for all Member States, as part of the 1992 MacSharry reforms (Regulation 2078/92). Under Agenda 2000 they were integrated within the broader framework of the rural development Regulation 1257/1999, but their compulsory nature and their purpose and scope remain relatively unchanged from the 1992 situation. Cofinancing rates for agri-environment programmes (AEPs) are 75% in Objective 1 areas and 50% elsewhere. In principle they apply throughout the territory of each Member State but in practice, application varies widely between countries, with some covering nearly all their farmed land (eg Austria, Finland) while others are tightly targeted to particular sub-regions or specific environmental situations.

#### *Agri-environment Measures and the Environment*

Currently, around 20% of UAA in the EU Member States is enrolled in agri-environment programmes (AEPs). This represents a significant achievement in a relatively short space of time, for a new instrument which is both voluntary and innovative in approach. For the majority of environmental and farming NGOs, these programmes represent an important step forward in integrating environmental considerations into agricultural policies and many would see their future growth and development as a particular priority for the future. To date, there is little consistent information at EU level to indicate the overall effectiveness of agri-environment measures in addressing the environmental impacts of agriculture. However, a significant and increasing number of studies examines these issues at more local level, either in relation to specific schemes (for which monitoring and evaluation are now required under the relevant EU legislation) or

in relation to particular environmental aims – for example, in the context of Biodiversity Action Planning for important species or priority habitats.

An early but still relevant overview of effectiveness was provided in an unpublished study to DG Environment of the Commission (IEEP, 1998), based upon more detailed analysis in several different Member States. It concluded the following:

- agri-environment schemes provide both incentive payments and a more supportive policy context for farmers pursuing forms of production which are well matched to environmental requirements but potentially less able to compete with alternative [more intensive] practices;
- schemes can bring benefits as they limit pressures from input use, constrain pollution and overgrazing, and contribute to maintaining valued cultural landscapes and seminatural habitats;
- where implemented over sizeable areas of land, agri-environment schemes have led to modest but worthwhile improvements in the management of livestock, the upkeep and maintenance of field boundaries and small habitats, the application of manure and inorganic fertilizer, the utilization of pesticides and the volume of irrigation water consumed. Many of the authorities responsible for schemes are in the process of reviewing and strengthening the stipulations included in management agreements. The extent of environmental benefits can thus be expected to increase accordingly, over time;
- over a smaller area there have been more substantial changes in farm management, including the re-establishment of valued habitats such as extensive pasture, the conversion of farms from conventional to organic production, significant reductions in the use of agrochemicals and fertilizers and, in a few cases, a decline in livestock numbers.

Examples of commitments covered by national/regional agri-environmental schemes are:

- Environmentally favorable extensification of farming;
- management of low-intensity pasture systems;
- integrated farm management and organic agriculture
- preservation of landscape and historical features such as hedgerows, ditches and woods;
- conservation of high-value habitats and their associated biodiversity.

**In the framework of the rural development policy, the Community offers a menu of measures to promote the protection of the farmed environment and its biodiversity. There are, among others, possibilities of support for less favoured areas and agri-environmental measures, which entail, respectively, applying or going beyond the usual Good Farming Practices.**

### **Agri-environmental measures in Republic of Macedonia**

Agri-environment schemes are not developed in Rural development policy in Republic of Macedonia, even some initially efforts to support environmental considerations into agricultural policies do exist.

## **Organic production**

The purpose for financial support is to promote and support the development of organic production in Macedonia because of the favorable conditions in the country and the demand for these products on the EU market.

### *Description of the measure*

#### Financial support for organic areas and areas under conversion from conventional agricultural production into organic one

The purpose of this measure is introduction of the standards stipulated by the Book of Rules for organic agricultural crop production of the producer/farmer i.e. production conversion from conventional into organic for which financial support is granted on the part of the reduced production/lost profit, as regulated by the measure. The same measure is applied in all countries which have introduced organic production system and it represents starting point for support of the organic production development.

#### Financial support of organic production in livestock farms

The purpose of this measure is introduction of the standards regulated by the Book of Rules for organic livestock production of the producer, i.e. production conversion from conventional into organic one, which increases the breeding expenses of the farm during the first years. This measure combined with the measure no. 1 (for crop production) is necessary for conversion of the whole production of a single farm, which is a model required within the organic agriculture. The funds payment is carried out by the provisions of the Contract between the producer and the Ministry.

Besides the measures directly addressed to farmers, set of other measures also support the organic agriculture as a part of agri-environment schemes (financial support of expenses for control and certification of organic products, financial support for the costs of lab analyses in organic farms, general measures).

## **Code of Good Agricultural Practice for Republic of Macedonia**

In the framework of the rural development policy, Code of GAP for Republic of Macedonia is under preparation. The document is on its final phase and is not published yet.

The draft Code of Good Agricultural Practice for Republic of Macedonia contains legislation obligations, recommendations and practical advice envisaged for farmers, horticulturists, individual growers, agriculture service employees and for everyone who is involved in agricultural production and preservation of rural environment. The aims of the Good Agriculture Practice (GAP) are to decrease the negative influence of farming on the environment and to prevent the impoverishment and irrational use of the main nature resources - soil, water, plants, animals, and landscape. It is recommended to follow the rules accepted in Europe and in other developed countries, so that Macedonian goods would not meet barriers in international markets and our rural environment would remain attractive for tourists. GAP comprises main spheres of agricultural activities that are critical in causing water, air, and soil pollution. It gives advice for the prevention or at least for the decrease of pollution. A successful implementation of GAP has to be based on three integrated basic principles: economically viable, environmentally friendly, and socially acceptable.

**In the framework of the rural development policy, in R Macedonia there has been some progress in starting with the consideration of agri-environmental measurements. Document which will involve this type of measurement will be those for organic production as well as for Good agriculture practice in the country.**

## 4. Agri-environmental indicators

The EU is committed to improving its agricultural environment. The development of agri- environmental indicators shall provide the means for assessing the evolving interaction between agriculture and the environment.

### *Introduction*

Historically, agriculture has shaped many European landscapes over centuries. This has given rise to unique semi-natural environments with a rich variety of habitats and species dependent on the continuation of farming. However, as commercial activities, agriculture and forestry are aimed primarily at production and rely on the availability of natural resources. Increasingly, the development of commercial activities has brought new environmental pressures to bear on the natural capital stock. Technological progress and the desire to maximise returns and minimise costs have produced a marked intensification in agriculture over the last 40 years.

Intensification can lead to degradation of soil, water and air. During recent decades awareness has grown that differentiated landscapes and related biodiversity are also threatened by the intensification of agriculture. On the other hand, they are also increasingly threatened by marginalisation and abandonment of agricultural land use due to economic forces. These differing challenges posed by intensification and abandonment of farming highlight the complexity of the relationship between agriculture and the environment.

The desired relationship between agriculture and environment can be captured by the term „sustainable agriculture“. At a first level, “sustainable agriculture“ involves managing natural resources in a way which ensures that they are available in the future. This narrow definition of sustainability in many cases reflects the *economic* self-interest of farmers. A broader understanding of sustainability extends, however, to a larger set of features linked to land and land use such as the protection of landscapes, habitats, and biodiversity, and to objectives such as the quality of drinking water and air. In this broader perspective, the use of land and natural resources for agricultural production must take account of the protection of the *environment* and cultural heritage.

Finally, sustainability needs also to reflect society's concerns as regards the *social* function of agriculture, the maintenance of the viability of rural communities and a balanced pattern of development. Sustainable agriculture therefore needs to reflect productive, environmental and social functions. This should be completed with the development of appropriate indicators to measure environmental efficiency.

It is the complexity of the relationship between agriculture and the environment – harmful and beneficial processes, diversity of local conditions and production systems – that has conditioned the approach to environmental integration in the context of the CAP. Central to understanding this relationship is the principle of “good farming practice”, corresponding to the type of farming which a reasonable farmer would follow in the region concerned. On this basis:

- As a minimum, farmers should respect general requirements as regards environmental care without specific payment. This means that all farmers should follow compulsory laws in relation to pesticide use, to fertiliser application, water

use and where appropriate, national or regional guidelines on good farming practice.

- However, wherever society asks farmers to pursue environmental objectives beyond good farming practice, and the farmer incurs a cost or foregoes income as a result, then society must expect to pay for that environmental service.

This approach is based on the Polluter-Pays-Principle. Accordingly, farmers bear compliance costs up to a reference level of "good farming practice" reflected in property rights. However, in rural areas environmental objectives are often more ambitious than "good farming practice". In such cases, environmental objectives will be achieved only if appropriately remunerated. It is therefore appropriate to pay farmers to preserve the environment through privately owned resources or factors of production, provided that this goes beyond good farming practice.

### **Agri-indicators in EU**

In order to devise the correct initiatives to improve agricultural environment and to measure their success, it is essential to develop the means to assess them ('indicators'), especially at regional/local level. Agri-environmental indicators help to transform physical and monetary data about human activities and the state of the environment into decision supporting information. With the help of environmental indicators it is possible to understand better the complex issues in the field of agriculture and environment, to show developments over time, and to provide quantitative information. For example, the development of fertiliser use is meaningful only if considered in relation to the development of actual fertiliser uptake.

The purpose of environmental integration indicators is to help assess the extent to which environmental concerns have been integrated into sectoral policies. To do this they must operate at a range of levels - policy, human activity and the environment – and reflect the complex chain of cause and effect. Information about actual environmental damage and its economic valuation need to be supplemented with analysis of causality and the sector's contribution to the problem. This will ensure a balanced evaluation of the effectiveness of current policy instruments both within and outside the sector. Only in this way can data about human activities in given sectors and the state of the environment be transformed into policy decision supporting information. Such indicators should therefore help achieve a better understanding of the complex issues in the domain of agriculture and environment, to show developments over time, and to provide quantitative information. All of these are needed for targeting and monitoring. However, if these indicators are to be meaningful, they must give a sufficiently accurate picture of the underlying processes and relationships that link human activities with the environment. This is particularly the case for agriculture where the relationship is highly complex and where farming itself involves a range of biophysical and site specific processes. An indicator framework for agricultural policy therefore needs to reflect the sector's specific characteristics.

In January 2000, the Commission adopted the Communication "Indicators for the Integration of Environmental Concerns into the Common Agricultural Policy", which identified a set of agri-environmental indicators to serve the following multiple purposes:

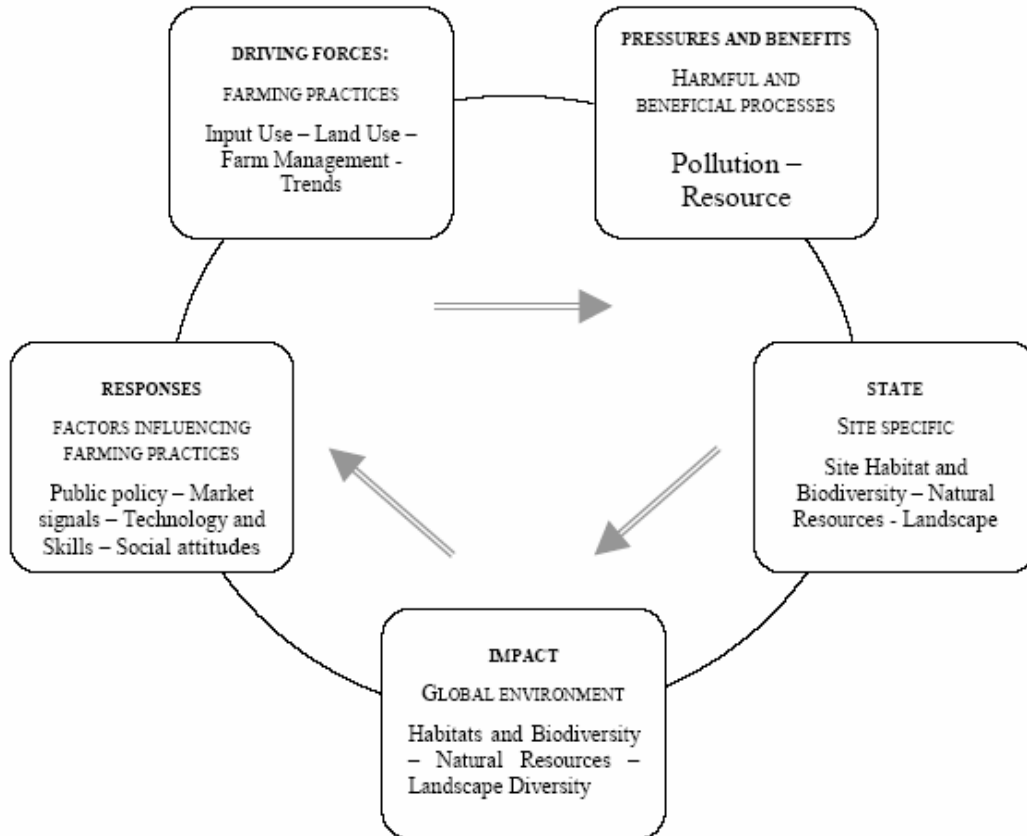
- to provide information on the current state and changes in the conditions of the environment in agriculture;

- to understand and monitor the linkages between agricultural practices and their beneficial and harmful effects on environment;
- to identify the key agri-environmental issues that are of concern in Europe today;
- to provide contextual information, particularly concerning the diversity of agri-ecosystems in the European Union;
- to help targeting of agri-environmental measures, with the aim to achieve the most significant progress in reducing agriculture's impact on the environment where environmental pressures are greatest;
- to assess the extent to which agricultural and rural development policies respond to the need to promote environmentally friendly farming activities and sustainable agriculture and to communicate this to policymakers and the wider public;
- to feed the global assessment process of agricultural sustainability.

In March 2001, the Commission published the Communication "Statistical Information needed for Indicators to monitor the Integration of Environmental concerns into the Common Agricultural Policy" which focused on the data needed to compile that set of indicators and identified a number of requirements to be met for the definition or calculation of some indicators. To improve, develop and compile the agri-environment indicators identified by these two Communications at the appropriate geographical level, the IRENA (Indicator Reporting on the integration of Environmental concerns into Agricultural policy) project has been launched (September 2002). The project is a collaborative effort between the Directorates General for Agriculture, Environment, Eurostat, Joint Research Centre and the European Environment Agency which is responsible for the co-ordination.

The IRENA operation has resulted in the following outputs:

- 40 indicator fact sheets and their corresponding data sets;
- an Indicator Report ("Agriculture and environment in EU-15 – the IRENA indicator report") providing an comprehensive overview of the interactions between agriculture and the environment in the European Union (EU-15 ) based on the indicators developed and the DPSIR (Driving forces - Pressures - State - Impact - Responses) framework. Several thematic agri-environmental "storylines" are used to illustrate indicator results and to review the effects of farming on the environment. These are: water use and water resources; water quality and the agricultural fertiliser and pesticide use; land use and soil; climate change and air quality and, landscape and biodiversity. The developed model for DPSIR is presented below;



Agriculture DPSIR model

- an Indicator-based Assessment report on the integration of environmental concerns into the CAP.

The intended users of the outputs of the IRENA operation are the European Union Institutions, the Agriculture and Environment Ministries and policymakers in the Member States, as well as stakeholder groups.

At present, a partial set of indicators are established to monitor the integration of environmental concerns into the CAP. This set will evolve as the indicators are improved and completed. They are mainly based on the indicator work developed within the OECD supported by work undertaken by Eurostat, the European Environment Agency, the Joint Research Centre and the ELISA research project. In principle, many of these indicators could be operational in the short to medium term, dependent on the adequate collection of data at a sub-national level. There are, however, areas such as farm management, habitat, landscapes and biodiversity for which the definition of operational indicators remains a major challenge. A number of key actions need to be undertaken to ensure that the potential of indicators is fully exploited. These involve improving existing indicators as well as extending the set to fully cover sustainable development, improving information collection capacities, developing approaches to environmental efficiency and the classification of agri-ecosystems, developing methods to estimate the wider international impacts of the CAP as well as reinforcing communication on agri-environmental issues. In principle, all these indicators should be operational in the short to medium term, dependent on the adequate collection of data at a sub-national level.



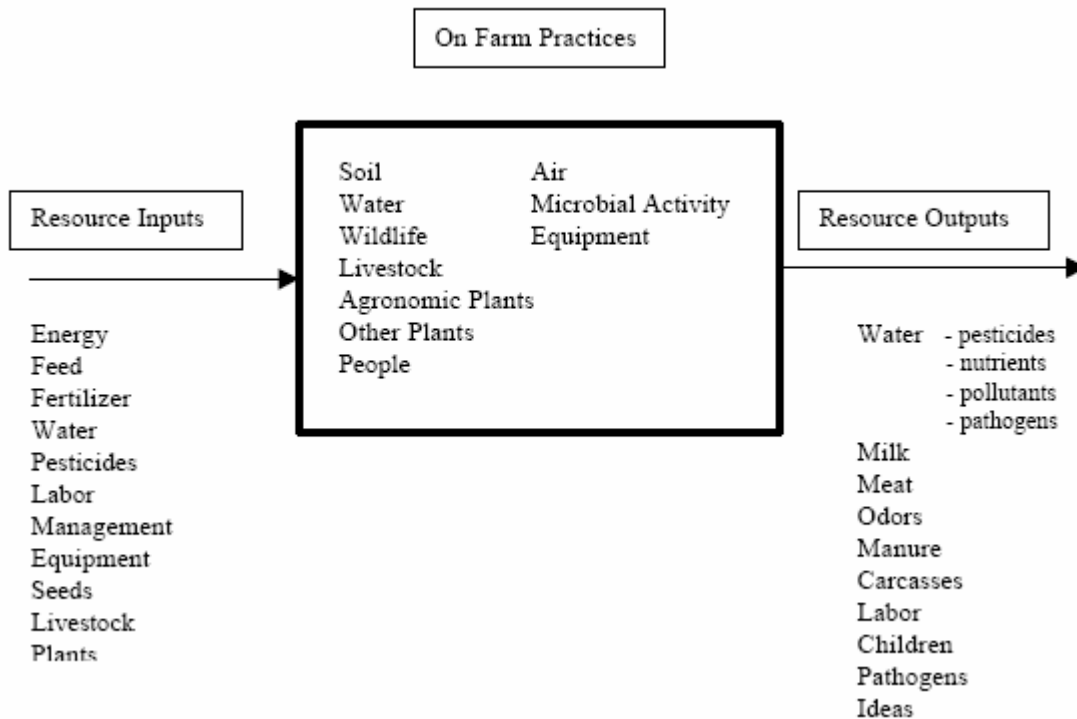
Data requirements are presented in the fourth column of the table, presented below. There are, however, areas in which the definition of operational indicators remains a major challenge. (marked “\*”). This is particularly the case for farm management, beneficial processes, landscapes, global habitat stock and biodiversity and landscape diversity. For these, appropriate indicators need to be defined on the basis of the considerable information that is currently available. Although a large amount of contextual information on factors and responses influencing farming practices is available, this needs to be further developed into a more complete set of coherent indicators. To date, little work has been done concerning the presence of genetically modified organisms, both as regards voluntary release and long-distance dispersion.

In general, scientific models will be necessary to encompass and validate the information base of indicators, in order to foster a comprehensive and shared approach to sustainable agriculture.

A priority over the coming years will be the further development, implementation and monitoring of the sectoral integration strategy developed by the Agricultural Council. A framework for further development is proposed. The measures set out encompass environmental requirements and incentives integrated into the market policy as well as targeted environmental measures forming part of the Rural Development Programmes. The Strategy sets objectives for water, agro-chemicals, land use and soil, climate change and air quality, as well as landscape and biodiversity. It is stressed that achieving sustainable agriculture will depend on the implementation of the available measures by Member States. The need for rigorous monitoring and evaluation of integration, based on meaningful environmental indicators is underlined.

Table: *Indicators for assessing environmental integration*

### PROPOSED ENVIRONMENTAL INDICATORS



**The EU is committed to improving its agricultural environment. The development of agri- environmental indicators shall provide the means for assessing the evolving interaction between agriculture and the environment. In order to devise the correct initiatives to improve agricultural environment and to measure their success, it is essential to develop the means to assess them ('indicators'), especially at regional/local level. Agri-environmental indicators help to transform physical and monetary data about human activities and the state of the environment into decision supporting information. In January 2000, the Commission adopted the Communication "Indicators for the Integration of Environmental Concerns into the Common Agricultural Policy", which identified a set of agri-environmental indicators. In March 2001, the Commission published the Communication "Statistical Information needed for Indicators to monitor the Integration of Environmental concerns into the Common Agricultural Policy" which focused on the data needed to compile that set of indicators and identified a number of requirements to be met for the definition or calculation of some indicators.**

### **Agri-indicators in Macedonia**

Republic of Macedonia has comparative advantages, trough relatively no contaminated soil, upon which to build when promoting environmental-friendly agriculture. However, although the Law on Agricultural Organic Production has been adopted, there is no other significant attempts in promotion of environmental concerns in agriculture.

The Republic of Macedonia, like other Central and East European countries in transition, has started the process of reform towards a market economy. As part of the economic development program, the Republic of Macedonia is shaping its environmental policies and identifying priority actions to protect human health and the environment and to utilize its natural resources in a sustainable manner. These policies and actions are consistent with the 'Environmental Action Programme for Central and Eastern Europe' (EAP), the document adopted at the Ministerial Conference in Lucerne in 1993.

In meeting its goals towards protecting the environment, the Government of the Republic of Macedonia has prepared the National Environmental Action Plan (NEAP I and II).

It should be noted that previously, environmental concerns was not an issue neither of the legislation on agriculture, nor of the agricultural policy. Our priority over the coming period will be problems identification and priority actions that should be taken in integration of environmental issues in agriculture.

### **Problem identification and prioritisation**

- ✓ Environmental concerns are not sufficiently integrated into the legislation and policies
- ✓ Inappropriate agricultural waste management practices and no accurate (precise) data on generated agricultural waste (only estimations)
- ✓ Non-existence of proper environmental monitoring in agricultural sector
- ✓ Deficient number of waste water treatment and recycling facilities
- ✓ Obsolete and insufficient irrigation network
- ✓ Fragmentation of arable land

- ✓ Low level of use of modern agro-technical measures
- ✓ Processing plants for animal waste are not existing
- ✓ There is no fully developed system for certification of agricultural organic products.

In that context, NEAP II document has set some important objectives to fulfill related to agriculture and environment and provided the developing of the appropriate indicators

### **Objectives**

**O1:** Mainstreaming of environmental concerns into agricultural development policy

#### Indicator:

- Specific environmental concerns included into agricultural development policy

**O2:** Maintenance of high level basic natural resources essential for sustainable agricultural development

#### Indicators:

- Natural resources available in the agricultural sector
- Area suitable for agricultural production
- Quality of arable land

### **Measures:**

**M1:** Rational use of natural resources, controlled use of fertilizers and pesticides and promotion and enhancement of organic production

#### Indicators:

- Consumption of fertilizer
- Consumption of pesticides (break-down on different types after level of poison)

**M2:** Improvement of monitoring system

#### Indicator:

- List of needed improvements in the existing monitoring system
- List of improvements implemented in the new monitoring system

**Macedonia is committed to improve its agricultural environment as it is in EU. The development of agri-environmental indicators shall provide the means for assessing the evolving interaction between agriculture and the environment. In this relation it is already started with preparation of the main objectives and their indicators. Further, it will be more in detailed explored in order to reach better agriculture and environmental goals.**

**Next table shows some more actions and environmental indicators that should be developed**

**Actions**

<b>Objective</b>	<b>Measures</b>	<b>Activities</b>	<b>Level and Actor</b>	<b>Reference to other sectors</b>	<b>Link to EU directives, agreements, strategies, documents</b>	<b>Monitoring parameter/ indicator</b>
O1, O2	M1 M2	Maintaining traditional farming methods and development of self sustainable and market orientated family farms	N, L/MEPP , MAFWM , ME, LSG		COM (91) 100-final COM (91) 258 – final Towards a thematic strategy on the sustainable use of pesticides	- Definition of self sustainable market oriented family farms - Number family farms - Share of arable land used by family farms
O1 O2	M1 M2	Development of training programmes for farmers tackling the issues of good agricultural practices and environmental protection		Energy Waste	91/676/EEC 79/117/EEC amended 91/188/EEC	- Training programme in good agricultural practice developed
		Development and pilot implementation programs of renewable energy resources use (biomass and bio fuels) Identification of demonstration projects Preparation of guidelines  Composting and reuse of the organic waste Development of demonstration projects Preparation of guidelines				- Programs for renewable energy resources use developed. - List of programs tested in pilot projects - list of guidelines prepared  - Amount of organic waste produced annually - Share of organic waste that is reused or composted - Demonstration projects realized - Guidelines prepared

Objective	Measures	Activities	Level and Actor	Reference to other sectors	Link to EU directives, agreements, strategies, documents	Monitoring parameter/ indicator
		Development of the strategy for disposal of animal waste and construction of installations				Strategy for disposal of animal waste (hereunder constructions of installations) developed - Constructed plant
		Development and implementation of pilot programs in order to assess the cost-efficiency of reusing treated wastewater  Investing in demonstration irrigation techniques (e.g. drop irrigation)				Pilot projects for assessment of the cost-efficiency of reuse of wastewater - developed - implemented - cost-efficiency results reported  Pilot projects for demonstration of irrigation techniques - planned - implemented
O1	M2	Up-to-date monitoring of waste and wastewater generation, and soil, air and water quality	N, L/MEPP, MAFWM, LSG	Waste Water Soil Air		Up-to-date monitoring of waste and wastewater generation, and soil, air and water quality reported annually
		Developing of agro-environmental indicators		Monitoring		List of agro-environmental indicators available
O1 O2	M1 2	Establishment of a EU recognized certification system for organic products  Strengthening of the capacities in order to obtain certificates for eco-labelling of products  Strengthening of capacities for introduction of IPPC	N/MAFW, MEPP, MH	Rural development Health		EU recognized certification system for organic products established  Capacity building in public authorities regarding administration of certificates for eco-labelling of products IPPC permitting issued

## Literature

- Indicators for the Integration of Environmental Concerns into the Common Agricultural Policy, COMMISSION OF THE EUROPEAN COMMUNITIES;
- A Life Cycle Approach to Sustainable Agriculture Indicators, University of Michigan, Dana Building
- NEAP(s) National Environmental Action Plan (s) 1999, 2006;
- Conceptual approach in the Creation and Implementation of the NSSD of the R.Macedonia, 2000;
- Agriculture development strategies of R.Macedonia to 2007-2013
- FYR Macedonian Agriculture Sector Review, Environmentally and Socially Sustainable Development, Europe and Central Asia Region, Document of the World Bank, Report no 25829, October 2002;
- National assessment report on sustainable development, 2002;
- National Strategy for EU integration of R.Macedonia, 2004;
- Country study for Biodiversity of the R.Macedonia (First National Report, 2003);
- Strategy for approximation of the Macedonian agro-food sector to the CAP, 2004;
- Questions/Answers toward our application to EU;
- FYR Macedonia Agriculture and EU Accession – Achieving FYR Macedonia’s Agriculture Potential, Environmentally and Socially Sustainable Development, Europe and Central Asia Region, Document of the World Bank, Report No.AAA11-MK, November 2006.
- Other local documents...still not officially adopted by Government of R.Macedonia
- Council Regulation (EC) No 1782/2003
- (Final) draft – National Agricultural And Rural Development Strategy 2007-2013
- The Draft Code Of Good Agricultural Practice For Republic Of Macedonia



# **Annex to the Sustainable Development Strategy addressing the Chemical issue**

## **1.0 Background Information**

Chemicals and chemistry, has been providing crucial benefits to modern societies. The use of chemicals is vital and essential not only in modern health-care, agriculture, production of consumer goods, design of packaging materials, surface protection, etc., but chemistry has also been building the basis for new scientific developments.

In the previous period, Republic of Macedonia approached to this issue mainly partially considering only small separate groups of chemicals through ratification and implementation of different International Conventions such as Basel, Stockholm, Vienna Conventions, Kyoto and Montreal Protocols

The sound management of chemicals has to consider their whole „life cycle“, i.e. their fate starting from importation or production via storage and transportation to exportation or distribution and use and finally to disposal or recycling.

There are number of risks and concerns connected with the management of chemicals, and these risks and concerns may become relevant at several or all stages of their life cycle.

The Republic of Macedonia, as many other countries has a lack of an integrated approach in monitoring the fate of chemicals and the management of their risks throughout their life cycle. There are responsibility barriers and information gaps related to organizational structures and regulatory boundaries, and this holds regardless of the considered country's regulatory focus being on the risks (the chemicals) or on the elements to be protected (consumers, air, waters, soil, etc.). Therefore, it is very important to develop a profile which addresses all data that are related to chemicals and to involve all respective stakeholders to manage in an environmentally sound manner..

## **1.1 Legal and Institutional Aspects of Chemical Management**

### **1.1.1 Policy and legislative framework**

#### **Policies**

The Constitution of the Republic of Macedonia (Official Gazette no. 52/91) provides that everyone has the right to a healthy living environment and duty to protect and improve the environment and the nature. The State is obliged to provide conditions for the citizens' exercising the right to a healthy environment.

The environmental policy in the Republic of Macedonia (RM) promotes the principle of environmental impact assessment, and the Law on Environment (LoE) provides for some basic provisions as regards the transposition of the Directive.

MOEPP makes efforts to integrate the environmental policy into other policies developed by the Republic of Macedonia, through establishment of closer coordination and cooperation with other authorities. At the same time, the other



authorities/relevant bodies have shown their willingness to accept their responsibility for implementing the environment protection in their sectoral policies, and to include it in the overall development policy of the country. The integration of the environmental policy in other policies as a process is becoming more intensive and is reflected in the strategic and programme documents adopted by the authorities

The National Chemical Policy is still not clearly defined but it is developing in a way to comply with the Millennium Development Goals

The need for developing the Strategy for Management of Chemicals is defined within the National Strategy for European Integration of the RM.

An Agri-environment policy is under development. The activities conducted in the field of best practices in farming, pesticides and fertilizers use, handling, storage and disposal are mainly financed and implemented through separate projects of the relevant Ministries (Agriculture, Environment) and NGOs.

### **Framework Legislation**

The environmental legislative framework of Republic of Macedonia is based on the **Constitution**, which determines the protection of the environment as a basic principle (Article 8). Article 43 develops further this concept and prescribes that a healthy environment is a basic human right. It also stipulated that the environment must be protected and it is the obligation of the state to provide a healthy environment for its citizens. At the local level, **the Law on Local Self-Government** in Article 222, § 2, prescribes the obligation of the local self-government for protection and pollution prevention of the environment.<sup>1</sup>

A framework **Law on the Environment, adopted in 2005** (Official Gazette of RM, No. 53/05, 24/07), It contains all environmental issues, which are characteristic for a modern European Environmental Protection Act. It stipulates the main principles, while legal and technical details are elaborated in secondary legislation.

### **Chemical specific legislation**

Following consultation on transposition of EU Chemicals Legislation in Macedonia initiated in 2004 in Skopje, the RM developed a legal regime based on the EU chemicals regulations and REACH system. The subsequent **Law on Chemicals (Official Gazette of RM No.113/07)** was adopted in August 2007. The law regulates the management of poisons, plant protection substances, fertilizers, explosives, flammable liquids and gases, hazardous substances and products, substances that deplete the ozone layer, persistent organic pollutants, etc. The current law is not yet fully transposed and in line with EU legislation and REACH (Registration, Evaluation and Authorization of Chemicals), however it is in accordance with the following EU Directives: 31967L0548, 31998L0008, 32004R0648 including regulations on assessment and classification of biocides and detergents.

Other laws with pertinence for chemicals management include the following:

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<sup>1</sup> Macedonia's National Implementation Plan, 2005.





- **Law on the Quality of Ambient Air** (Official Gazette of the R.M No, 92/07). The law regulates the conditions, the measures and the manner of organization and implementation of air protection and quality improvement. It would also regulate: air quality limit values, including emission limit value and limit values for pollutants in fuel; monitoring and the establishment of a monitoring information system, including an inventory of air polluters; and management of air quality, measures for air pollution against potential disasters.
- **Law on waters** (Official Gazette of the R.M. No. 4/98, 19/00, 42/05, 87/08) provides the legal basis for water quality and management, although it is not based on the concept of integrated water management. In addition a wide range of laws, decrees and rulebooks regulate specific aspects of water management, water classification, water quality, drinking water, water protection, prevention of pollution at source, emissions control, water extraction, storage and handling of substances endangering or potentially endangering waters.
- **Law on Waste Management** (Official Gazette of the R.M 68/04, 71/04 and 107/07). The law, administered by MoEPP, sets out requirements for prevention and reduction of waste generation, utilization of the recycled waste materials, sustainable development through protection and preservation of the natural resources and prevention of harmful impact on the environment, life and human health, disposal of waste in an environmentally sound manner and a high level of protection of the environment, animal and human health.
- Macedonia's National Implementation Plan for Persistent Organic Pollutants (Stockholm Convention) of 2005 also recommended that secondary legislation should be adopted and promulgated, with priority given to development of the following regulations that recently were developed and came into force:
  - Regulation on Management of Hazardous Waste( Official Gazette No.15/08)
  - Regulation on criteria for treatment and handling with Wastes (Official Gazette No.8/08)
  - Regulation on Landfills (Official Gazette No.156/07)
  - Regulation and criteria for handling with medical waste (Official Gazette No.146/07);
  - Regulation on criteria and conditions for handling, storage and disposal of PCBs (Official Gazette of the R.M No.48/07);
  - Regulation on Waste Oils Management (Official Gazette of the R.M.No.156/07);
  - Regulation on ELVs; and
  - Regulation on WEEEs.
- **Law on transportation of hazardous substances in the railway and inland traffic** (Official Gazette 92/07)
- **Law on the prohibition of the development, production, stockpiling and use of chemical weapons** (Official Gazette No.71/06) that regulates all the obligations, prohibitions and limitations coming from the Convention for the prohibition of the development, production, stockpiling and use of chemical weapons (Law on Ratification of the Convention, Official Gazette of the RM No. 23/97).
- **Industrial pollution** - regulate issues of Integrated Pollution and Prevention Control (IPPC)in accordance with the relevant regulations.
- Pesticides used in agriculture are controlled by the following regulations administered by the Ministry of Agriculture, Forestry and Water Supply”



- Law on Plant Protection (Official Gazette of R.M. No. 25/98 and No. 6/00);
- Law on products for plant protection ( Official Gazette of R.M No.110 /07)
- The Law on Agricultural inspection (Official Gazette of the RM No. 38/04) is in force since 2004.
- Regulation on the criteria of the Book of Rules for granting licenses for trading in plant protection substances (Official Gazette of R. M. No. 65/01 and No. 99/03);
- Book of Rules on the conditions to be met by legal entities concerning the equipment, instruments and structures used for testing plant protection substances (Official Gazette of R. M. No. 54/2001);
- Book of Rules on the conditions to be met by legal entities concerning the equipment, instruments and structures used for the production, wholesale and retail, of plant protection chemicals and the content and the way of reporting on these activities (Official Gazette of R. M. No. 54/01);
- Book of Rules on the method of declaring plant protection chemicals prior to trade and use (Official Gazette of R. M. No. 54/01);
- List of chemicals for plant protection permitted for application.

### **Institutional roles and responsibilities**

In the field of chemicals management in the Republic of Macedonia (RM) , institutional capacities are insufficient to enable the institutions to fully exercise their competences and therefore, to achieve their mandates relative to chemicals management.

The roles of the different ministries and agencies involved in chemicals also need to be more clearly articulated and capacities within these institutions strengthened to enable them to carry out their respective legal mandates. A formalized inter-governmental mechanism and procedures are also required to improve coordination of chemicals management activities among these institutions, which is currently unsatisfactory..

Institutional strengthening—including hiring of more staff and training— will be needed as supported by budget enhancements to support implementation of chemical management and safety aspects of national policy and legal instruments.

Government institutions and their respective roles in chemicals management are briefly described bellow.

**Ministry of Health/Drug Bureau.** Under the Law on Chemicals (Official Gazette of RM No.113/07) the **Ministry of Health/Drug Bureau** has responsibility for the following aspects of chemicals management in the Republic of Macedonia:

- Risk assessment and risk management on chemicals;
- Classification on chemicals;
- Notification on chemicals;
- Marketing, authorisation on biocides and detergents;
- Control of production; and



- Inspection on chemicals.

### **Ministry of Environment and Physical Planning/Administration for Environment (MoEPP)/ Chemicals Unit.**

The Chemicals Unit was established in 2007. In cooperation with the State Inspectorate for Environment and the Environmental Impact Assessment Division, the Chemical Unit is responsible for chemicals management from the environmental protection aspect and is involved in approval procedure for import/export of several group of chemicals, including regulation of consumption, generation, handling, storage, treatment and disposal of hazardous chemicals as well as trade in accordance with the Law on Chemicals and the Law on Environment.

The Ministry of Environment and Physical Planning initiated and lead all procedures for ratification of international acts dealing with chemical management (Vienna Convention, Montreal Protocol, Stockholm Convention and Basel Convention). The MoEPP has implemented several projects on institutional strengthening, as well as raising public and professional awareness on management in support of chemical safety. As well, MoEPP is the regulatory agency charged with licensing and tracking consumption of some chemicals (ODS and PCBs) is permanently performed by the MoEPP, utilizing a specially designed software (database) that contains available data on export, import and consumption of these chemicals based on reporting by consumers.

In accordance with its responsibilities, the MOEPP carries out regular collection, processing, formatting and proper keeping of the data from the monitoring networks of all the environmental media and areas - air, water, noise, soil, waste. It also submits data to the **European Environmental Agency** and other relevant international organizations. The MOEPP lead the process of development of **National Set of Environmental Indicators for the Republic of Macedonia.**

Within the Ministry of Agriculture, Forestry and Water supply, its Directorate for Plant Protection is responsible for all chemical products used in plant protection purposes, including their import/export, generation, formulation, use or consumption and disposition. This Directorate keeps records and updates of all registered pesticides in their own database.

A system has been established for periodic inspection of waste management undertakings and facilities, however, frequency of inspection is not specified. The competent authorities for carrying out inspection concerning waste management are MoEPP (State Inspectorate for Environment), Ministry of Health (State Sanitary and Health Inspectorate), Ministry of Economy (State Market Inspectorate) and Municipalities (Local Authority Inspectorate).

As regards international agreements, the country is in the initial phase of ratification of the Rotterdam **Convention**. Macedonia is a Party to the **Stockholm Convention** (from 2004), and prior to ratification has prepared a National Implementation Plan for the reduction and elimination of persistent organic pollutants (POPs). The RM has ratified the **Vienna Convention and**



**Montreal Protocol** (1994) and its amendments (1998-2002), and has implemented the Country Programme for ODS Phase-out during the past eight years. (RM has succeeded reduction of 90% of the total ODS consumption).

There has been no significant investment in the classification, packaging, labelling and notification of dangerous substances in RM in recent years. However, a Swedish funded technical assistance project is imminent.

<b>Table 1: Macedonia: Status of Chemical Convention Ratification and Implementation of Convention Provisions</b>						
<b>Multilateral Environmental Convention (MEA) for chemicals</b>	<b>MEA has been ratified</b>	<b>Country plans to ratify MEA</b>	<b>MEA provisions have been implemented</b>	<b>Some MEA provisions have been implemented</b>	<b>No MEA provisions implemented, but plans are in place to begin implementing provisions</b>	<b>No provisions have been implemented and there are no plans at this time to implement</b>
1. <b>Basel Convention</b> on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal	X	Not Applicable			See GHS note below	
2. <b>Stockholm Convention</b> on Persistent Organic Pollutants	2004	Not Applicable		<b>National Implementation Plan completed 2005 and submitted to the Secretariat</b>  <b>Disposal of POPs and other hazardous chemicals From April 2004 to July 2006 of 31,215 kg PCBs and 4 tonnes of hazardous chemicals (DDT, methyl bromide, cyclone B) formerly stored on premises of the</b>	See GHS note below	
3. <b>Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade</b>		X Initial phase				
5. <b>Globally Harmonized System (GHS)</b> for the Classification and Labelling of Chemicals	Not Applicable				Swedish funding to assist with classification, packaging and labelling	



6. <b>Vienna Convention for Protection of the Ozone Layer/Montreal Protocol</b> on Substances that Deplete the Ozone Layer	1994/ 1998/2002 amendment s ratified			Country Programme for ODS Phase out in operation 10 years: 90% reduction of total ODS consumption since 1998		
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## 2.0 Characterization of chemicals management in Macedonia

That overall status of Macedonia's chemicals management is summarized below:

### STRENGTHS

- The *Law on Environmental Protection* has been harmonized with EU legislation; The *Law on Chemicals* has been harmonized with EU legislation, including its chapter of biocides. The law will be further amended to bring it into full alignment with EU legislation, i.e., REACH, GHS and RoHS.
- Macedonia's *National Implementation Plan (NIP) on persistent organic pollutants* was submitted to the Stockholm Secretariat in 2005 in accordance with provisions of the Stockholm Convention on Persistent Organic Pollutants; Some post-enabling activities for implementation of Macedonia's NIP on POPs have already been implemented;
- MoEPP is in the process of developing a *National Detailed Inventory on PCBs*, another implementation activity under the Stockholm Convention.
- Establishment of a Chemical Department within MOH is planned for 2008.
- A project for implementation of an action plan for the Strategic Approach to International Chemicals Management approved by SAICM fund that will be implemented by MoEPP, has been approved by the SAICM Secretariat.

### WEAKNESSES

- Current chemical management legislation is not fully transposed and in line with EU legislation, REACH;
- Existing chemicals or those currently in the marketplace are not yet inventoried, hence are not yet represented within Macedonia's electronic data base(except for PCBs and ODS)
- Many ministries and agencies have competences in certain parts of the chemical management system, often with unclear responsibilities
- Lack of systematic control of certain chemical effects to human health and environment, as well as lack of systematic control of the fulfillment of prescribed risk reduction measures [owing to gaps in legislation?]
- Lack of human resources,
- Lack of laboratory capacities, trained staff for laboratory practices;
- Insufficient intersectoral connection between departments competent for different phases in life cycle of chemicals;
- Lack of adequate financial resources and professional capacities for enforcement



of legislation, for example for hiring and training of staff, as regards laboratory capacity to support investigations, etc.;

- Lack of technical guidelines for enforcement;
- National profile for chemicals management has not yet been prepared.

### **OPPORTUNITIES**

- Chemicals management is one of the EU priorities, as well as a priority of the Macedonian Government and European partnership;
- Use of international funds and foreign investments is possible;
- Government is willing to commit additional funds to support chemical management priorities
- Ratification of the Rotterdam Convention is a government priority;
- Macedonia aspires to access to the EU;
- Government bodies are aware of the necessity of improvement to the country's chemical management system;
- The existing pool of experts in educational and scientific-research institutions is a plus, as is their willingness to acquire and foster specific knowledge.

### **THREATS**

- Chemical industry infrastructure is in bad condition; financial resources are not sufficient for development of cleaner technologies;
- Lack of professional capacity within industry to implement provisions of new legislation;
- Insufficient administrative and professional capacities in government bodies responsible for chemical management (administrative; enforcement);
- Financing system for solving the problems caused by chemicals is inefficient;
- International obligations related to chemicals are not completely implemented;
- The public awareness related to chemicals risk is not sufficiently developed;
- Laboratories are inadequately equipped for quality and quantity analyses of chemicals and there is no system to control fulfillment of GLP principles in laboratory (GLP inspectors, GLP Monitoring Authority);
- Using services from the foreign laboratories is time consuming procedure and also need additional funds for covering the expenses
- There are no facilities for adequate storage, treatment and disposal of hazardous chemical waste in the Republic of Macedonia
- Lack of trained staff in regulatory toxicology and risk assessment in industry and educational and scientific-research institutions.

**9B**

## **3.0 Chemicals management: the current situation**

### ***3.1 Chemical sector capacity and output***

Within the industry and mining sectors of the country, the chemical industry accounts for 9.13 % of commercial activity via value activities. An estimated, 75% of chemical products or products produced using chemical processes are exported. The chemicals sector as a whole, accounts for 8.6 % of the Gross



Domestic Product. The existing industrial chemical capacities produce substantial quantities of different products. In this context, significant and at the same time long-term activities should be undertaken in order to minimize risk associated with chemical production, use and trade, and to protect the human health and the environment.

**Table 2. Installed capacity for production of some important products**

Production of Chemical products	Quantity (t)
Sulphuric acid	115 000
Phosphoric acid	40 000
Monochlorine acetate acid	5 000
Plant protection chemicals	8 000
NPK fertilizers	120 000
Polyacrylic-nitril fibbers	10 000
PVC (polyvinyl-chloride)	48 000
PVC granulate and compounds	24 000
PVC pipes	10 000
Medicines	800
Detergents	30 000
Production of various plastic products	30 000
Polyurethane foams	5 000

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Chemical products with the greatest export potential are the following:

- Polyacrylic-nitril fibbers
- Polyvinyl-chloride (PVC)
- PVC granulate and compounds
- PVC pipes and PVC fittings
- NPK fertilizers
- Mono-chloride acetate acid
- Medicines
- Medical plastics
- Detergents
- Various plastic products
- Additives for construction industry

Industry will have to integrate chemicals risk management as a normal component of its everyday performance. Some pressure on manufacturers within the Balkans is exerted by the EC market as driven by consumer desire to be able to make informed decisions and avoid hazards of exposure.

### **3.2 Management of hazardous wastes**

Taking into consideration that waste is the last stage of the chemical's life cycle, special attention has to be paid to its environmentally sound management. Currently, there is no available detailed data and information regarding



hazardous waste composition. However, estimated quantities of generated waste can be used as a starting point for further investigation. (Table 3.)

Table 3. Estimated quantities of generated waste

Type of waste	Estimated quantity (t/year)
Municipal waste	420.000
Commercial waste (constituents similar to those in household waste)	150.000
Waste from healthcare institutions	1.000
Construction and demolition waste	500.000
Industrial non-hazardous waste	2.120.000
Industrial hazardous waste	77.500
Waste from mining	17.300.000
Agriculture waste – animal by-products	4.900.000
Agriculture waste – plant by-products	550.000
Used tyres	5.000
Used mineral oils	8.000
End-of-life vehicles	17.500
Used accumulators	3.500
Total	app. 26.000.000

220B Source: Waste management strategy (2008-2020)

### 3.2.1 Waste Management Strategy

The **Waste Management Strategy** of the Republic of Macedonia (2008-2020), adopted 11 March 2008, identifies major problems of waste management and constraints, which are present in almost all areas of the existing waste management system and in all relations with the society, as related to:

1. Waste management: policy and legislative framework;
2. Organisation of institutions and human resources;
3. Cost recovery and financing of services and investments;
4. Stakeholder awareness and communications;
5. All phases of technical management from collection to final disposal of waste,
6. Existence/remediation of environmental burdens; and
7. Impact on public health and living/natural environment with the potential impact on the Macedonian economy.

The above mentioned strategy gives directions towards gradual development of a general waste management scheme that manages waste “from its source to its final disposal”, such as:

- Solving waste problems at their source;
- Waste separation and collection;
- Recovery and use of valuable constituents from end-of-life products;





- Utilisation of waste as a substitute for non-renewable natural resources, e.g., for energy production and as recycled into other products;
- Establishment of a rational network of waste treatment and disposal facilities;
- Establishment of the network of new, improved or remediated infrastructure facilities for hazardous waste management;
- Provisions governing disposal of residual waste in landfills to ensure that only stabilised, non-reactive material can be disposed of in landfills; and
- Remediation of contaminated sites – “hot-spots”;

#### **4.0 Monitoring and identification of environmental contamination and remediation priorities**

In accordance with its responsibilities, the MOEPP carries out regular collection, processing, formatting and proper keeping of the data from the monitoring networks of all the environmental media and areas - air, water, noise, soil, waste. However, there are number of chemicals that are still not included in the regular monitoring system.

#### **‘Hot Spots’ or contaminated sites resulting from industrial chemical and mining sector activities**

Apart from the available statistical data for chemical production, there is no comprehensive database (inventory) of contaminated sites, nor is there an adequate system for monitoring chemical releases from industry, etc. which would help to prevent creation of future sites and suggest where sites not yet identified might be located. In the absence of a national inventory, there were several studies developed in the period 2001-2008 related to identification of hot spots involving chemical pollution.

In the First Inception Report of the project “Development of Remediation Plans with Financial Requirements for elimination and remediation of Industrial Hotspots”(2007) criteria were developed for identification of hotspots. Criteria included risks and impacts, such as public health, seismic and geotectonic risk, economical benefit and impact, public sensitivity, cross-order pollution prevention, and climate impact . These criteria were applied to the following 16 hotspots to determine which were priorities for remediation

1. OHIS A.D (organic chemical industry) - Skopje
2. Bucim copper mine - Radovis
3. MHK Zletovo (lead and zinc smelter) - Veles.
4. Lojane (former chromium, arsenic, antimony mine) - Kumanovo
5. Sasa (lead and zinc mine) - Makedonska Kamenica  
Silmak ferro-silicon plant (former HEK Jugohrom) – Jegunovce
6. Toranic (lead and zinc mine) - Kriva Palanka
7. Makstil (iron & steel plant) - Skopje
8. Zletovo mine (lead and zinc mine) - Probistip
9. REK Bitola (Thermal power plant and lignite mine) - Bitola.
10. Feni Industry (ferro-nickel smelter) - Kavadraci



11. MHK Zletovo (fertiliser factory) - Veles
12. REK Oslomej - ESM (Thermal power plant and coal mine) - Kicevo
13. Godel tannery - Skopje
14. OKTA Rafinerija AD (oil refinery) - Skopje
15. Tane Caleski (metal surface treatment) - Kicevo.

Following application of the criteria, the following four hotspots were selected as the top candidates for remediation:

1 – **OHIS A.D** – Skopje- The main concern is the Lindane dump site (soil and groundwater contamination with hexachloro - cyclohexane, HCH, and its decay products) and former electrolysis plant (soil and groundwater contamination with mercury)

2 – **MHK Zletovo – Veles**

The results are reported of the first systematic study of spatial distribution of different chemical elements in surface soils in the Veles region, known for its lead and zinc industrial activity in the recent past.

A total of 201 soil samples were collected according to a dense net (0.25 km and 0.5 km) in urban and less dense net (1 km) in rural areas of 33 km<sup>2</sup>. The most characteristic elements for the given industrial activity are Cu, Cd, Zn, Hg, and Pb.

The concentration of elements such as As, Au, Cd, Cu, Hg, In, Pb, Sb, Se, Zn in soil samples around the lead and zinc smelter and in the adjacent part of the town of Veles was shown to be much higher than in those collected in the surrounding areas due to the pollution from the plant. For example, the content for Cd is ~ 40 times higher than the Dutch maximum permissible levels values for Pb and Zn – 10, for Hg, Cu, Se and Sb – 2, while the content of Cd (3 times), Pb and Zn (2 times) is even higher than the corresponding intervention (critical) values according to the Dutch standards. (Ref.Prof. Trajce Stafilov's study).

3 – **Silmak – Jegunovce**- Operation of dichromate unit (Cr<sup>6+</sup>-compounds) stopped 30 years ago. Surface contamination with chromium (VI) is still present at the dumpsite used by the facility. Remediation has been initiated, but many activities remain to be undertaken. The dumpsite poses a risk of pollution to the aquifer that feeds Skopje with potable water.

4 – **Makstil – Skopje**- Makstil is one of three main successors of former Iron & Steel plant "Skopje". A former dumpsite is the main environmental threat. A recent dumpsite is a part of Makstil's IPPC-licence. Due to the high content of iron, the dumped slag and other waste appears to be commercially attractive for reuse as a raw material.

## Environmental monitoring of agricultural pesticides

*Issues associated with pesticide application and storage*



Agrichemical is a generic term for the various chemical products used in agriculture. It refers to the broad range of pesticides (insecticides, herbicides, and fungicides), but it also includes synthetic fertilizers, hormones and other chemical growth agents, and concentrated stores of raw animal manure.

The thousands of different pesticides fall roughly into the following chemical categories; organochlorines, halogenated hydrocarbons, carbamates, heterocyclic compounds, organophosphates, chlorinated phenoxy substances, amines and ureas, benzonitriles, phenolic compounds and pyrethroids.

Fertilizers typically provide, in varying proportions, the three major plant nutrients (nitrogen, phosphorus, potassium: N-P-K), the secondary plant nutrients (calcium, sulfur, magnesium) and sometimes trace elements (or micronutrients) with a role in plant or animal nutrition: boron, chlorine, manganese, iron, zinc, copper, molybdenum and (in some countries) selenium. The problem of over-fertilization is primarily associated with the use of artificial fertilizers, because of the massive quantities applied and the destructive nature of chemical fertilizers on soil nutrient holding structures. The high solubilities of chemical fertilizers also exacerbate their tendency to degrade ecosystems, particularly through eutrophication.

Storage and application of some nitrogen fertilizers in some weather or soil conditions can cause emissions of the greenhouse gas nitrous oxide (N<sub>2</sub>O). Ammonia gas (NH<sub>3</sub>) may be emitted following application of inorganic fertilizers, or manure or slurry. Besides supplying nitrogen, ammonia can also increase soil acidity. Excessive nitrogen fertilizer applications can also lead to pest problems by increasing the birth rate, longevity and overall fitness of certain pests.

For these reasons, it is recommended that knowledge of the nutrient content of the soil and nutrient requirements of the crop are carefully balanced with application of nutrients in inorganic fertilizer especially.

### *Water pollution by agrochemicals in Macedonia*

*In the Republic of Macedonia there is no authorized institution that conducts regular monitoring of the pollution in agricultural areas, however there are some existing data obtained through separate projects implemented in the country.*

Different forms of water pollution caused by agricultural sources have been reported from certain parts of the Republic of Macedonia. Water pollution by nitrates and phosphates, pesticides and organic manures from agriculture is still a major problem in the country. The main types of water pollution by agriculture can be characterized as follows:

- a) Diffuse pollution of ground and surface waters with nitrates and phosphates due to the poor management and excessive application of mineral fertilizers and animal manures, especially highly vulnerable soils. This problem is not widespread, but locally there are many farms with very intensive input use, taking advantage of the low level of environmental law enforcement.
- b) Point source pollution of ground and surface waters with pesticides due to their poor management is another source of environmental contamination. Average pesticide use in the Republic of Macedonia is not excessively high. However, poor management often leads to localized water pollution problems from inadequate storage, over-application, inappropriate disposal or accidents by spray operators.
- c) Point source pollution of surface waters by poorly stored and managed manure, slurry, dirty water, silage effluent and other farm wastes. Although livestock numbers decreased dramatically during the past decade, there are still a significant number of highly specialized and very intensive establishments in R Macedonia. Few of these store their manure and manage their wastes according to official requirements, and there are many examples of farm effluent causing the pollution of irrigation canals, rivers, streams and irrigation lakes with nitrogen compounds, phosphates, various organic



materials with high Biological Oxygen Demand (BOD) and pathogenic organisms.

- d) Reports from environmental surveys indicate excessive levels of nitrates in both ground and surface waters in some areas, but especially in localities where heavy nitrogen loads are present from intensive livestock farms. The problems result primarily from inadequate waste storage facilities and poor application of waste treatment technology.

#### *Soil pollution by agrochemicals*

The problem of soil pollution by intensive use of artificial fertilizers and pesticides occurs predominantly in intensive cropping regions (e.g., the Vardar valley) in especially where fruits and vegetables are produced. The contamination is recognized to be serious and requires a solution. However, data is required to quantify and characterize the extent of the problem (e.g., severity, area coverage) so as to inform development of strategies.

#### *Nutrient balance, loss of soil organic matter, soil compaction and soil acidification*

Similarly to certain environmental issues discussed above, there is a lack of quantitative data on these environmental problems directly affected by farming and agricultural land use. These problems have been highlighted by several national experts.

In order to develop an agri-environment policy in the Republic of Macedonia, following proposals could be considered:

- Institutional capacity development;
- Legal harmonization;
- Data and monitoring system establishment;
- AE pilot and full-scale programme development and implementation;
- Training and advisory service; and
- Other accompanying RD measures (LFA, investment support, etc.).

## **5.0 Chemical exposure of and effects on the human population in the RM**

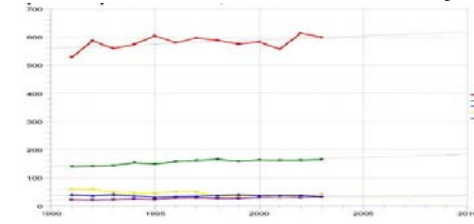
According to the statistical data provided by the Republic Institute of Health Protection regarding the mortality and morbidity rate, Macedonian citizens are less healthy than the average EU citizens. A difference is also identified in the life span of Macedonian citizens (73, 5), or five years less than 15 other EU countries (79). The main reason for this is the higher prevalence of cardiovascular diseases in Macedonian population.

Cancer diseases are on the second rated cause of mortality and have increased in the last 10 years, from 140/100,000 in 1991 up to 165/100,000 in 2003. In 2004, 5,696 new cases of cancer were detected. Endocrine disruptors were



identified as the fifth leading cause of death. Exposure through food and water that have been contaminated, as well as via products which incorporate endocrine disrupting chemicals and pose a risk owing to factors such as [frequency of use, contact via ingestion, persistence, dose, etc.] have been associated with exposure in humans in various studies, including assessments performed by EU countries.

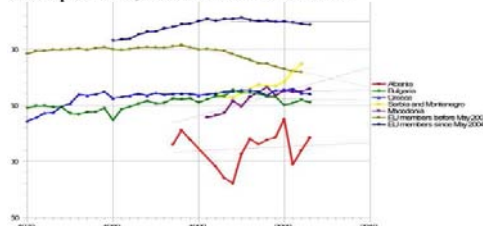
### Rate of standardized mortality of the Macedonian population



Црвена боја: 1120 ССС, болести на циркулаторниот систем, сите возрасти на 100,000 жители;  
Зелена боја: 1520 ССС, малигни неоплазми, сите возрасти на 100,000 жители;  
Сива боја: 1720 ССС, издворени причини (позрели и траума), сите возрасти на 100,000 жители;  
Жолта боја: 1830 ССС, болести на респираторниот систем, сите возрасти на 100,000 жители;  
Пастелна боја: 1870 ССС, болести на гастроинтестиналниот систем, сите возрасти на 100,000 жители;  
Вклучуваат акутноста на менингитис, сите возрасти на 100,000 жители.

Извор: WHO HFA-DB, јануари 2006.

Слика 5. Стандардизирани стапки на смртност (ССС) за сите возрасти на 100,000 жители за малигни неоплазми.



Извор: WHO HFA-DB, јануари 2006.

The history of the industrial and agricultural development of the region suggests that there are areas in the country contaminated with pesticides, of which the lindane and other PTSs account for the major proportion.

Although there is not any systematic approach to regular monitoring chemical exposure in humans, many separate studies that have been done in the previous period indicate serious exposure of the population.

Dioxins, which are unintentional by-products of industrial processes and combustion (industrial and agricultural), are known to cause many adverse effects on human health. Owing to their endocrine disrupter properties, they affect estrogenic receptors and cause puberty praecox. In order to evaluate the concentrations of dioxins in young girls's bloods that show the signs of puberty praecox, the Paediatric Clinic-Skopje, RM conducted a case study in 2006. Both dioxins and high concentrations of lindane were found. High concentrations of lindane were also found in the control group. There were no differences between rural and urban population.

## 6.0 Sustainability of sound management of chemicals

1. Development within Macedonia of a core administration which coordinates inter-agency activities will run parallel to the increasing emphasis on chemicals in the EU. Health and environmental policy will become oriented towards early action on the sources of chemical risk. A systematic, focused approach to chemicals management which embraces the broad range of chemicals (industrial, agricultural, etc.) will serve all areas of society and facilitate the application of regulation in all fields of concern to chemicals safety (accident prevention, consumer protection, emission control, waste, workers' protection etc.)
2. Institutional capacity in the area of chemicals legislation has been shown to be a crucial factor for bringing about a shift in industry culture - from



solely controlling emissions from processes and installations - to undertaking early action to prevent the emergence of risks and mitigate those which cannot be prevented (e.g., through process changes in the factory that reduce generation of wastes).

3. Industry will have to integrate chemicals risk management as a normal component within their everyday performance. There is a certain pressure of the EC market on manufacturers among the Balkans as elsewhere in boarder regions of the EU. Industry in the Balkan has to realize that chemicals risk management is a way to make users and consumers able to make informed decisions and avoid hazards of exposure.



Support to the Preparation of a National Strategy for Sustainable Development in  
The Republic of Macedonia

Draft Final National Strategy for Sustainable Development February 2008

Part II: Strategic background and analysis

# **SUSTAINABLE DEVELOPMENT STRATEGY IN REPUBLIC OF MACEDONIA**

**Working Group: Transport**

## **PROPOSITION OF PERFORMANCE INDICATORS FOR ROAD AND RAILWAY TRANSPORT TO ESTABLISH MORE EFFICIENT, LESS POLLUTED AND SAFER TRANSPORT SYSTEM IN REPUBLIC OF MACEDONIA**

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## 1. INTRODUCTION

The problems of the choice between various alternatives are permanent and essential in the projects of systems of transport and transport infrastructures. The complexity of the many fields affected by the transport infrastructure as well as the diversity of the various intervening actors directly or indirectly in the study process are as much elements to integrate in this choice.

The methods of multicriteria decision analysis are used to integrate several objectives and to make possible to take account of this complexity. The use of such methods also makes it possible to connect the objective aspects of the choices, based in particular on evaluation of the performance indicators of the alternatives for each criterion, with its subjective aspects which are the relative consideration of importance of each criterion, also called weighting.

These methods of multicriteria decision analysis are evidently at the basis of a study process ensuring the realization of a sustainability of transport infrastructure. In fact, they make possible to connect social, economic and environmental dimensions by the consideration of adequate criteria.

## 2. BASIC CONCEPT TO IMPROVE TRANSPORT POLICY IN REPUBLIC OF MACEDONIA

The major challenge for Republic of Macedonia is to join the NATO and EU. A very important event was happened in December 2005 when the Presidency of the European Council awarded Macedonia a candidate EU member state status. So, the major transport policy objectives in R. of Macedonia should be in correlation with EU major transport policy objectives expressed from the Commission point of view in the White paper called "European transport policy for 2010: time to decide". The major orientations in this document can be summarised along the following lines with special focus on environmental impact and sustainable development:

- to continue a policy of liberalisation, but also to progress in parallel with measures of harmonisation,
- to promote alternative modes such as rail transport, inland waterways and short sea shipping in order to rebalance modal shares,
- to eliminate the bottlenecks and give a new impulse to development of transeuropean network,
- to improve safety, to promote of new technologies and to improve participation of user are also important points of the EU orientations.

The possible environmental effects of policy proposals in the White Paper are evaluated by focusing on three main issues:

- modal shift and cleaner urban transport policy proposals (the desired modal shift is from road and air to rail and inland waters, and in the urban areas more and better public transport. The modal shift is seen as an important way to meeting economic,



social and environmental goals. The Commission supports the policy concept of dedicated rail lines for freight).

- pricing (restructuring charges towards better internalization of external transport costs: congestion, pollution and accidents; so charges which are differentiated with respect to mode, location, time, vehicle characteristics...) and
- alternative fuels promising lower emission, but at present, they are expensive. The Commission recommends biofuels in the short and medium term, natural gas in the medium and long term and hydrogen in the very long term.

Among the criteria to be promoted there is a criteria of accessibility but at this point it is also to give a different approach of the transport problem, the approach which privileged the spatial dimension from regional or European spatial development point of view (ESPON, 2006).

On adoption of the White Paper, the Commission decided to conduct a mid-term review in 2005 in order to establish whether the quantitative targets had been attained or adjustments are required. The EU Commission initiated this review with a consultation process started in 2005 and published its mid-term review on June 2006. The report is entitled "Keep Europe moving – Sustainable mobility for our continent", and it is intended to renew the definition of the future EU transport policy directions. Its core theses are:

- Mobility is essential to Europe's prosperity and to the freedom of movement of its citizens.
- The negative effects of mobility, i.e. energy consumption and impacts on health and the environment, must be reduced.

The integration of transport policy into environmental policy establishes the fundamental policy directions.

### 3. NOTION OF SUSTAINABLE TRANSPORTATION SYSTEM

Transport is closely related to many economic and social activities and rarely justified as a final "product" but he is almost considered as a derivative activity to realize a motive or finality. Transport has economic, financial, environmental and social dimensions and all of them must be taken into account in this policy scope.

Sustainability reflects the fundamental human desire to create a better future world and leave a positive and durable legacy. Sustainability emphasizes the integrated nature of human activities and therefore the need to coordinate decisions among different sectors, groups and jurisdictions. Sustainability planning considers society's overall, long-term goals. It means that local, short-term decisions are consistent with strategic, regional and global, long-term goals. Comprehensive and sustainability planning rely on measurable **indicators**. Such indicators have many uses for planning and management in the process of *sustainability planning*. Several data should be used to create indicators. This data can help establish baselines, identify trends, predict problems, assess options, set performance targets, and evaluate a particular jurisdiction or organization. Which indicators are selected can significantly influence analysis results.

The selection of pertinent indicators to establish more efficient, less polluted and safer transport system needs to define a sustainable transportation system and the major objectives of



the transport policy. The definition of sustainable transport provided by the European Council of Ministers<sup>1</sup> is following:

“A sustainable transportation system is one that:

- Allows the basic access needs of individuals, companies and societies to be met safely and in a manner consistent with human and ecosystem health, and with equity within and between generations.
- Is affordable, operates efficiently, offers choice of transport mode, and supports a competitive economy, as well as balanced regional development.
- Limits emissions and waste within the planet’s ability to absorb them, minimizes consumption of non-renewable resources, limits consumption of renewable resources to the sustainable yield level, reuses and recycles its components, and minimizes the use of land and the production of noise.”

Therefore, we should announce the goal of sustainable transportation planning: the goal is to ensure that environment, social and economic factors are considered into decisions affecting transportation activity.

#### 4. GENERAL CONSIDERATION ABOUT CRITERIA AND INDICATOR

A criteria is a qualitative or quantitative expression permit to judge the consequence or the performance of an alternative for an objective of transport policy or a constraint of the considered project. A criteria must be useful and reliable. It is associated an ordinal or cardinal scale with a direction preferably. For the road and railway projects, the preferable criteria should be numerous and it is necessary to group them in families of criteria in order to in particular facilitate the appreciation of their relative importance.

The choice of the criteria must be coherent, which is checked if 3 conditions are observed:

- Exhaustively
- Coherence enters the local preferences of each criteria and the total preference
- Independence: there should not be redundancy between the criteria. Their number must be such as the suppression of one of the criteria does not make it possible more to satisfy the two preceding conditions (Maystre L. Y., Pictet J. et al., 1994).

The criteria are not always directly measurable. One uses sometimes an **indicator** which is a measurable variable being used to quantify a situation or the tendency of this criteria. The determination of the performances of the alternatives for a given criteria is based on an **indicator** which is a measurable variable being used to quantify a situation or the tendency of the criteria. So, an **indicator** is a variable selected and defined to measure progress toward an objective and an indicator data contains some values used in indicators. Indicators can reflect whether trends are positive or negative with respect to objectives. Reference units are measurement units normalized to facilitate comparison of impacts, such as per-year, per-capita, per-kilometer, per-trip, per vehicle-year, per euros... The selection of reference units can affect how problems are defined and solutions prioritized. Comparisons can be structured in various ways to reflect different perspectives, such as comparisons between different areas and groups, or trends over time. A group of indicators aggregated into a single value often is called an **index**.

Many impacts are best evaluated using **relative indicators**, such as trends over time or comparisons between different groups or activities. Equity can be evaluated based on how disadvantaged groups (people with low incomes, physical disabilities or other

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<sup>1</sup> **Sustainable Transport Definition** (Source: Adapted from Council of the European Union 2001)



disadvantages) compare with other groups in terms of their transport options and impacts.

It may be helpful to prioritize indicators and develop different sets for particular situations. For example, it can be useful to identify some indicators that should always be collected, others that are desirable if data collection costs are acceptable, and some indicators to address specific planning objectives that may be important in certain cases.

## 5. EXEMPLES OF INDICATORS FOR SUSTAINBLE TRANSPORT

The sustainable transportation indicators should be assembled by category according to three major issues of sustainable development: economic, social and environmental effects. Two pertinent subdivisions of indicators should be by localisation of the assessment: urban and rural area.

### 5.1. Economic Indicators

Economic development refers to a society progress toward economic objectives such as increased income, wealth, employment, productivity and social welfare. Sustainable transportation economic indicators should reflect both the benefits and costs of transport systems, and the possibility that more motorized mobility reflects a reduction in general accessibility and transport diversity, rather than a net gain in social welfare.

Table 1 Example of Economic Indicators

INDICATOR	DESCRIPTION	Direction
Supports a competitive economy	Transport total output of the economy (GDP and GDP per capita)	More is better
Commute time	Average door-to-door travel time by mode of transport	Less is better
Motor vehicle travel	Motor vehicle travel measured as vehicle kilometres travelled or passenger kilometres travelled	Both directions
Employment Accessibility	Number of job opportunities and commercial services within 30 minute travel distance of residents by mode of transport	More is better
Cost of externalities in terms of GDP.	Cost of congestion, pollution and safety expresses in the money, and this share of GDP	Less is better
Cost-Benefit Analysis including the cost of externalities.	To consider the cost of externalities in the Cost-Benefit Analysis	More benefit is better
Mode Split in passenger transport	Portion of passenger travel made by road and railway (measured in number of passengers and passengers * km)	More for railway is better
Mode Split in freight transport	Portion of freight transported by road and railway (measured in number of tonnes and tonnes * km)	More for railway is better



Congestion delay	Traffic congestion delay per capita or average time lost per vehicle km	Less is better
Travel cost	Portion of household expenditure devoted to transport	Less is better
Transport cost efficiency	Transportation costs as a portion of total economic activity and per unit of GDP	Less is better
Facility costs	Expenditures per capita on roads, parking, railway and traffic services	Less is better
Freight efficiency	Speed and affordability of freight and commercial transport	More is better
Accident cost	Accident cost per capita expressed in the money	Less is better
Operates efficiently	Public Transport Punctuality	Less is better

Source: Litman 2007

## 5.2. Social Indicators

Social impacts include equity, human health (which is also an economic impact if disease imposes financial costs or reduces productivity), community cohesion (the quality of interactions among people living in a community), impacts on historic and cultural resources (such as historic sites and traditional community activities), and aesthetics.

Transportation equity can be evaluated with a variety of perspectives and impacts. It requires comparing differences in transport options, service quality, impacts and between different groups, particularly impacts on people who are economically, physically and socially disadvantaged.

Human health impacts of transportation include accident injuries, pollution illness, and health problems from inadequate physical activity. Policies that improve walking and cycling conditions and increase non-motorized travel improve mobility for disadvantaged people and increase fitness and so tend to support sustainable transportation.

Community cohesion can be measured using appropriate area surveys to see how transport facilities and activities impact the human environment, surveys of residents to determine how these impacts affect interactions among neighbours, and economic surveys to see how this affects property values and business activity.

Table 2 Example of Social Indicators of Sustainable Transportation

INDICATOR	DESCRIPTION	Direction
Social cohesion	Number of trip (all transport modes) per capita	More is better
Safety	Accident disabilities and fatalities per capita	Less is better
Users satisfaction	% of users satisfied with local authority provided district transport services	More is better
Disabilities	% of disadvantaged users satisfied with provided district transport services	More is better



Basic Access	% of residents defined as within a distance of 500m (15min walk) of key local services	More is better
Cultural preservation	Degree to which cultural and historic values are reflected and preserved in transport planning decisions	More is better
Affordability	% of budgets spent on transport by lower income households	Less is better
NMT <sup>2</sup> transport	Quality of walking and cycling conditions	More is better
Children's mobility	% of children's travel to school and other local destinations by walking and cycling	More is better

Source: Litman 2007

### 5.3. Environmental Indicators

Environmental impacts include various types of air pollution (including gases that contribute to climate change), noise, water pollution, depletion of non-renewable resources, landscape degradation (including pavement or damage to ecologically productive lands, habitat fragmentation, hydrologic disruptions due to pavement), heat island effects (increased ambient temperature resulting from pavement), and wildlife deaths from collisions. Various methods can be used to measure these impacts and quantify their ecological and human costs but there is considerable uncertainty about many of these costing methodologies and the resulting values. There are various ways of dealing with such uncertainty, including improved analysis methodologies, use of cost ranges rather than point values, and establishment of reference standards (such as acceptable levels of ambient air pollution and noise levels).

Table 3 Example of Environmental Indicators of Sustainable Transportation

INDICATOR	DESCRIPTION	Direction
Climate change emissions	Fossil fuel consumption, and emissions of CO <sub>2</sub> and other climate change emissions per capita	Less is better
Other air pollution	Emissions of air pollutants (CO, NOx, particules, etc.) per capita	Less is better
Frequency of air pollution	Frequency of air pollution standard violations	Less is better
Noise pollution	% of population exposed to high levels of traffic noise	Less is better
Water pollution	Vehicle fluid losses per capita	Less is better
Land use impacts	Land devoted to transport infrastructure and facilities	Less is better
Energy Efficiency of transport industry/economy	% of cars or transport vehicles used a renewable resources of energy	More is better
Habitat protection	Preservation of high quality wildlife habitat	More is better

Source: Litman 2007

The European Union's *Transport and Environment Reporting Mechanism* (TERM) identifies the sustainable transportation indicators summarized in following table:

<sup>2</sup> Non Motorized Transport



Table 4 Proposed TERM Indicator List (EEA, 2002)

Group	INDICATORS	
<b>Transport and Environment Performance</b>		
Environmental consequences of transport	Transport final energy consumption and primary energy consumption, and share in total (fossil, nuclear, renewable) by mode.	
	Transport emissions and share in total emissions for CO <sub>2</sub> , NO <sub>x</sub> , NM, VOCs, PM <sub>10</sub> , SO <sub>x</sub> , by mode.	
	Exceedances of air quality objectives. Exposure to and annoyance by traffic noise.	
	Infrastructure influence on ecosystems and habitats ("fragmentation") and proximity of transport infrastructure to designated sites.	
	Land take by transport infrastructures. Number of transport accidents, fatalities, injured, polluting accidents (land, air and maritime).	
Transport volume and intensity	<i>Passanger transport (by mode and purpose):</i> <ul style="list-style-type: none"> <li>- total passengers</li> <li>- total passengers*km</li> <li>- passenger*km per capita</li> <li>- passenger*km per GDP</li> </ul>	<i>Freight transport (by mode and group of goods):</i> <ul style="list-style-type: none"> <li>- total tonnes</li> <li>- total tonnes*km</li> <li>- tonnes*km per capita</li> <li>- tonnes*km per GDP</li> </ul>
<b>Determinants of the Transport/Environment System</b>		
Spatial planning and Accessibility	Average passenger journey time and length per mode, purpose (commuting, shopping, leisure) and territory (urban/rural)	
	Access to transport services e.g.: motor vehicles per household, part of households located within 500m of public transport.	
Transport Supply	Capacity of transport infrastructure networks, by mode and by type of infrastructure (e.g. motorway, national road, municipal road etc.). Investments in transport infrastructure per capita and by mode.	
Price signals	Real passenger and freight transport price by mode.	
	Fuel price.	
	Taxes	
	Subsidies.	
	Expenditure for individual mobility per person by income group. Proportion of infrastructure and environmental costs (including congestion costs) covered by price.	
Technology and utilization efficiency	Energy efficiency for passenger and freight transport (per pass-km and per tonne-km and by mode).	
	Emissions per pass-km and emissions per tonne-km for CO <sub>2</sub> , NO <sub>x</sub> , NM, VOCs, PM <sub>10</sub> , SO <sub>x</sub> by mode.	
	Occupancy rates of passenger vehicles.	
	Load factors for road freight transport (LDV, HDV).	
	Uptake of cleaner (unleaded petrol, electric, alternative fuels) and alternative fuelled vehicles.	
	Vehicle fleet size and average age.	
	Proportion of vehicle fleet meeting certain air and noise emission standards (by mode).	
Management integration	Number of Member States that implement an integrated transport strategy.	
	Number of Member States with national transport and environment monitoring system.	
	Uptake of strategic environmental assessment in the transport sector.	
	Uptake of environmental management systems by transport companies.	
	Public awareness and behaviour.	



Source: Project TERM - Indicator List (EEA, 2002)

The European Commission sponsored project called *SUMMA* (Sustainable Mobility Measures and Assessment) to define sustainable mobility, develop indicators, assess the scale of sustainability problems associated with transport, and identify policy measures to promote sustainable transport ([www.SUMMA-EU.org](http://www.SUMMA-EU.org)). The scope of its analysis is summarized in the following table:

Table 5 SUMMA Outcomes of Interest

<b>Economic</b>	<b>Environmental</b>	<b>Social</b>
<p><b>EC1: Accessibility</b> Economic accessibility has two aspects: (1) local access of goods and people to services, work, industrial plants, etc., and (2) long distance links among regions</p>	<p><b>EN1: Resource use</b> The use of materials, energy and other resources by the transport sector.</p>	<p><b>SO1: Accessibility and affordability</b> The time and cost required to reach basic services. Lower income individuals generally have poorer accessibility to basic services than those well off.</p>
<p><b>EC2: Transport operating costs</b> The costs to the user of the transport system, both direct user costs (fuel, ticket prices, transport equipment), and indirect costs, such as the costs of congestion.</p>	<p><b>EN2: Direct ecological intrusion</b> The impacts of transport on flora and fauna that are not caused by emissions or pollution, but rather by transport infrastructure (building, using, and maintaining).</p>	<p><b>SO2: Safety and security</b> Safety implies freedom from danger. Security concerns freedom from fear (of crime or other undesired actions).</p>
<p><b>EC3: Productivity/Efficiency</b> Providing conditions for an expanding, productive and efficient economy, and therefore for more individual and public welfare. Inefficiencies increase the resources needed for benefits.</p>	<p><b>EN3: Emissions to air</b> Emissions of pollutants, etc. into the air, which affect health and harm buildings. Also the emission of greenhouse gasses, which contributes to global warming.</p>	<p><b>SO3: Fitness and health</b> The trend to perform short trips by car decreases fitness and increases the threat to health (through increased pollution).</p>
<p><b>EC4: Costs to economy</b> All costs of transport (except for the individual user), i.e. infrastructure investments, maintenance, public subsidies, final energy consumption and external costs of transport.</p>	<p><b>EN4: Emissions to soil and water</b> Emissions of pollutants to soil and water, wastewater from manufacture and maintenance, runoff from roads, discharges of oil and wastewater by ships.</p>	<p><b>SO4: Livability and amenity</b> Transport influences our <i>quality of life</i>. It concerns an individual's direct surroundings and the impact transport has on it. It concerns not only measurable aspects (noise, pollution) but also perceptions and attitudes.</p>
<p><b>EC5: Benefits to economy</b> The gross value added generated by the transport sector, national revenues from taxes and traffic system charging, and economic growth induced by transport.</p>	<p><b>EN5: Noise</b> Transport is one of the most significant sources of noise in urban areas. There is evidence that noise is related to human and animal health and wellbeing.</p>	<p><b>SO5: Equity</b> This concerns the fair distribution of costs and benefits among different groups in society, among income classes, among regions, and among generations.</p>
	<p><b>EN6: Waste</b> Transport vehicles and infrastructure create large amounts of waste during their life cycle, which can partly be recycled or</p>	<p><b>SO6: Social cohesion</b> The ongoing process of developing a community of shared values, challenges and opportunities based on trust, hope and reciprocity. It is related to <i>social</i></p>





	reused, but is otherwise disposed of by incineration and in landfills.	<i>capital</i> , which refers to features of social organisation such as networks, norms, and social trust that facilitate co-operation for mutual benefit.
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Source: SUMMA project (www.SUMMA-EU.org)

## 6. EXISTING DATA IN REPUBLIC OF MACEDONIA AND PROPOSITION OF INDICATORS FOR SUSTAINABLE TRANSPORT SYSTEM

Sustainable indicator systems are generally separate from conventional statistics and accounting systems commonly used by public and private organizations to evaluate the value of assets and activities, such as censuses, national accounts and corporate reports. Therefore, it may be possible to integrate these systems to provide comprehensive indicators. The specific inconvenience in Macedonia concerns data availability. The lack of pertinent transport survey data requires making several indicators for sustainable transport based on other existing data.

### 6.1. EXISTING DATA

- **The socio economic** data can give information about social disparities and possible problems resulting from the economic structure. We can use information about demographic data, regional employment structures (by sectors) and GDP, the (national) exports and imports per year structured according to 9 Standard International Trade Classification groups etc. Some of these data are collected by State Statistical Office and the Ministry of Economy.
- **The data on traffic performances** contains several information concerning the vehicle and traffic. The following data should be provided on national level:
  - number of accidents by road per year
  - number of injuries by road accidents per year
  - number of deaths by road accidents per year
  - number of registered cars and lorries per year
  - type of motor vehicles by energy consumption
  - age of vehicles...
- **Land use data** contains information about surface, land used, elevation, localization of cities and economic activities, protected natural parks and area, etc.
- **Available data in Fond of Road and in MZ** is related to the physical transport infrastructure, maintenance and the intensity of traffic flows. They are collected by two public entities responsible for national road network (Fond of road) and railway network (MZ).
- **Data for energy consumption and pollution** generated by transport activity should be provided by different administrative institutions e.g. the Ministry of Environment and Physical Planning and the Ministry of Health.



- **Data for urban transport** behaviour and activity should be obtained in municipality of larger cities in Macedonia, particularly in the capital Skopje.

## **6.2. PROPOSITION OF INDICATORS FOR SUSTAINABLE TRANSPORT SYSTEM**

On the basis of several data we can propose some indicators for transport sector in Republic of Macedonia. The sets of performance indicators depend on objectives of the study and the level of analyses and on action plan to achieve these objectives<sup>3</sup>. The assessment of projects for road and railway infrastructure could be based on following indicators:

### **6.2.1. SOCIO-ECONOMIC INDICATORS**

#### **DOMAIN: ECONOMY**

#### **1) INDICATOR SE1: *Ratio between Benefits/Costs***

##### DEFINITION – OBJECTIVE

This indicator considers the proportion between benefits and costs of the projects, estimated in monetary values. If the ratio is higher then the project is more preferable. The costs and benefits of the projects should be known and expressed in monetary units to calculate this indicator

Data Source: Proper project characteristics.

#### **2) INDICATOR SE2: *External Trade***

##### DEFINITION – OBJECTIVE

This indicator assesses the value of imports and exports per regions where the transport infrastructure should be improved or constructed. This indicator may assess the impact of the infrastructure of external trade. The export and import of merchandise in 2003 and 2004 in Republic of Macedonia are following:

Exports of merchandise				Import of merchandise			
Millions of US\$		Percentage of GDP		Millions of US\$		Percentage of GDP	
2003	2004	2003	2004	2003	2004	2003	2004
1363	1661	29.2	34.6	2300	2875	49.3	54.6

Source: *UNCTAD Handbook of Statistics On-line* (exports, imports of merchandise and GDP [http://unohrlls.expressiondev.com/UserFiles/File/lldc%20documents/LLDC\\_INDICATORS2006](http://unohrlls.expressiondev.com/UserFiles/File/lldc%20documents/LLDC_INDICATORS2006))

The total external debt to export of merchandise in ratio of GDP was 40% of GDP in 2003 and 39% of GDP in 2004.

<sup>3</sup> In this case to establish more sustainable transport system



Data Source for this indicator: Data in the Ministry of Economy and State Statistical Office should be basic data to make this indicator.

### 3) INDICATOR SE3: *Generalised cost of transport*

#### DEFINITION – OBJECTIVE

This indicator is pertinent to aggregate the price, the value of time and the quality of transport. The general expression of this indicator is:

$$C_{\text{gener.}} = C_{\text{price}} + C_{\text{time}} * T_t + C_{\text{perf.}}$$

Therefore, to calculate this indicator it should have information about the price of transport (tariffication prices), the time lost in transport  $T_t$ , and the value of travel time  $C_{\text{time}}$  expressed in monetary values, and may be the cost of quality of transport services. For road and railway transport in Macedonia it is possible to calculate the first two members of this equation. The value of travel time for passengers can be calculated through the average hourly income in the country. The estimations of the value of travel time in the feasibility study<sup>4</sup> for Demir Kapija – Udovo – Smokvica motorway (Corridor X) in April 2007 are following:

**Table 6 Value of time by trip purpose used in the feasibility study per Egnatia Odos**

Type of trip	Value of time
trips made in the framework of work (e.g., salesman) and for professional drivers	3,40 €/hour
trip purpose “to and from work”	1,70€/hour (which is equal to 50% of the average daily salary)
trips with other purposes	0,85€/hour

Source: Egnatia Odos, 2007

Data Source for this indicator: Data in the Ministry of Economy and State Statistical Office should be basic data to make this indicator.

### 4) INDICATOR SE4: *Safety of transport*

#### DEFINITION – OBJECTIVE

This indicator considers the values of human life expressed in monetary terms, plus the medical cost and loss of production in the case of injures which take place in traffic accidents. The measure should be by euros per tonnes\*km or passenger\*km. The estimations of the unit cost per type of accident in the feasibility study for Demir Kapija – Udovo – Smokvica motorway (Corridor X) in April 2007 are following:

**Table 7 Unit cost per type of accident estimated per Egnatia Odos**

Type of accident	Average unit cost in EU countries	Accident unit cost in Republic of Macedonia
Fatal accidents	1.000.000 €	146.200 €
Accidents with severe injures	125.000 €	17.340 €
Accidents with light injures	38.462 €	1.360 €
Accidents with damages	4.739 €	170 €

<sup>4</sup> Egnatia Odos, 2007



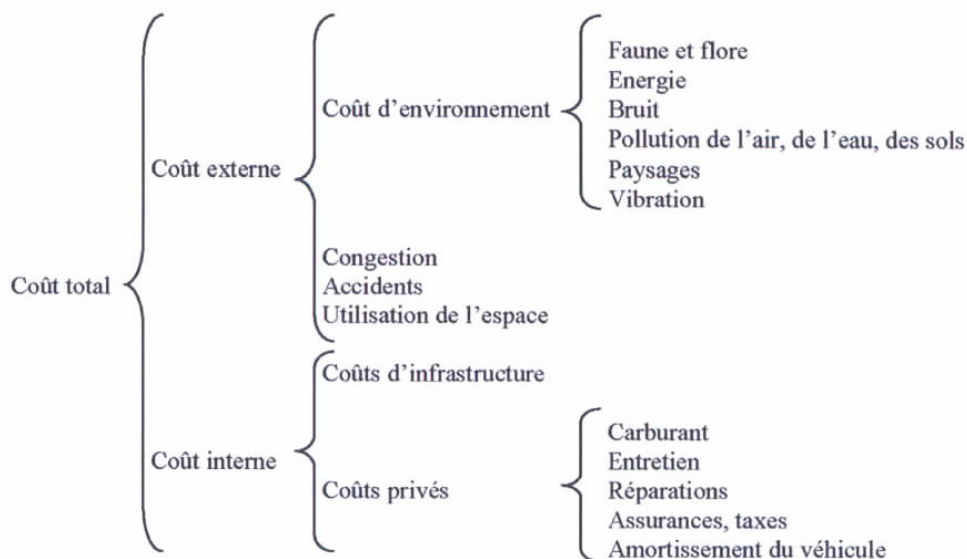
Source: Egnatia Odos, 2007

Data Source: this indicator should be constituted through information of transport safety in the Ministry of Interior about annual accidents per vehicle, per transport mode or per tonnes\*km or passenger\*km transported. The several data should be provided in the Ministry of Health.

## 5) INDICATOR SE5: *Cost benefit analyses with external cost of transport and cost of cycle of live of infrastructure*

### DEFINITION – OBJECTIVE

The indicators more used in the economic cost/benefit analyse are the IRR (Internal Rate of Return) and NPV (Net Present Value). The costs should include the externalities of transport activities as well as the noise, the pollution, the safety and congestion. The min. value of IRR should be 10% to justify economic feasibility of the project. If the IRR or NPV is higher the project is more preferable. The transport costs should be preceded in following line:



Source: Quinet, 1998.

Data Source: this indicator should be calculated for each project in accordance with proper characteristics of the project. To execute a cost benefit analyses it should know all costs and benefits of the project.

## 6) INDICATOR SE6: *Freight intensity (relationship between tonne kilometres moved and Gross Domestic Product)*

### DEFINITION – OBJECTIVE

The encouraging more freight to be lifted by railway will help to reduce traffic on roads network. The "freight intensity" indicates how the volume of transported freight (measured in tonne-kilometres) has been changing relative to the volume of the economy. This indicator could be fragmented by transport mode and in this case shows the modal split in freight transport.



Data Source for this indicator: Data in the State Statistical Office

## **DOMAIN: MOBILITY**

### **7) INDICATOR SE7: Average number of trip per person and per day**

#### DEFINITION – OBJECTIVE

The daily average number of trip per person aged of 5 years and plus is a classical indicator for mobility of population in an urban area. This indicator measures the social cohesion of the population. This indicator should be subdivides by transport mode and motive. The more preferable situation is when the NMT (non motorized transport mode) keeps a considerable part of the mobility.

Data Source: this indicator should be calculated in the urban areas where we have data come from the mobility investigation (Skopje, Bitola).

### **8) INDICATOR SE8: Average daily travel time per habitant**

#### DEFINITION – OBJECTIVE

The daily average travel time per habitant, or the “budget-time”, measures the daily time considered to travel. The preferable situation is if this indicator is lower. This indicator should be combined by monthly household expenditure for transport and calculating for each transport mode and motive of trip.

Data Source: this indicator should find in the Time Use Survey - State Statistical Office, September 2004.

### **9) INDICATOR SE9: Average daily travel distances per habitant**

#### DEFINITION – OBJECTIVE

The daily average travel distances per habitant, or the “budget of distances”, measures the daily distances considered to travel. The preferable situation is then this indicator is lower because the special sprawling of the city is lower. This indicator should be estimated by transport mode and by motive.

Data Source: this indicator should be calculated in the urban area where we have data come from the mobility investigation (Skopje, Bitola).

## **DOMAIN: ACCESIBILITY**

Accessibility to transport is a key issue for sustainable development and social justice. We need to ensure that more Macedonian households are able to choose sustainable forms of transport.



Concerning the accessibility, the SEETO<sup>5</sup> notices that: “Improving accessibility and connectivity between communities, regions and neighbouring countries is essential for socio-economic development. Policies, programmes and plans are needed to address these issues, but justification for investment to improve accessibility from economical point of view is difficult due to low values of travel time and high construction costs, especially in mountainous and difficult terrain”.

## **10) INDICATOR SE10: *Potentially Benefited Population***

### **DEFINITION – OBJECTIVE**

This indicator defines the population that potentially benefits from the transport project. The benefited population is assessed in relation to the distance on the transport infrastructure, particularly:

- a) Concerning the road project, the population that lives at a X km near distance from road network. This distance expresses an area involving possible daily commuting.
- b) The population that lives at a XX km further distance from road network, a distance that expresses a wider area in which possible frequent movements are expected and therefore an area with increased potential of functional connections.
- c) Concerning the railway project, the population that lives at a X km near the railway station.
- d) Concerning the public urban transport project, the population that lives at a 15 minutes walking from the stations of public transport (this travel time corresponds about 750 m distance from stations).

Data Source for this indicator: State Statistical Office; the census of 2002 is a basic data to make this indicator.

In accordance with the objective of the study this indicator should be subdivided by target group of population for example part of labour force, part of unemployed population, part of child, part of disabled people etc.

## **11) INDICATOR SE11: *Population density related to transport***

### **DEFINITION – OBJECTIVE**

This indicator determines the density of population in the urban districts. Density is a basic indicator of the distribution of population in relation to the transport axis. The indicator records the relation between transport infrastructure and population concentration. The population tends to concentrate near transport axes, which is a main characteristic of urban development. The public transport is more efficiency in the area with high density of population.

Data Source for this indicator: State Statistical Office – census in 2002 should be basic data to make this indicator.

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<sup>5</sup> South-East Europe Transport Observatory



## **12) INDICATOR SE12: *Number of job opportunities and commercial services within 30 minute travel distance of residents by mode of transport***

### **DEFINITION – OBJECTIVE**

This indicator defines the job opportunities and commercial services within 30 minute travel distance of residents by mode of transport. This indicator is very pertinent to use it for evaluation of urban transport systems.

Data Source for this indicator: Data in the Ministry of Economy and State Central Register for enterprises should be basic data to make this indicator.

## **13) INDICATOR SE13: *Time distance between towns***

### **DEFINITION – OBJECTIVE**

This indicator determines the time-distance between towns using road or railway transport. Time-distance between towns is a main indicator for assessing town accessibility; it is also an important for calculating the cost of transportation of goods and the overall cost.

The Transform in 2005 for Sustainable Mobility, policy Measures and Assessment (SUMMA, [www.SUMMQ-EU.org](http://www.SUMMQ-EU.org)) propose a similar index between important economic centres and regions by transport mode called “**Accessibility of origin - destination**” which is:

$$A_{ij} = \sum_{ij} (I_i + I_j + W_i + W_j) \cdot t_{ij} \cdot e^{-0.01d_{ij}}$$

I - number of inhabitants

W – number of working places

t – average travel time between zones i and j

d- average distance between zones i and j

Data Source for this indicator: Data in the Ministry of Interior and in Makedonija pat should be basic data to make this indicator.

## **14) INDICATOR SE14: *Accessibility of transport modes***

### **DEFINITION – OBJECTIVE**

This indicator should measure the accessibility to transport mode. For road transport this indicator may be a percent of motorized population expressed in number of cars/1000 inhabitants. For railway or urban public transport the measure may be percentage of households within 10 minutes walk of a railway station or a bus stop. This indicator can be disaggregated in many ways, including by household type, social class, household income band, property type, tenure, local authority and "urban" and "rural" areas.



The recently study shows that the use of public transport increases considerably if the rate of motorization is about 400 car ownership per 1000 inhabitants and if the supply of public transport is a high quality (figure ).

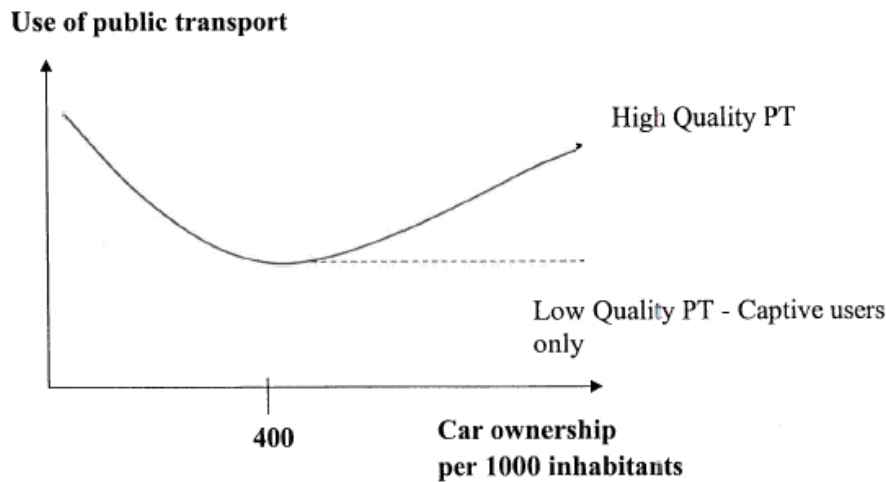


Figure 1 Use of public transport related to car ownership and quality of PT

The statistics published by State Statistical Office indicate that in 2002 there were 152 cars per 1000 inhabitants, but in 2005 this number decreases for 20% to arrive on 278 thousand vehicles, or 136 cars per 1000 inhabitants. The main reason of decline could be attributed to the age of the vehicles. Unfortunately, a large part of cars still remains obsolete, as in 2003 the average age of vehicles was 15,5 years and around 50% were older than 20 years (figure). Another reason of this situation is an increased number of non registered cars which is estimated to be about 40% of total passenger cars in 2006. Therefore, there is a high potential to increase the level of motorization of population if we analyze the total number of drivers which was about 675 thousand in 2005, or 550 thousand drivers with driving licences category B (for passenger cars).



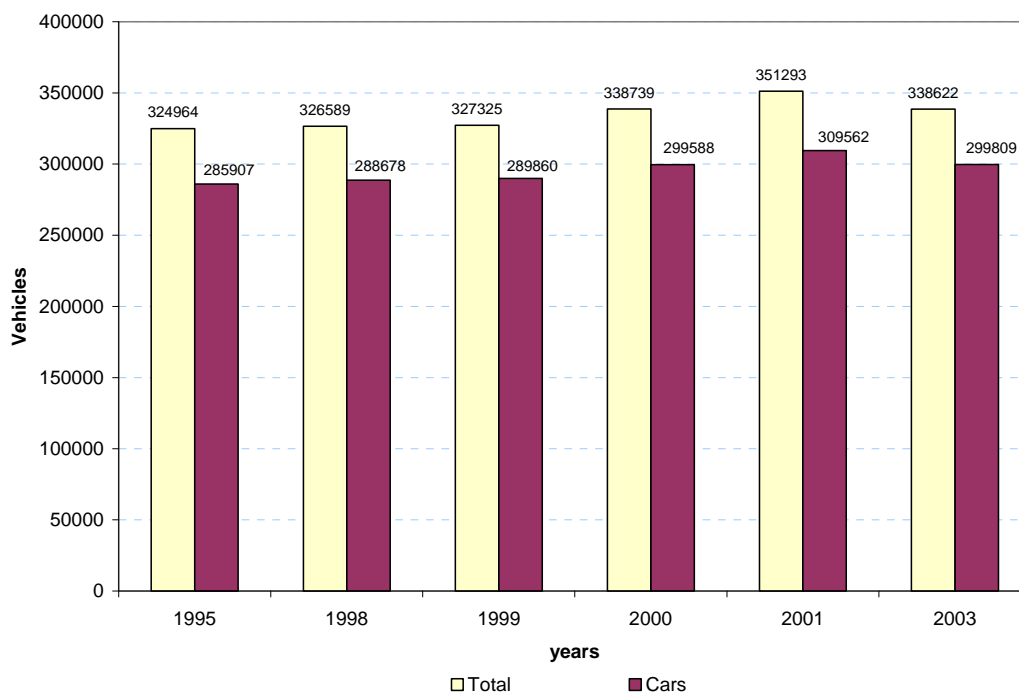


Figure 2 Number of vehicles fleet in Republic of Macedonia

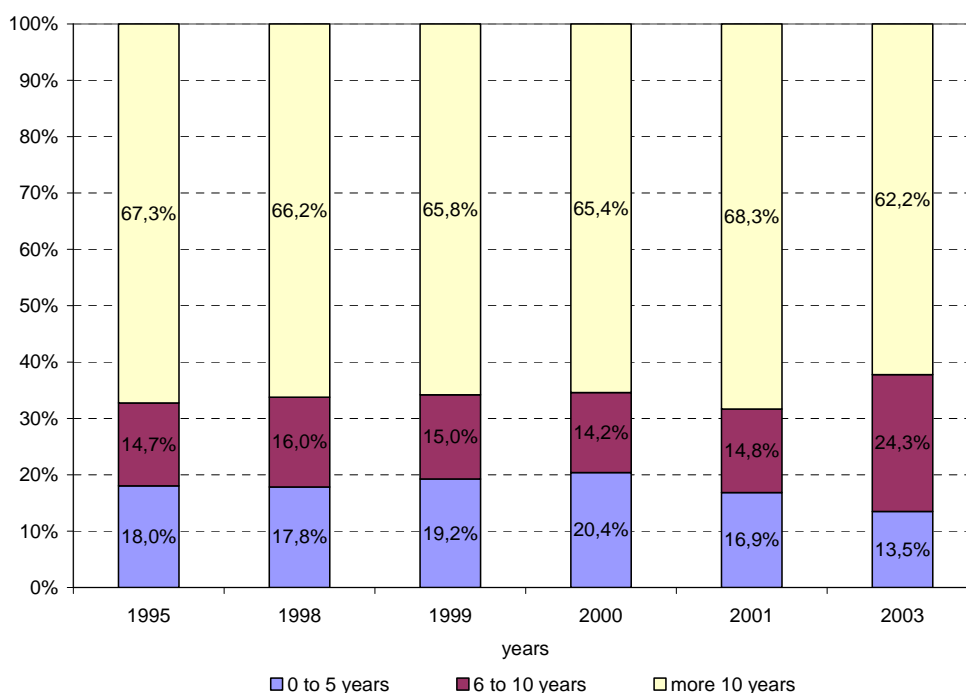


Figure 3 Age of vehicles fleet in Republic of Macedonia

Data Source for this indicator: Data in the Ministry of Interior and in State Statistical Office.

### 15) INDICATOR SE15: *Percentage of journeys to work not using car*



### DEFINITION – OBJECTIVE

Cars do not use resources as efficiently as other forms of transport. Encouraging people to travel to work without using their car is a good way of using resources better, as well as cutting pollution, greenhouse gas emissions and congestion on roads. The indicator is defined as the percentage of adults who do not use a car (or van) to travel to work.

Data Source for this indicator: Data in the State Statistical Office - Macedonian Household Survey.

## 6.2.3. ENVIRONMENTAL INDICATORS

### 1) INDICATOR EI1: *Fragmentation of natural areas*

#### DEFINITION – OBJECTIVE

This indicator defines potential fragmentation problems of forest areas, areas of natural beauty or other important ecosystems. The fragmentation of ecosystems by transport infrastructure may have an impact on their function and biodiversity, either because of loss of living space for the species (areas for nesting, reproduction and hunting) or because of communication problems of some species. The fragmentation of areas with characteristics of single ecosystems has been one of the most important issues related to the alignment of the axis of transport infrastructure

This indicator could be created in the following way: The land which transport infrastructure is established should be grouped in “sensitive” and “non-sensitive” areas. The fragmentation index of “sensitive” areas should be measured of 1 km on either side of the transport infrastructure axis and related to total surface.

Data Source for this indicator: Data in the Ministry of Environment and Physical Planning should be basic data to make this indicator.

### 2) INDICATOR EI2: *Land use change*

#### DEFINITION – OBJECTIVE

This indicator determines the changes from land use as a result of used areas to build transport infrastructure. It should be calculated through the project technical documentation and cadastre plan. Several subdivisions are possible. This indicator should estimate as well the rate of change of agricultural land (cultivated areas) into urban land, of natural areas into urban land, and of natural areas into agricultural land. Changing agricultural land to non-agricultural is a reason for loss of biodiversity, as well as reduction of natural resources.

Data Source for this indicator: Data in the Ministry of Environment and Physical Planning, also the project technical documentation and cadastre plan should be basic data to make this indicator.



### 3) INDICATOR EI3: *Fuels consumption by transport*

#### DEFINITION – OBJECTIVE

Transport plays an important role in sustainable development because much energy is used on transport. This indicator expresses fuels consumption by t \*km or pass. \*km transported.

Data Source: data in the Ministry of Economy and State Statistical Office.

Table 8 Fuels consumption in transport (1000\* t)

Year	ROAD			RAIL	Air	Water		TOTAL
	Gasoline	Diesel Oil	LPG <sup>6</sup>	Diesel Oil	Jet Kerose ne	Gasoline	Diesel Oil	
1990	161,00	152,00	0,00	7,00	1,32	0,30	0,06	321,68
1991	163,00	143,12	0,00	6,88	2,66	0,30	0,06	316,02
1992	132,00	121,41	0,00	4,59	3,12	0,30	0,06	261,48
1993	182,00	178,00	0,00	3,92	4,17	0,30	0,06	368,45
1994	176,00	154,00	0,00	3,51	3,99	0,30	0,06	337,86
1995	171,00	153,00	0,00	3,86	4,40	0,30	0,06	332,62
1996	175,00	162,00	0,01	3,70	3,98	0,30	0,06	345,05
1997	163,00	171,00	0,27	3,91	3,59	0,30	0,06	342,13
1998	164,00	187,00	0,65	3,80	4,05	0,30	0,06	359,86

Source: MoEaPP, 2003 (Macedonian's first national communication on climate change) p.32

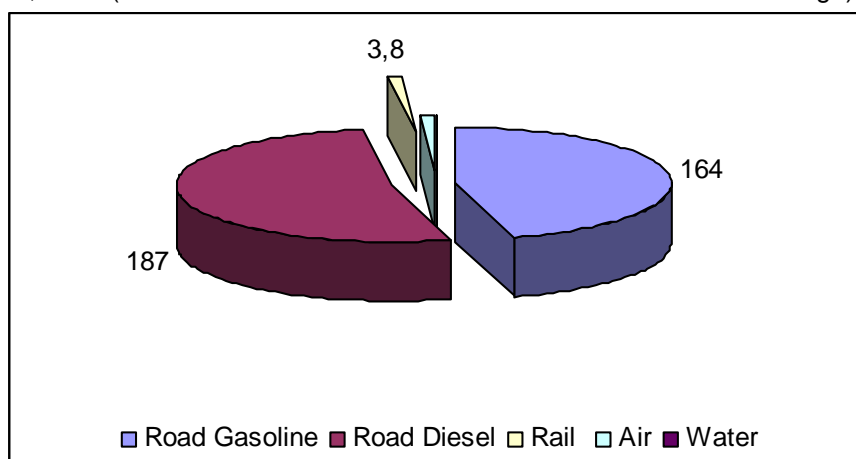


Figure 4 Fuels consumption in transport in 1998

<sup>6</sup> LPG – Liquefied Petroleum Gas is a butane or propane gas, is used to power specially modified petrol-engine vehicles; he is a popular alternative vehicle fuel source. It emits fewer harmful emissions petrol, has an excellent safety record and offers comparables vehicle performance.

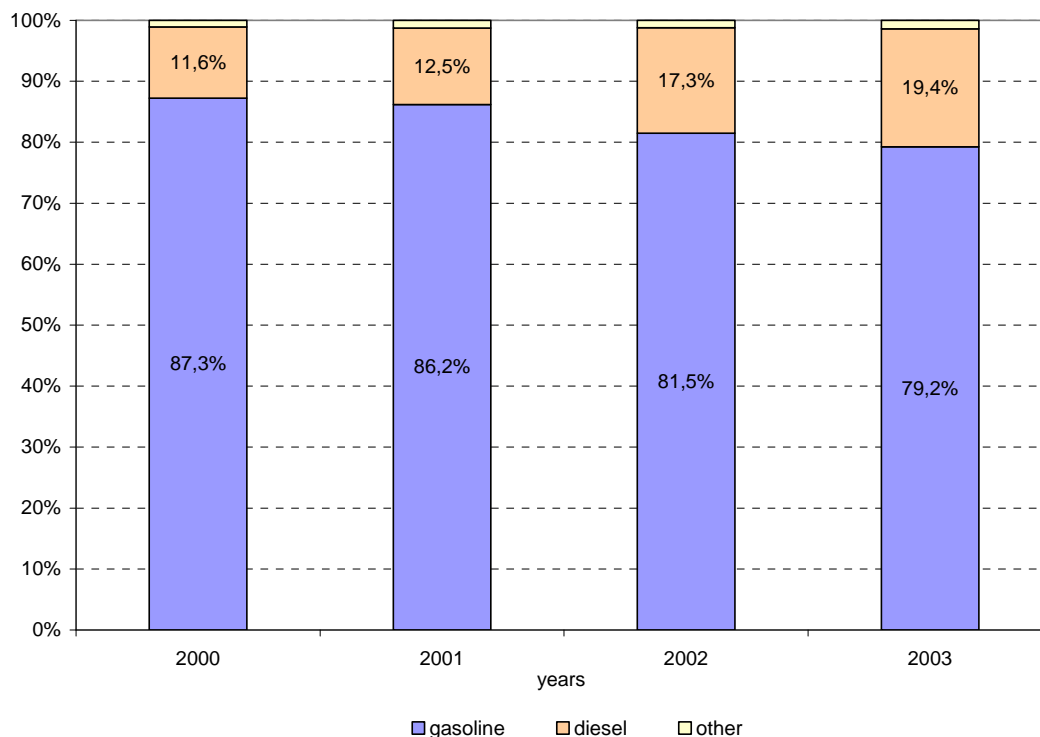


Figure 5 Consumption of gasoline and diesel in road transport in 2000 - 2003

#### 4) INDICATOR EI4: Greenhouse gases emissions (GHGE)

##### DEFINITION – OBJECTIVE

GHGE generate by transport en millions of tonnes expressed in equivalent CO<sub>2</sub> emission. The estimation of GHGE from transport sector should be estimated for each transport mode, as well as for each type of fuel.

Data Source: data in the Ministry of Economy, State Statistical Office, Ministry of Health.

#### 5) INDICATOR EI5: Noise pollution (Population no longer exposed to noise pollution)

##### DEFINITION – OBJECTIVE

This indicator expresses the effects of noise produced by transport. In Europe, transport is the most important source of community noise. The indicator measures the percentage of the population highly annoyed by noise. The noise levels proposed in Environmental Health Indicators for Europe<sup>7</sup> are following:

I	II	III	IV
<55dB(A)	55-65dB(A)	65-75dB(A)	>75dB(A)

Data Source: data in the Ministry of Health.

<sup>7</sup> Environmental Health Indicators for Europe, a pilot indicator based report, June 2004 (www.euro.who.int/document/eec/ebakdoc04.pdf)



## 7. CONCLUSION

The make use of indicators depends on level and objectives of analyses. The proposed indicators not are definitive and unique. Other indicators should be created according to studies and objectives which could be achieved.

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ANNEX 1. BASIC DATA OF THE THREE CENSUSES IN REPUBLIC OF MACEDONIA

Municipality	Surface (km <sup>2</sup> )	Population			Indeks			Frame RM=100			Density inhabitant/km <sup>2</sup>		
		1981	1994	2002	1981/94	1994/02	1981/02	1981	1994	2002	1981	1994	2002
R.Makedonija	25713,00	1909136	1945932	2022547	101,93	103,94	105,94	100	100	100	74,2	75,7	78,7
Skopje	1813,44	504932	545228	578144	107,98	106,04	114,50	26,4	28,02	28,58	271,8	293,4	318,8
G.Baba	482,01	92472	100259	108363	108,42	108,08	117,18	4,84	5,15	5,36	191,9	208,0	224,8
Karpos	315,03	121746	127462	136708	104,7	107,25	112,29	6,38	6,55	6,76	386,5	404,6	433,9
K.Voda	728,99	114176	146746	156224	128,53	106,46	136,83	5,98	7,54	7,72	156,6	201,3	214,3
Centar	18,00	93614	85021	82604	90,82	97,16	88,24	4,9	4,37	4,08	5200,8	4723,4	4589,1
Sair	274,02	82924	85740	94245	103,4	109,92	113,65	4,34	4,41	4,66	302,6	312,9	343,9
Берово	805,60	20227	19829	19458	98,03	98,13	96,20	1,06	1,02	0,96	24,8	24,3	24,2
Битола	1798,05	137636	108203	105644	78,62	97,64	76,76	7,21	5,56	5,22	80,2	63,1	58,8
Брод	923,93	12271	11022	11686	89,82	106,02	95,23	0,64	0,57	0,58	13,2	11,8	12,6
Валандово	331,22	11176	12092	11890	108,2	98,33	106,39	0,59	0,62	0,59	33,5	36,2	35,9
Виница	432,43	18499	19063	19938	103,05	104,59	107,78	0,97	0,98	0,99	41,9	43,1	46,1
Гевгелија	757,01	31814	34817	35121	109,44	100,87	110,39	1,67	1,79	1,74	41,6	45,5	46,4
Гостивар	1351,93	101028	108181	116864	107,08	108,03	115,67	5,29	5,56	5,78	73,7	79,0	86,4
Дебар	264,94	22497	25452	24251	113,14	95,28	107,80	1,18	1,31	1,20	84,3	95,3	91,5
Делчево	589,23	23717	25287	25615	106,62	101,30	108,00	1,24	1,3	1,27	40,1	42,8	43,5
ДемирХисар	443,03	14434	10524	9497	72,91	90,24	65,80	0,76	0,54	0,47	33,2	24,2	21,4
Кавадарци	1132,47	39731	41937	42882	105,55	102,25	107,93	2,08	2,16	2,12	34,7	36,6	37,9
Кичево	854,39	51422	52958	56739	102,99	107,14	110,34	2,69	2,72	2,81	61,7	63,6	66,4
Кочани	570,18	47922	48538	48846	101,29	100,63	101,93	2,51	2,49	2,42	83,1	84,1	85,7
Кратово	376,23	12392	10898	10441	87,94	95,81	84,26	0,65	0,56	0,52	32,6	28,7	27,8
КриваПаланка	719,78	26935	25129	24964	93,29	99,34	92,68	1,41	1,29	1,23	37,0	34,5	34,7
Крушево	238,87	13286	12005	11812	90,36	98,39	88,91	0,7	0,62	0,58	65,1	58,9	49,4
Куманово	1212,49	126118	127814	137382	101,34	107,49	108,93	6,61	6,57	6,79	104,9	106,3	113,3
Неготино	735,91	21131	23156	23757	109,58	102,60	112,43	1,11	1,19	1,17	28,4	31,2	32,3
Охрид	1068,58	64230	60763	61256	94,6	100,81	95,37	3,36	3,12	3,03	61,7	58,4	57,3
Прилеп	1675,82	99770	94183	94358	94,4	100,19	94,58	5,23	4,84	4,67	54,2	51,1	56,3
Пробиштип	326,04	15188	16650	16193	109,63	97,26	106,62	0,8	0,86	0,80	46,2	50,6	49,7
Радовиш	734,86	28575	30525	31780	106,82	104,11	111,22	1,5	1,57	1,57	38,5	41,1	43,2
Ресен	738,84	25360	17681	16825	69,72	95,16	66,34	1,33	0,91	0,83	34,0	23,7	22,8
Ряколе	648,73	21260	21444	21355	100,87	99,58	100,45	1,11	1,1	1,06	32,7	32,9	32,9
Струга	505,63	56451	62979	65809	111,56	104,49	116,58	2,96	3,24	3,25	103,4	115,3	130,2
Струмица	951,74	87347	91047	92625	104,24	101,73	106,04	4,58	4,68	4,58	90,7	64,5	97,3
Тетово	1079,61	162378	172171	189066	106,3	109,81	116,44	8,51	8,85	9,35	148,8	157,8	175,1
Велес	1536,35	64799	65942	66541	101,76	100,91	102,69	3,39	3,39	3,29	41,8	42,5	43,3
Штип	814,83	46610	50714	51808	108,8	102,16	111,15	2,44	2,61	2,56	53,6	58,3	63,6



## WATER INFRASTRUCTURE IN REPUBLIC OF MACEDONIA

### A. Introduction

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The environment in Macedonia is one of the most valuable national assets that should be protected and preserved with a view to gain future benefits. At the same time our country is going through a period of major changes and many of them expose this asset to potential risks. In order to protect and preserve the natural resources and improve the state of environment in the country, sustainable development should be ensured for the future – not only in social and economic but also in environmental terms. For this reason the main strategic objective of the environmental policy is:

- *To improve the quality of life of the population in the country through ensuring healthy and favorable environment and to preserve the rich natural heritage on the basis of sustainable development of the country.*
- *To attain and maintain high economic growth through dynamic knowledge-based economy in accordance with the principles of sustainable development;*
- *To improve the potential of human capital and to achieve employment, income and social inclusion level that provides high quality of life.*
- ***Improvement, preservation and recovery of the natural environment and development of the environmental infrastructure.***

The past decade is characterized with favorable changes for the Macedonian environment. The considerable developments in respect to the environment in the country contributed to the reduction of the disparities with the average EU level for variety of indicators. Nevertheless, there is a need of additional efforts in regard of achieving progress on a variety of issues.

In the field of infrastructure for the protection and rational use of water, the main issues in the country are related with the increase of the share of the population, connected to water supply and sewerage networks and to urban waste water treatment plants. The water supply in some regions is deteriorated due to the poor condition of the water supply systems. Further to that the water resources are not uniformly allocated along the territory of the country and the population in some regions suffers seasonal (in some events all-year) shortage of water. There is a definite need of improvement of the water balance, increase of the accessible water resources and last but not least improvement of the infrastructure and the measures for prevention of the floods, which become an essential issue for the country during the past year. The development of alternative water supply, schemes of water consumption, new water sources and measures for prevention or elimination of the negative impact of the floods, also require significant investments.



**Table 1: Main differences between Macedonia and EU concerning water sector**

	<b>Indicator</b>	<b>Definition of the indicator</b>	<b>Macedonia</b>	<b>EU – 25 (average)</b>
1	Population connected to the public water supply network	The indicator presents the percentage of population connected to the water supply network in relation to the total number of population in the country.	72(2002)	Bulgaria – 98.8 (2002) Hungary – 93.0 (2002) Czech Republic – 89.8. (2002)
2	Population connected to the water sewerage network	The indicator presents the percentage of population connected to the water sewerage network in relation to the total number of population in the country.	65 (2002)	Bulgaria – 68.0 (2002) Hungary – 51.0 (2002) Czech Republic – 75.0 (2002)
3	Population connected to WWTP	The indicator presents the percentage of population connected to a municipal WWTP, compared to the total number of population in the country.	12.5 (2006)	Bulgaria – 39.0 (2002) Czech Republic – 65.0 (2002) Hungary – 57.0 (2002)

Water is a scarce and fragile resource that is unequally distributed in time and space, and climate change is expected to lead to more irregular and lower volumes of rainfall. The shortage of water, due to irregular rainfall and aridity, is a major constraint for agriculture, as irrigation is the largest consumer of water.

An overview of the impacts has defined the following problems: the issue of access to water still remains a serious constraint, particularly in rural areas; water quality is worsened by pollution from agricultural runoff, and from untreated urban and industrial wastewater; irrigation networks are inefficient because of bad maintenance; excessive water abstractions are not targeted by effective demand management policies and controls over exploitation rates; wetlands are shrinking and endangered by extension





of farming lands; change of agricultural and fishing products have impacted the traditional livelihood systems.

Macedonia is faced with several water-related issues: how to manage their water resources sustainably; how to secure access to safe drinking water for population groups who do not yet have it; and how to accustom individual consumers to practices which save water. The first challenge requires water demand management policies to reduce loss and misuse, the development of more added value through greater efficiency in irrigation and in the use of water in industry and urban areas; and the meeting of economic and social needs at reduced cost. It also requires the integrated management of catchments areas and an increase in water supply and sanitation. The second challenge requires the achievement of the MDGs concerning access to safe drinking water and sanitation. The third necessitates the strengthening of partnerships with local water users and water management bodies and awareness-raising campaigns on how to save water.

In Macedonia water scarcity and deteriorating water quality will soon become critical factors limiting national economic development, expansion of food production and/or provision of basic health and hygiene services to the population.

Water scarcity is aggravated by following principal factors:

- Reluctance to treat water as an economic as well as a public good resulting in inefficient water use practices by households, industries and agriculture – for example consumers pay too little to cover the whole cost of water resources development; very often households pay a lumpsum tariff for their water use.
- Inefficient institutions for water and wastewater services. There is no incentive to improve their efficiency and reliability under the current organizations.
- Fragmented management of water between sectors and institutions, with little regard for conflicts between social, economic and environmental objectives;
- Inadequate recognition of the health and environmental concerns associated with current practices. Lack of trained engineers, data on water quality, and information dissemination systems further aggravates this problem.
- Environmental degradation of water sources, in particular, reduced water quality and quantity due to pollution from urban or land-based activities. Too little money and attention are paid to improve such basic infrastructures as water and wastewater systems, while more money is spent for economic growth. Inappropriate pricing structures and hence limited cost recovery result in inefficient operation and maintenance of water systems, as well as in misallocation and loss of water. Lack of consensus on "who should pay for water and wastewater", because very often people do not want to pay for the services, makes it difficult to build sustainable water and wastewater systems.
- Economic, social and environmental criteria for the approval of policies, plans and projects are most often few and inadequate.
- Inadequate use of alternative water sources. Alternative water sources other than groundwater and surface water are rarely explored. Wastewater reuse may be a future alternative but it requires a better understanding on the risks and benefits of water reuse.



We must adopt a new approach to water resources management in the new millennium so as to overcome these failures, reduce poverty and conserve the environment -- all within the framework of sustainable development.

## **B. Analysis of the Current Situation - Water Sector**

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### **1. General**

Republic of Macedonia is located in the central part of the Balkan Peninsula, in the area between 20°27' and 23°01' longitude East (East from Greenwich) and 40°51' and 42°21' latitude North. It covers an area of 25.713 km<sup>2</sup> with total population of about 2, million inhabitants. Its mountain relief, vast valleys and numerous long and narrow ravines distinguish the topography of the territory of the Republic.

According to the hydrographic division, there are four river basin areas: river Vardar, river

Crn Drim, river Strumica and river Juzna Morava. The last river basin has only 44 km<sup>2</sup> of area and it is not treated in further analysis. There are three major natural lakes: Ohrid, Prespa and Dojran.

Republic of Macedonia is classified as semi-arid region (area of Ovce Pole is the driest area in central Balkan Peninsula), so water resources use, protection, conservation and development have significant importance.

Table 1.- population according to the last Census in RM 2002

No	River basin	Population
1	Vardar	1.732.102
2	Strumica	120.869
3	Crn Drim	178.576
4	Total	2.022.547

## **2. State of Environment – available water resources quantity and quality**

### **2.1 Surface Water Resources**

#### **2.1.1 General**

Surface water resources are the most important source for meeting the human water demands. Also, they are most spread in the space and are closest to the areas of human activities, running waters are forming the hydrographic network with its ecosystem, they are result of the precipitation run off and finally, they are drainage system for the wastewater.



Due to the location of the Republic of Macedonia which covers upstream basins of the rivers Vardar and Crn Drim, major part of our surface waters are domicile, actually waters which are formed on our territory by the precipitation. The basic characteristic of our surface water condition is that The Republic of Macedonia is not rich in water, but contrary, poor and mainly depending on appearance, duration and intensity of the precipitation. Due to morphological, hydrogeological and hydrogeographical structure of the relief, the run off is quickly running into the hydrographic network (rivers, streams and lakes) and the water runs out of our country. The only exceptions are the karst areas, where the water retains for longer period in the ground and recharge running waters of the river network.

**Table 3. Income flow, domicile water and outflow in RM**

River	Income flow		Outflow		Domicile waters		Total domicile %
	Q m <sup>3</sup> /sec	W 10 <sup>6</sup> m <sup>3</sup>	Q m <sup>3</sup> /sec	W 10 <sup>6</sup> m <sup>3</sup>	Q m <sup>3</sup> /sec	W 10 <sup>6</sup> m <sup>3</sup>	
Lepenec	8.70	274.40					
Pcina	4.85	153.00					
Eleska	8.30	262.00					
Vardar			144.90	4570.00	123.05	3880.00	85
Strumica			4.20	132.00	4.20	132.00	
Cironska & Lebnica			0.57	18.00	0.60	18.00	
Crn Drim	10.30	325.00	52.00	1640.00	41.70	1316.00	80
Vkupno:	32.15	1014.40	201.67	6360.00	169.55	5346.00	84

### 2.1.2 River system

Almost 98% (25.421km<sup>2</sup>) of the national area is divided into three main river basins: Vardar, Crn Drim and Strumica and five tributaries of Vardar: Crna, Bregalnica, Treska, Pcina, Lepenec. Remaining area of 292km<sup>2</sup> is divided into three small regions that include lake Dojran, the Cironska and Lebnica river (flowing to Bulgaria) and Juzna Morava river (flowing to Serbia), but as their size of the catchment area is very small they are excluded from the calculations.

2.1.2.1 The River Vardar basin covers an area of 20.661 km<sup>2</sup>, or 80,4 % of the total territory of the country. Over the country, the River Vardar has a length of 301 km. Its spring is near the village of Vrutok, at 683 m.a.s.l., and runs off into the Aegean See. The average annual flow for the period 1960-1991, measured at the gauging station in Skopje is 63,0 m<sup>3</sup>/s, and at the gauging station in Gevgelija 144,90 m<sup>3</sup>/s, while the



specific run off at the same profile is 6,5 l/s/km<sup>2</sup>. The average annual volume of discharged water at Gevgelija is approximately 4,6 billion m<sup>3</sup>.

To Vardar river basin belongs the smallest natural lake in Macedonia, Dojran Lake which we share with Greece. The total water surface area of the Dojran Lake is 42,64 km<sup>2</sup>, of which 25,62 km<sup>2</sup> belong to the Republic of Macedonia, and 17,07 km<sup>2</sup> to Greece. During the past 15 years rapid draw-down of the Dojran Lake has occurred, and there was a danger of losing the Lake totally. The reasons for this disappearance of the water from the lake, were the dry hydrological cycle of more than 10 years and massive use of the water from wells in Greece for irrigation. There is hydrogeological connection between the water in the lake and aquifer where the wells are drilled. In order to improve the situation, Republic of Macedonia, constructed a system for abstraction of water from wells near Gevgelija and install pipeline system for recharging the lake with the groundwater. Even this solution was not an integral solution for the lake basin, still there are some results. Thanks to this project and to improved hydrological situation, water level of Dojran Lake is continually increasing and the life in and around the lake is back again.

There are 14 large dams in the River Vardar basin. The water from the reservoirs is used for water supply of population and industry, irrigation, production of energy, while the reservoirs are used for flood and erosion protection, recreation and tourism.

#### 2.1.2.2 River Strumica Basin

The River Strumica basin covers 1.649 km<sup>2</sup>, or 6,4% of the territory of the Republic of Macedonia. The major part of the total river basin (75%) is in Macedonia, while the remaining is in Bulgaria and Greece. The main tributaries to River Strumica are Vodoca, Turija, Radoviska and Podareska. The annual average discharges of River Strumica for the period 1961-1990 at the gauging station Smiljanci is 0,74 m<sup>3</sup>/s, at gauging station Susevo 1,79 m<sup>3</sup>/s and at gauging station Novo Selo is 4,2 m<sup>3</sup>/s, while its specific run off is 3,1 l/s/km<sup>2</sup>. This area is the poorest in water resources. The annual average of total available water in this river basin is approximately 132 million m<sup>3</sup>.

There are five large dams constructed in these basin areas in order to meet the demands for drinking, industry, irrigation and biological minimum.

#### 2.1.2.3 River Crn Drim Basin

The River Crn Drim basin covers 3.359 km<sup>2</sup>, or 13,1 % of the total territory of the Republic of Macedonia. This region is the richest with water resources. The River Crn Drim, whose

length in our country is 44,5 km, springs out from the Ohrid Lake, at the town of Struga. Its

main tributary is the River Radika, whose annual average flow for the period 1961-1990 at

the gauging station of Boskov Most is 19,63 m<sup>3</sup>/s. The annual average flow for the above

mentioned period of the Crn Drim at the HPP Spilje is 52 m<sup>3</sup>/s, respectively its specific run off is 12,3 l/s/km<sup>2</sup>. The average water volume discharging from the River Crn Drim is approximately 1,64 x 10<sup>6</sup> m<sup>3</sup>.

The two biggest natural lakes in Macedonia -Ohrid and Prespa belongs to this river basin.



The total volume of the Ohrid Lake is 50,7 billion m<sup>3</sup>, the water surface covers an area of 356,77 km<sup>2</sup>, with maximum length of 29,5 km and width of 14,7 km, while his maximum depth is 269,8 m. The Lake surface is at an average elevation of 693 m.a.s.l.. This Lake we share with neighbouring Albania, so that 105,82 km<sup>2</sup> of its water surface area belongs to the neighbouring state, and 250,95 km<sup>2</sup> to the Republic of Macedonia. Out of the total basin area 843,03 km<sup>2</sup> belong to Macedonia, and 308, 32 km<sup>2</sup> to Albania. Galicica Mountain divides the Prespa and Ohrid Lakes. The numerous analyses showed that the water of Prespa Lake, situated at 854 m.a.s.l., runs off into the Ohrid lake, through the karst of the Mountain, and re-appear as surface springs at St. Naum, but also as underground springs at the bottom of the Lake.

The Prespa Lake has a total volume of 4,8 billion m<sup>3</sup>, with a water surface of 327,7 km<sup>2</sup>, a total length of 43,3, km, a width of 16,4 km, and maximum depth of 55,55 m. This Lake we

share with the neighbouring countries Albania and Greece, so that 197 km<sup>2</sup> of its water surface belongs to Macedonia, 48,4 km<sup>2</sup> to Albania and 82,3 km<sup>2</sup> to Greece. In the period 1986-1995 there has been a significant decline of the water level of Prespa Lake. The last 4-5 years due to favourable hydrological situation the water level of the Lake is increasing.

There are three large dams in this river basin. The water from the reservoirs is used for energy production, irrigation, recreation and tourism. The reservoir Mavrovo allows water transfer from this river basin to the river Vardar basin.

Total annual available surface water resources in the Republic of Macedonia are assessed as 6,372 billion m<sup>3</sup>:

Table 4. Surface Water Resources

no	River basin	Surface water resources (10 <sup>6</sup> m <sup>3</sup> /year)
1	Vardar	4600
2	Strumica	132
3	Crn Drim	1640
4	TOTAL	6372

Source: NEAP II

### 2.1.3 Annual and Monthly Rainfall

Macedonian climate and general rainfall characteristics can be presented as a result of the Mediterranean climate. Macedonia has its largest rainfall in winter (November and December) and smallest rainfall in summer period (july and august).

The rainfall regime in the western part of the country has greater amount of rainfall with an average annual of more then 1000mm ( St Lazaropole = 1029,2mm), while the eastern part has an average of less than 700mm (st.K.Palanka = 606,5mm) . The central part of the country, including Vardar valley has the lowest amount of



precipitation with an average of 500mm (st.Skopje = 493,8mm). The minimum average monthly rainfall of 21,14mm is recorded in Radovis in august, and the maximum average monthly rainfall of 145,6mm was recorded in Lazaropole in november ( analyzed period 1961-1996 – source the study on integrate water resources development and management master plan –JICA ).

Table 5. Annual rainfall

Station	Annual rainfall (mm/year)		
	average	maximum	minimum
Tetovo	710	1008	385
Skopje	508	741	301
Kocani	525	708	360
Strumica	545	762	286
Bitola	605	842	365

#### 2.1.4. Hydrological Characteristics of Macedonia

For the Vardar river basin , average monthly flow is recorded at Gevgelija for the period 1925-1993, and the max.and min, mean annual flows were recorded in 1962 and 1993 with values of 396,4 m<sup>3</sup>/s and 57,2 m<sup>3</sup>/s respectively. The max and min mean monthly flows are recorded in april and august with values of 264,7 m<sup>3</sup>/s and 40,3 m<sup>3</sup>/s . The absolute max mean monthly flow was recorded in February 1962 989m<sup>3</sup>/sec. All the basins had max flow records during 1963 while min records occurred during 1990. (min flow occurred in r.Pcinja –st.Kumanovo – 0,17 m<sup>3</sup>/s in august. Generally, max flow appears in May and the min.in august,;

The annual runoff balance for the major river basins and sub-basins is summarized as follows:

- the south-eastern part, especially Strumica , has low runoff and high losses
- the upper part of Vardar river , especially Treska, has high runoff

Table 6. Analused period 1961-1996

No.	basin	rainfall mm	runoff mm	loss mm	runoff coefficient
1	Vardar	590.9	192.3 (33%)	398,6 (67%)	32.54
2	Treska	696.44	391.5 (56%)	304.94 (44%)	56.21
3	pcinja	520,93	134.2 (26%)	386.73 (74%)	25.76
4	Bregalnica	538.05	122,06 (23%)	415.45 (77%)	22.79
5	Crna	554.42	156.10 (28%)	398.32 (72%)	28.16
6	Strumica	564.57	86.27 (15%)	478.30 (85%)	15.28
7	Crn Drim	800.74	228.8 (29%)	571.94 (71%)	28.57
	Average	609.43	187.4 (31%)	422.04 (69%)	29.9

Source: JICA Study

Presently, surface water resources are monitored at 110 gauging stations and 115 measuring points are used to monitor the groundwater Administration on



Hydrometeorological Works (AHMW) is performing the monitoring of the surface and groundwater quantities.

At 54 gauging stations on rivers, discharge and water level are monitored (45 stations in

River Vardar Basin, 9 in River Crn Drim basin, 3 stations in River Strumica basin). On each

of the three natural lakes: Ohrid, Prespa and Dojran there is one gauging station for monitoring the water level.

Average discharge for river Vardar at Skopje for the period 1971-1980 is 64,56 m<sup>3</sup>/s, for the period 1981-1990 it is 53,61 m<sup>3</sup>/s and for the period 1991-2000 it is 46,02 m<sup>3</sup>/s. Presented in percentage average ten years discharge reduce for 14% to 17%. The analyses of maximum ten years discharge, also shows trend of explicit reduction. For example, for the period 1961-1970, maximum occurred discharge is in 1962 with Q<sub>max</sub> = 1.080 m<sup>3</sup>/s. In the following decade, 1971-1980, maximum occurred discharge is Q<sub>max</sub> = 983 m<sup>3</sup>/s in 1979, and for the period 1981-1990 it is Q<sub>max</sub> = 404,0 m<sup>3</sup>/s. In the last decade, maximum occurred flow is only Q<sub>max</sub> = 226 m<sup>3</sup>/s. Presented in percentage, maximum waters in river Vardar, within the period 1961-2000 have reduced for 79%. For river Crna-Skochivir, high oscillations are noticed with reduction trend, presented in percentage, from 10% to 24%. It is similar condition with the maximum flows, that are Q<sub>max</sub> = 535 m<sup>3</sup>/s for the period 1971-1980, Q<sub>max</sub> = 327 m<sup>3</sup>/s for the period 1981-1990 and only Q<sub>max</sub> = 164 m<sup>3</sup>/s for the last decade. The registered minimum flows are: Q<sub>min</sub> = 0.05 m<sup>3</sup>/s for period 1951-1960, Q<sub>min</sub> = 0,55 m<sup>3</sup>/s for the period 1961-1970, then Q<sub>min</sub> = 0,35 m<sup>3</sup>/s for the period 1971-1980 and Q<sub>min</sub> = 1,2 m<sup>3</sup>/s, for the period 1991-2000.

For river Strumica-Susevo, very bad hydrological condition can be stated. Minimum flows are within 0-0,5 m<sup>3</sup>/s limits for several years observed period. Average flows are Q<sub>av</sub> = 2,11 m<sup>3</sup>/s for the period 1961-1970, Q<sub>av</sub> = 1,84 m<sup>3</sup>/s for period 1971-1980, Q<sub>av</sub> = 1,42 m<sup>3</sup>/s for period 1981-1990 and Q<sub>av</sub> = 1,00 m<sup>3</sup>/s for the last decade 1991-2000.

Situation is significantly better in the western part of the Republic of Macedonia. For example, for river Radika-Boskov Most, uniform oscillations of the flood/maximum flows are registered. Maximum flows occur almost every 5 year with following intensities: Q<sub>max</sub> = 250 m<sup>3</sup>/s in the period 1961-1970, Q<sub>max</sub> = 262 m<sup>3</sup>/s in the period 1971-1980, Q<sub>max</sub> = 211 m<sup>3</sup>/s in the period 1981-1990, and in the last decade maximum occurred discharge is Q<sub>max</sub> = 224 m<sup>3</sup>/s. With these measurement data regulating/trend line can be treated as horizontal line. Similar condition can be stated for low/minimum waters that are within the range of 2,20-16,40 m<sup>3</sup>/s for the observed period. Average flows have descending trend, especially in the last 30 years. For the period 1961-1970 they were Q<sub>av</sub> = 24,39 m<sup>3</sup>/s, for the following decade Q<sub>av</sub> = 19,48 m<sup>3</sup>/s, and for the last two decades they have been reduced to 15,19 m<sup>3</sup>/s and 14,57 m<sup>3</sup>/s.

For Dojran Lake-Nov Dojran (in NEAP II are presented the characteristic water levels for the 1951- 2000 period. Small amplitudes of the water levels with continuous descending trend have been noticed for the period 1955-1985. Maximum levels were registered in 1956, H<sub>max</sub> = 311 cm, then H<sub>max</sub> = 274 cm in 1963, H<sub>max</sub> = 244 cm in 1974, H<sub>max</sub> = 90 cm in 1980, H<sub>max</sub> = 186 cm in 1984, H<sub>max</sub> = -225 cm in 1995, and H<sub>max</sub> = -230 cm in 2000. Oscillation amplitude for the period 1956-1980 (24 years) is 219 cm, and for the period 1984-1995 (11 years) the amplitude increases to 411 cm. As a conclusion it can be stated that the amplitude increases proportionally almost twice, with double reduction of the time period. Average and minimum water levels



have same descending trend that continues in the last 5 years too. Alarming descending of the level of this natural lake causes ecological catastrophe with largest consequences on the rare species of flora and fauna. Life quality of the people in the region is significantly reduced, and society damages are also presented through the impact on the tourism, which is almost completely shut down. Taking into consideration low depth of the Dojran Lake, it can be stated that with continuation of these trends it is threatened with complete drying out of this rare lake in the near future. The situation is influenced by large number of factors: climatic, socio-economic and political, not only in the Republic of Macedonia but also wider in the region. Our country cannot solve the problem by itself or put in a better way, to mitigate consequences from what was already done, mostly because almost 2/3 of the basin of the lake is located in the neighboring Greece. The attempt of our country to recharge the Lake with groundwater has already positive influence on the water level and all together with increased precipitation for the last two years, the water level of the Lake is continuously going up.

For Ohrid Lake-Ohrid, small oscillation amplitudes of the water levels with continuous descending trend can be stated. The observed maximum and average water levels have the maximum amplitudes of 142 cm and 70 cm in 1963, and of 105 cm and 82 cm in 1956.

Within this period 1956-2000, the observed minimum water levels have continuous decreasing trend and are constantly below the average water level of 32 cm. The lowest water level of - 17 cm has been registered in 1990. The regulating/trend lines for all characteristic water levels do not have very high descending gradients. The stated situation with this lake that is a very rare natural reservoir and is protected by UNESCO, can be explained by the fact that the inflow into this lake, at St. Naum location is coming from Prespa Lake below Galichica mountain and is almost constant cca 10 m<sup>3</sup>/s, but also to the fact that the outflow of Crn Drim at Struga is regulated.

For Prespa Lake-Stenje , analyses of registered water levels for the period 1951-2000 show negative trends. Maximum levels H<sub>max</sub> = 415 cm have been registered in 1963, then H<sub>max</sub> = 88 cm in 1978, H<sub>max</sub> = 241 cm in 1986, after which pulling of the water from the coast started with water levels of H<sub>max</sub> = -300 cm in 1995 and H<sub>max</sub> = -175 cm in 2000. Oscillation amplitude of the maximum levels for the period 1963-1978 (15 years) is 327 cm, and oscillation amplitude for the period 1986-1995 (9 years) is 541 cm. This shows that while the observed period is reducing, the water level amplitude is increasing. For the whole observed period, the amplitude of maximum registered levels is 715 cm. Average and minimum levels follow the same descending trend. Small positive trend of increasing of characteristic water levels has been noticed in the last 5 years. The trend of increasing of water level is still present, so in 2002, water level of Prespa Lake increased for 7 cm.

Macro-scale or nationwide hydrological conditions are summarized as follows:

- an extremely dry period is noticed during 1990-1996
- the driest year was 1990
- the wettest year was 1962/63. Most of the rivers overspilled and flooded and the flood caused great damages
- the second wettest year was 1979. High water levels were recorded and many rivers flooded
- most of rivers have two maximum flow records, in spring due to snow melting and in autumn due to heavy rainfall.





### 2.1.5 Floods

According to the area of the region affected by the flood, there are regional floods and local

floods. Regional floods are caused by the biggest rivers in Macedonia: Vardar, Crna Reka, Strumica, Treska, Pcinja, Lepenec and Bregalnica. The main river Vardar is typical torrential river. Relation low: medium: high water is 1: 6,6: 90.

During the floods in 1962, river Vardar flooded 12.735 ha, river Crna Reka 25.000 ha and

Strumica 8.000 ha. During the floods in 1979, 45.860 ha were flooded all together. Total

damage costs were estimated on 193,8 mill USD.

Flash (local) floods are typical for Macedonia, due to natural conditions, bad land cover especially low forest closeness, rare but very intensive short time rainfalls, unbalanced water regime. The most damaging flash floods occurred in 1979- river Pena, 1958, 1979 –river Luda Mara, 1995- Negotinska Reka, Anska Reka, Bregalnica, May-June 2004-Gevgelija, Bogdanci, Valandovo and Strumica.

Small torrents (with river basin less then 5 km<sup>2</sup>) are 62% of the total number of torrents. Although their river basin is small, the pick of the discharge achieve more then 30 m<sup>3</sup>/s, and that results in a lot of sterile sediment on the flooded areas.

According to data from AHMW, sinusoidal period of repetition of dry and wet periods in the

Republic of Macedonia is 60 years. Currently, it is a wet period on and it is expected that in

2020, peak of the wet period will be achieved.

In the following Table Vardar floods at Skopje are presented with the contribution of rivers: Treska, Upper Vardar and Lepenec.

Table 7. Registered floods data

data	Vardar - Skopje		Treska		Vardar Upper		Lepenec	
	m3/s	%	m3/s	%	m3/s	%	m3/s	%
10.12.1935	1020	100	195	19	975	76	155	15
23.12.1935	1020	100	840	82	300	29	20	2
5.12.1937	1080	100	290	27	630	58	180	17
16.11.1962	1595	100	1000	63	385	24	165	10
13.01.1963	715	100	340	48	110	15	147	21
19.11.1979	983	100	467	47	363	37	372	.8

Source NEAP II

### 2.1.6 Surface Water Quality – present condition.

The condition of the environment of the Vardar river deteriorates as the river enters Skopje and continues until after Veles. In june 1998, the Vardar at the confluence of the Pcina had a large number of fish-kill because of a high flux of chemical discharge into the river waters. The condition of water quality in Vardar and other rivers in eastern Macedonia varies with seasons and location. In general, rivers have a high pollution assimilation capacity during the rainy season due to the higher flow rate and dilution effect, During the dry season, the deterioration is rapid and high and some of the rivers even become below ecological minimum.



The river environment in the Strumica river and Crna river, because of agricultural run-offs, households and industry discharges has an alarming deterioration. The main rivers in the eastern part of the country, including the Vardar downstream from Skopje, Pcina, Bregalnica, Crna and Strumica are severely polluted, In addition, the smaller rivers in eastern Macedonia are also severely polluted. Including Kumanovska, Dragor, Grasnica, Topolka, Topolnica and Kiselicka. Some of the above rivers , because of high levels of pollution after receiving wastewater discharges have become westawater collectors (dead rivers), such as Dragor downstream Bitola and Kumanovka after Kumanovo. The quality of water in Vardar, Crna , Bregalnica, Strumica, after receiving communal and industrial wastewater from the cities of Tetovo, Skopje, Veles (Vardar), prilep, Bitola (Crna river), Kocani, Stip (Bregalnica) and Strumica (Strumica river) becomes mostly out of class in the dry season. The fist fauna in Vardar river has decreased due to increased pollution during the last 30 years. There were 29 spicies of 11 families in 1968, these have now been reduced to 17 spicies of 5 families.

In contrast to eastern part, the western part has some very clean rivers, including Crn Drim and Radika rivers. The river waters overall have:

- the water temperature varies from 3,0 to 16,1 0C
- the PH values range from 5,0 to 10,65 and ranged from slightly acidic to alkaline
- the electrical conductivity ranged from 44,6 to 8200 (micro S/cm)
- the river waters contained high numbers of coliform bacterias

In 1999 new secondary legislation was adopted in accordance to the Water Law: "Decree for water classification" (Off. Gazette of RM, No.18/99) and "Decree for categorization of rivers, lakes reservoirs and groundwater" (Off. Gazette of RM, No. 18/99). According to the classification, now there are five classes: I, II, III, IV and V.

Surface water quality monitoring is performed by AHMW. Monitoring covers a network of 20 measuring points located on rivers, lakes and reservoirs. Analyses are performed 12 (8) times per a year (on monthly base). Quality control comprises analysis of physical-chemical, toxic-chemical, and saprobiological parameters. This is the full list of analyzed parameters: Ph value, visible waste substances, considerable smell, colour, dissolved oxygen, saturation with oxygen, BOD, permanganate index, rate of biological productivity, total soluble substances, total suspended substances, ammonium ion, nitrates, nitrates of iron, lead, zinc, cadmium, chrome Cr+6, specific indicators, indicators of oxygenic regime, indicators of mineralization, toxicity of chemical compounds, most probable number of coliform bacteria, radioactivity, quality of water proscribed by law and total quality assessment obtained from the water analyses.

## 2.2. Spring information

There are 4414 registered springs with various yields. The total number and amount of free flowing spring water are assumed to be 2347 and 435mil m<sup>3</sup> annually. The total number and amount of tapped and captured springs are 1918 and 195mil m<sup>3</sup>/year.



Table 8. Spring data

Present use		Total number of springs	No.of springs with yield data	Total yield (x 10 <sup>6</sup> m <sup>3</sup> /year)
Free flowing (without sv.naum)		2389	2347 (55%)	435 (69%)
catured	tapped	1645	1630 (38%)	22 (3.5%)
	captured	380	288 (7%)	173 (27.5%)
total		4414	4265 (100%)	630 (100%)

Source : JICA Study

Out of total number of springs , 3000 springs with a discharge of less than 1 l/sec occupy 70%. Only 59 springs or 1,4% has a discharge of greater than 100l/sec. The springs with a discharge of greater than 10l/s are 326 in number and are mostly distributed in the Sara Mountin.

Table 9. Spring water resources by basin

(unit 10<sup>6</sup> m<sup>3</sup>/year)

River basin	number	Average yield	Total	Free flowing	capturing	maximum
Polog	180	0.467	84.06	51.45	32.62	30.13
Treska	183	0.390	71.38	67.92	3.46	40.18
Kicevo	220	0.478	105.10	98.2	6.9	16.07
Skopje (upper)	132	0.918	121.15	11.77	109.38	104.26
Skopje (lower)	273	0.034	9.23	8.45	0.79	0.7
Veles	147	0.025	3.68	2.64	1.04	0.35
Pcina	379	0.010	3.76	2.64	1.12	0.36
Kriva reka	221	0.009	2.04	0.93	1.11	0.44
Ovce pole	83	0.010	0.84	0.06	0.78	0.2
Kriva lakavica	129	0.009	1.18	0.79	0.39	0.41
Zletovo	81	0.009	0.70	0.45	0.25	0.18
Stip-Kocani	240	0.026	6.22	4.11	2.11	0.56
Delcevo	168	0.014	2.43	1.82	0.61	0.28
Crna(upper)	645	0.094	60.64	54.98	5.66	23.5
Crna (lower)	183	0.025	4.54	3.39	1.15	0.82
Gevgelija	319	0.078	24.8	19.19	5.61	4.64
Radovis	80	0.008	0.61	0.47	0.14	0.07
Strumica	145	0.039	5.59	4.16	1.43	1
Dojran	18	0.013	0.23	0.08	0.15	0.04
Cironska	12	0.002	0.03	0.01	0.02	0.01
Crn Drim*	427	0.285	121.78	101.3	20.48	168.94
Total	4265		630	434.8	195.2	

Source: JICA Study

\* the spring of sv.naum is excluded from the calculation except for the maximum because of a kind of river flow



### 2.3. Ground water

The total amount of ground water including karst limestone and marble amount to 30,47 m<sup>3</sup>/sec or 961x10<sup>6</sup> m<sup>3</sup>/year, which is equivalent to 18,7% of that of river water resources (5,147x10<sup>6</sup> m<sup>3</sup>/year).(karst limestone is counted as spring water)

Table 10. Amount of ground water

Aquifer	Amount				
	Exploited (under use) m <sup>3</sup> /sec	Exploration finished m <sup>3</sup> /sec	Exploration level m <sup>3</sup> /sec	Total m <sup>3</sup> /sec	Annual total (10 <sup>6</sup> m <sup>3</sup> /year)
Unconsolidated sands &gravels (10 <sup>6</sup> m <sup>3</sup> /year)	1.99 (62,8)	0.79 (24.9)	3.54 (11.6)	6.32 (199)	199
Faults&fractured zone (10 <sup>6</sup> m <sup>3</sup> /year)	0.05 (1.6)	-	0.11 (3.5)	0.16 (5.1)	5.1
Karst limestone *(10 <sup>6</sup> m <sup>3</sup> /year)	7.73 (243.8)	1.19 (37.5)	15.07 (475.2)	23.99 (757)	199
Total m <sup>3</sup> /sec 10 <sup>6</sup> m <sup>3</sup> /year %	9.77 308.3 32 %	1.98 62.4 6.5%	18.72 590.3 61.5%	30.47% 961 100%	961 100%

Source : JICA Study

### 2.4. Groundwater and spring water quality

The groundwater quality survey ( JICA) was conducted during dry and wet season in 1998.

The hygienic characteristics (nitrate and nitrite)in wet season (june) are as follows: the nitrate concentration of 11 wells out of 56 wells were higher than the Macedonian standards for drinking water and it would be an indicator of environmental pollution. Regarding the spring waters concentrations of nitrite and nitrate are very low and it shows no indicator of environmental pollution.

The concentration of iron for 9 wells out of 56 were detected and large magnesium concentrations of 12 wellls were detected higher than the Macedonian standards for drinking water. The lead concentration was higher in samples from 7 wells. Hardness is higher in 11 wells, and the total number of coliform bacteria was higher in 11 wells. As for agricultural characteristics of ground water it is recommended that with adequate drainage, special management for salinity control may be required due to the fact that 20 samples are classified to be a high-salinity and low-sodium type of water and 33 samples are classified to be medium salinity and low-sodium type of water.

During the dry season 25 wells out of 56 had higher nitrate concentrations than the Macedonian standards for drinking water, Regarding the spring waters concentrations of nitrite and nitrate are very low and it shows no indicator of environmental pollution.

Unfortunately, there is no systematic quantity and quality monitoring of the groundwater in

the Republic of Macedonia. This area is the weakest point in Macedonian monitoring system.



Groundwater is very important due to links between surface and ground, especially in karst areas and alluvium area along the riverbeds.

## 2.5. Nationwide potential for future development

Table 11.

Unit 10<sup>6</sup>m<sup>3</sup>/year

Potential	Groundwater (wells)	Spring water	Total
Under use	64.4 (62,8+1,6)	195.2 to 243.8	259.6 to 308.2
Available for future development	140 (136,5+3,5)	434,8 to 512,7	574,8 to 652,7
Total	204.4	630 to 756,6	834,4 to 960,9

Source: JICA Study

## 2.6. Thermal and Mineral Waters

Territory of the Republic of Macedonia is very rich with mineral, thermal and thermo-mineral water. Mineral and thermo-mineral waters are rechargeable resources, which is not the case with other classical energetic resources. The main geothermal zones are in the areas of Volkovo-Skopje-Katlanovo, Kumanovo-Kratovo, Isti Banja-Kocani-Stip, Strumica, Smokvica- Negorci-Gevgelija and Kosovrasti-Debar-Baniste.

Geothermal water are traditionally used for spa and medical cure purposes: Bansko-Strumica, Banja-Kocani, Negorska spa - Gevgelija, Katlanovo spa - Skopje, Kezovica - Stip,

Proevska Spa -Kumanovo, Banjiste and Kosovrasti-Debar. Also in area of Kocani and Strumica (Banjsko) thermal water are used for heating of green houses used for early vegetable production. For exp. public utility Geoterma from Kocani is using annually 1.400.000 m<sup>3</sup> of thermal water for heating of glass houses for early vegetable production on 18 ha and premises (schools, etc) in the central zone of Kocani. It is a very efficient system which is recommended to other regions where the thermal water has suitable parameters and it is very environmentally favorable energy renewable resource.

Most of the thermal waters, out of 32, have capacity less than 10 l/s, 10 thermal waters have capacity between 10 and 50 l/s, 8 of them have capacity between 50 and 100 l/s, and only 3 of them have capacity higher than 100 l/s. Regarding the temperature, 24 of thermal waters have lower temperature than 40°C and 29 of thermal waters have higher temperature than 40°C.

According to the analysis of 17 major active thermal water sources performed in 1995, it was concluded that total capacity in the River Vardar and Strumica basins is 0,763 m<sup>3</sup>/s or 24,06x10<sup>6</sup> m<sup>3</sup>/year with temperature from 24°C to 75°C, while in the River Crn Drim basin total capacity of the thermal waters is 0,923 m<sup>3</sup>/s or 29,10 x10<sup>6</sup> m<sup>3</sup>/year, with temperature of 24°C up to 60°C.

Beside the thermal waters there are also cold mineral waters which are not captured yet.

These mineral waters are sub arterial waters mostly located in tercial basins such as:



Pelagonija, Polog and Strumica valley. Mineral waters are very famous upon their cure characteristics.

According to the analysis of the contents and quality of the mineral waters performed in the period 1973-1976, most of the mineral water belongs to hydrocarbonat waters with different cationic contents. Total mineralization is between 1 to 3 g/l. Regarding temperature, 140 water samples of 170, have temperature lower then 20OC, 15 water samples have temperature from 20 to 35OC, 14 water samples have temperature from 35OC up to 75OC. Regarding pH value, 113 water samples have value 7-8, 55 water samples below 7,

and only 2 water samples have pH value higher then 8.

Mineral and thermo-mineral groundwaters are with relatively high quality regarding the presence of micro organisms. There was recorded bacteriological pollution of some mineral resources, but it was confirmed that the pollution was from the surface layers of the site.

## 2.7. Wetlands

According to the Inventory of Macedonian Wetlands as Natural Resources, prepared by B.

Micevski and Bird Study and Protection Society of Macedonia in 2002, there are 44 wetlands in the Republic of Macedonia. These wetlands are grouped as follows: 19 artificial lakes (reservoirs), 8 marshes, 6 glacial lakes, 3 fish ponds, 3 natural lakes, 1 temporary water, 2 rivers, one aquatic bed and one spring. Total area that is covered by wetlands is 57.422 ha or 2,23% of the total area of Macedonia.

The largest percentage belongs to natural lakes (82,5%), reservoirs (11,3%) and marshes

(5,54%). The largest number of wetlands (10) belongs to Vardar (direct basin) and Crna

River basins, while in the river Bregalnica basin there are 6 wetlands.

Water quality in these wetlands is mostly endangered by the wastewater which is discharged untreated in the water bodies, uncontrolled abstraction of the water, uncontrolled visits of the tourists and unfavorable weather conditions.

## 2.8 Climate Changes Impact

According to the Report on First Communication on Climate and Climatic Changes and Adaptation in the Republic of Macedonia, section Hydrology and Water Resources (prepared in November 2002), for the observed period (1961-1990) the average discharges have decreased for 10-20% and the maximum discharges have been reduced to 80%. The climatic changes impact on the water resources are expected to be more unfavourable considering that the analyses are related to the average values of the parameters, such as discharges, water levels, and temperatures. In different seasons some of the parameters have extreme values that will influence the components of the hydrological cycle. For example, in the summer period in Macedonia the temperatures are rather higher then the annual average ones and with long duration. So, it can be stated that the evaporation from the water surface and ground will be greater and the effective rainfalls smaller.

In order to evaluate climatic changes effects, analysis of the average monthly and average



annual temperatures for meteorological station Skopje-Petrovec as representative for the central part of the territory of the Republic of Macedonia, has been carried out. Data for the

1961-1990 period have been implemented and they were projected in 2050 and 2100 year,

in correspondence with the scenario (IS92a). The results presented in the report it can be stated that average annual air temperature of 12 °C for the 1961-1990 period will increase to 13,7 °C in 2050 or for 14,1%. In 2100 year the temperature will increase to 15,2 °C or for 26,7% in relation with the analyzed period.

Similar analyses have been performed for the average monthly and annual amounts of rainfalls again for Skopje meteorological station in Petrovec, and based on the data for the 1961- 1990 period., From the results it can be concluded that annual amounts of rainfalls for the analyzed period will be reduced from 504,4 mm to 492,0 mm in 2050 year or for 2,45%, and to 481,9 mm in 2100 year or for 4,46%. Analyses of monthly rainfalls will be certainly even more unfavorable having into consideration physical and uneven distribution in time of the rainfalls and real increasing of the annual evaporation.

In order to be prepared for the climatic changes impact, Action plan for adaptation should be carried out on the national level. This plan should present the knowledge in the investigation methodologies, measurements techniques and processing of the data.

Main purpose of the suggested measures in the draft Action Plan for adaptation, proposed

within the Report on First Communication on Climate and Climatic Changes and Adaptation in the Republic of Macedonia, section Hydrology and Water Resources, is to reduce the water losses in conditions of climatic changes, various in time and space. Studies for evaluation of the river basin's sensitivity and water balance components under different scenarios of unfavorable climatic impacts are necessary. For measures implementation, previous identification of the endangered regions is required as well as carrying out of the law regulation for utilization and maintenance of the structures and systems for water resources utilization under conditions defined in the National Action plan for adaptation.

### **3. Water used per sector – current and future water demands**

#### **3.1 General**

The analyses is focused on the environmental sector- water, having currently the highest negative impact, where Macedonia is seriously lagging behind, and where the medium term expected investments, although costly, have great potential to contribute to sustainable economy, by stimulating new business and jobs. A wider scope of environmental problems is presented in NEAP II.

According to the total water demands by users, currently major water consumer is the irrigation sector with 46%, minimum accepted flow with 28%, then industry with 14% and population and tourist 12%. The same water demands by the river basins are as follows: river Vardar 79% of the total water demands, river Crn Drim basin 12% and river basin Strumica 9% of the total water demands.

Table 12: Total water demands – current condition

Water demands (m <sup>3</sup> /year)
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River basin	Drinking water	Industry	Irrigation	Minimum accepted flows	Total water demands
Vardar	183.567.187	233.025.100	731.732.000	457.000.000	1.605.324.287
Strumica	11.348.854	32.897.600	117.941.000	13.000.000	175.187.454
Crn Drim	17.094.739	8.224.300	49.662.000	164.000.000	238.981.039
TOTAL	212.010.779	274.147.000	899.335.000	635.000.000	2.019.492.780

## 3.2 Drinking Water Supply

### 3.2.1 Water supply infrastructure and drinking water quality

Water supply of the municipalities provides high quality water in order to meet the demands: of the population, light industry (which uses high quality water and it is located in the urban areas) and the public needs (institutions, schools, hospitals, restaurants, trade centers, street washing, watering of parks and other green areas, fire extinguishments etc).

In the Republic of Macedonia, there are mainly local water supply systems for cities, towns

and villages. Many of them, originally constructed for the city or town, are extended in order

to meet the water demands of the local rural areas. There are also regional water supply systems: "Studencica" for Kicevo, Prilep, Makedonski Brod and Krusevo, "Lukar" for Kavadarci, Negotino and 13 villages and "Debar" for town Debar and several close villages. There are a large number of villages, which are supplied with drinking water by local water supply system. In the period from 1995-1999, there were more than 300 village's water supply systems constructed, mostly with donations and self-financing of the local population. Unfortunately, there is no central database for more detailed information about rural water supply.

According to the Census 2002, the number of dwellings connected to public water supply system is 597.014, which presents 86% of all dwellings, while 7% of dwellings are connected to air compressed water tank or other resource. The percentage of connections to public water supply systems in the municipalities-urban areas is much higher than the average, it varies from 82% (Berovo, Kumanovo) to 100% Skopje-Center municipality. Total number of population connected to public water supply systems is 1.200.000 inhabitants. Regarding the rural areas the percentage of the connected dwellings to the public water supply systems is very different, from 10% up to 100%. According to the available data, average percentage is about 70, while total number of population connected to public water supply is 250.000 inhabitants.

In the following table are presented current drinking demands for population and tourists, where the water supply norm for population is : Skopje 0,4, m<sup>3</sup>/cap/day, other from 0,35-0,3, and for tourists from 0,350 m<sup>3</sup>/tourist/day to 0,500 m<sup>3</sup>/tourist/day.

Table 13. Drinking water supply demands /year

River basin	Drinking water demand (m <sup>3</sup> /year)-population	Drinking water demand (m <sup>3</sup> /year) – for tourist
Vardar	183.567.187	2.041.100
Strumica	11.348.854	162.000
Crn drim	17.094.739	4.055.300
Total	212.010.779	6.258.300





According to the data from "Study on the Conditions in the Public Communal Utilities", May

2004, there are 2.209,5 km of total conveying and distribution pipeline, out of which 454,7 km are convey pipeline and 1.754,8 km are distribution network pipeline. Most of this pipelines, 84% are older then 15 years, 10% of them are old between 5 and 15 years, while only 6% of the total pipelines are built less then 5 years ago. In order to improve the quality of the raw water, there are 10 filter plants with total capacity of 6.822 m<sup>3</sup>/hour.

For drinking water supply springs, groundwater and surface water or combined resource are used. Larger cities, which are supplied with spring water, are: Skopje, Prilep, Kicevo, Makedonski Brod, Krusevo, Struga, Debar, Gostivar, Tetovo and Kriva Planka. Groundwater is used for supplying the cities: Skopje, Stip (with pretreatment), Veles, Kocani, Probistip, Gevgelija, Ohrid, Demir Hisar, Delcevo, and Radovis. Surface water is used after treatment of the raw water for the cities: Bitola, Kumanovo, Strumica, Veles, Berovo, Vinica, Sv. Nikole and Kratovo. Combined water supply with spring and surface water is used for Ohrid, Kavadarci and Negotino, while groundwater and surface water is used for Delcevo and Vinica. Rural water supply systems are mainly supplied from springs and groundwater, but lately, very often they use surface water.

Table 14. Drinking water supply data

year	Type and quantity of intake water (m <sup>3</sup> /s)			Consumed water (m <sup>3</sup> x10 <sup>6</sup> /year)	Assessed water losses %
	springs	groundwater	Surface water		
1994	5.49	2,296	3,143	121,858	10 – 60
1997	4,93	2,645	2,482	97,318	10 - 60

During the last years **water losses** during transportation to the final consumers is between 40% - 80% (average 60%) dependently on the age, type of the pipes and the pressure in the network. In 2004 the water losses during transportation to the final consumers are on the average of 52% of the water received. The basic actions, which are necessary to be undertaken in order to reduce the water losses are connected with the purchase of devices and appliances for detection of leakages, reconstruction at stages of the distribution water-supply network and water-supply system connections and elaboration of projects for efficient control on water losses.

All data are based on information provided bu PU, generally , there is no database on national level, where all different types of information are collected regarding water supply. This is also very evident for the rural water supply systems where is no data or data are very limited on the water used quantities, water quality, use efficiency, problems in operation, etc.

In many urban areas the current condition of the water supply systems is not satisfying in regard to the distribution network, main convey pipelines, water storage tanks, structure and other facilities. The network is mostly worn out, rather old,, the capacity of the pipelines is not meeting the growing demand and are constructed of very different materials: cost iron, asbestos concrete, PVC, concrete. The results are very high losses (10-60%) of the total consumed water. The water storage tanks in many cities are with insufficient capacity, which results in shortage of water during the day.



The shortage of drinking water especially in summer period leads to restriction of water supply for few hours in a day. This measure have high negative impact on the technical condition of the network and other structures, as well as on water quality.

Regarding the rural water supply systems there are no data on their condition, or efficient system for their operation, maintenance or financing. According to the experience, once they are put in operation, there are no regular monitoring of the condition, so only necessary remedies are performed when they are needed. If the system is operated and maintained by the PU, than the condition is more under control.

As a whole, the water quality in the country is good, except in definite regions, facing problems of a local character. Current control measures, frequency and standards for safe drinking water are in compliance with EU regulations and WHO Drinking Water Guidelines<sup>1</sup>. The chemical quality of drinking water varies with the origin of the drinking water source. Almost all carstic and surface waters, and significant amounts of well water, are notably short in fluoride, on average 0.1 mg/l. Some wells in Veles, Shtip and Kocani have relatively a high content of iron and manganese, and the content of nitrates ranges between 1 and 5 mg/l. During summer, higher nitrate concentrations have been found in wells in Prilep and Radovish (10-15 mg/l). Both wells are situated in regions where the land is used for intensive agriculture production. The content of nitrite generally lies below 0.03 mg/l. Toxic parameters, such as lead, arsenic, chromium and cadmium concentrations, meet WHO standards. A few wells in rural settlements have unusually high levels of ammonia, nitrite, nitrate and KMnO<sub>4</sub>. 5% of all wells assessed by the Republic Institute for Health Protection are microbiologically contaminated. Several water-borne epidemics were observed over the last century, caused by serious failures in the distribution networks combined with poor local hygiene practices and inadequate sanitation (around 70% of urban settlements with sewage network coverage on the national level and in rural areas the connection rate is 15%). In some of the reservoirs for drinking water supply, the process of eutrophication as a result of accelerated grow of algae and higher forms of plant life is present. This process enriches the water with nitrogen compounds, which disturbs the water quality in the reservoir. According to the available data, this process is recorded in the reservoir "Strezevo" near Bitola. The water quality of this reservoir is very important because the water is used for drinking and for food processing industry.

#### Main problems identified

- Condition of the WSS in urban areas unsatisfactory
- Rural area not covered with WSS
- High losses and low water use efficiency
- Shortage of water in the regions (eastern, southern and central part of the country): Prilep, Veles, Kumanovo, Kratovo, tetovo, Kriva Palanka
- Water quality problems in Sv.Nikole, Veles, Kratovo, and temporary Kavadarci
- Inefficient operation and maintenance of the systems (especially in rural areas)
- Low revenue collecting rates in PU
- No regular monitoring of the water quality and quantity (rural areas)
- No database on national level for all issues related to domestic water supply.

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<sup>1</sup> New By-Law Regulation on drinking water safety is adopted 57/04 and its approximated with the EU regulations as well as WHO Drinking Water Guidelines



### 3.2.2 Future Drinking Water Demands

Estimations for future drinking water demands are performed in NEAP II, covering two horizons 2010 and 2020. The number of population is taken from the expert report "Projections on population and labor up to 2020". According to this report, in 2010, in the Republic of Macedonia, there would be 2.078.670 inhabitants, while in 2020, 2.228.000 inhabitants. Growing rate for these two horizons breakdown is 0,41%, actually 0,67%, while the average growing rate is 0,52 %. The water supply norms are defined in accordance to the size of the cities, population life standard, economy development, culture and habits, etc.(for Skopje : 2010- 0,5 m<sup>3</sup>/c/d 2020 – 0,55; other cities 2010 0,45 – 0,37 and 2020 0,5-0,3, and rural area 2010 0,27 m<sup>3</sup>/c/d; 2020 0,3: m<sup>3</sup>/c/d

Table 15. Drinking Water Demands in 2010 and 2020

River basin	Drinking water demand (m <sup>3</sup> /year) 2010 pop.+tourist	Drinking water demand (m <sup>3</sup> /year) 2020 pop.+tourist
Vardar	264.974.200 + 2.972.400	289.454.100 + 3.759.400
Strumica	14.428.800+ 243.000	17.921.500 + 311.900
Crn drim	24.199.200 + 6.080.000	29.013.900 + 7.800.500
Total	285.602.200 + 9.295.400	336.389.500 + 11.871.800

The input data for the estimation of the future water demands for tourists are taken from the expert report on "Development of tourism and organization of the tourists locations". The applied water supply norms are from 0,420 m<sup>3</sup>/tourist/day up to 0,600 m<sup>3</sup>/tourist/day. Total drinking water demands for the tourists for year 2010 and 2020 are presented as follows:

Increasing of the water supply norms and respectively water demands in future is not a recommended planning approach from environmental aspect. The norms which are used in

ERWRM (current and future) are rather high compared to water supply norms in other western European countries. Beside all the specifics of the water supply in the Republic of Macedonia (there is no tradition of use of bottled water for every day use, gardens around the houses are irrigated by the water from the public water supply systems, there is no parallel water supply system for technical purposes, high temperatures in summer period), there should be actions for reduction of the water norms and demands. As a first step, a Study on determination of the water supply norms should be prepared, respecting the environmental aspects for sustainable development.

## 3.3 Sewage Systems

### 3.3.1 Wastewater collection and treatment



With regard to the degree of construction of sewerage network in settlements and of Urban Waste Water Treatment Plants (UWWTP), the country lags behind in comparison with the water-supply networks. Generally, existing sewerage systems in major urban areas are designed to collect and convey both wastewater and precipitation water. Only 12 cities have constructed separate sewage systems. The City of Skopje has constructed a separate system for waste water (56%) and for precipitation water (18%). There collection network is 280.6 km. At the national level, the sewage collection network is 1,239.1 km and collector network of 280.6km. From the total number of dwellings 697,529 (Census 2002) 60% are connected to a public sewage system whereas 21% of the dwellings have septic tanks and another 12% only have a system of uncontrolled waste water discharge. The available data indicate average connection rates of about 60%. Compared with the connections to public water supply systems, there is significant difference. Almost 180.000 dwellings, which are connected to the public water supply systems are not connected to public sewage. It is obvious that there are big differences in percentage between the cities. All this leads us to the conclusion that number of connections to public sewage is not adequate to those for water supply.

Sewage systems are local systems for each urban area. Beside these local systems there are three larger or regional sewage systems for protection of Ohrid, Prespa and Dojran Lake.

The sewage system for protection of the Ohrid Lake is consisted of eastern, western and

main collector pipeline, pumping stations and wastewater treatment plant. Eastern collector

is collecting wastewater starting from monastery "St. Naum", up to city of Ohrid and then is

connected to the main collector pipeline in Struga. Total length of this collector pipeline is 44 km. Western collector is covering west cost of the lake, starting from village Radozda up to city of Struga, with total length of 12 km. This pipeline is in construction phase. The main collector is conveying the wastewater from city of Struga up to the wastewater treatment plant in village Vranista.

The sewage system for protection of the Prespa Lake is consisted of eastern, western and

northern collector, pumping stations and wastewater treatment plant. Only the northern collector is constructed and the first phase of the wastewater treatment plant.

The sewage system for protection of Dojran Lake is consisted of collector around the lake

and wastewater treatment plant.

There is no monitoring of the waste water which municipal sewage systems discharge. The management of the sewage systems is the responsibility of the public water supply and sewage enterprises.

Investments in municipal infrastructure are at very low level, and will need to increase in order to meet the requirements of the *acquis*.

Currently, 6 **UWWTP** are constructed in the country. They serve 7 settlements with 252. 000 actual inhabitants or 12.5% from total population. The efficiency of the UWWTPs remains low, which in 2003 operate with the 60% of their design capacity. The main causes of the problem are routed in the incomplete/missing sewerage systems in the settlements.



The table below compares some basic data regarding sewerage systems in Macedonia and some EU member states.

**Table 16: Sewerage systems in member states**

Indicator	Measure	Member state				Macedonia
		Austria	Bulgaria	Hungary	Czech Republic	
Population	Inhabitants	8 033 000	7801273	10 198 000	10 023 000	<b>2 022 547</b>
Population included in the sewerage network in 2005	%	89	69	51.0	79.0	60.0
Population connected to WWTPs in 2005	%	89	41	57	73	<b>12.5</b>

**Source: EUROSTAT**

Regarding the urban wastewater quantities there is no monitoring of the discharged wastewater from municipal sewage systems. The principal of their estimation is based on wastewater norm per capita per day, and number of population for each municipality from Census 2002. Applied wastewater norm is defined on the base of size and character of the urban area, condition and existence of the sewage systems as well as water supply norm. For city of Skopje, wastewater norm is reduced for 25% from the water supply norm or 0,3 m<sup>3</sup>/c/d, for the second group of cities the wastewater norm is reduced for 29% or 0,25 m<sup>3</sup>/c/d, and for the third group is reduced for 33% or 0,2 m<sup>3</sup>/c/d. For the rural areas, wastewater norm is reduced for 50% from the water supply norm, or respectively 0,1 m<sup>3</sup>/c/d.

Tourist premises are usually connected to the sewage systems. Due to the additional load provoked by the tourists during certain period of the year, separate estimations were performed for wastewater quantities discharged by the tourists. In NEAP II, the wastewater

quantities have been estimated by the number of tourists and wastewater norm. This norm is from 0,280 m<sup>3</sup>/tourist/day to 0,400 m<sup>3</sup>/tourist/day for Skopje. Actually, wastewater norm is 80% from the water supply norm. Also, during estimations, time duration of the tourist season is taken under consideration. Depending on the type of tourist activity, time duration is from 120 to 270 days, while for Skopje as capital of the state and cultural, economic and trade center, 365 days.

**Table 17. Waste Water Quantities m<sup>3</sup>/year**

River basin	NEAP II – population	NEAP II- tourist
Vardar	119.738.943	1.632.800
Strumica	6.937.135	129.600



Crn Drim	10.576.715	3.244.200
Total	137.252.793	5.006.600

Even it is well known fact that urban wastewater is one of the most danger pollutant of the surface water in the country, there is no data on the urban wastewater quality, due to not existing systematic monitoring. In the Water Law (Off. Gazette of RM, No. 4/98), there are provisions that any wastewater producer must install, operate and maintain measuring devices, as well must provide wastewater quality analysis, in the practice the law is not respected.

Only the laboratory of the Water Supply and Sewage Utility in Skopje (Centre for sanitation

control and supervision) has equipment for performing analyses. The wastewater quality is

monitored at six locations where main sewage pipes discharge the wastewater into River Vardar. The sampling frequency is two times in a month and the following parameters are controlled: basic physical indicators, parameters for oxygen regime, nutrients, anion contents and specific indicators such as presence of phenol, oil and fuels and surface active substances.

**Table 18.: Wastewater pollution load in kg/day population**

no	River basin	Urban population	Wastewater m3/year	BOD t./year	N-tot t./year	P-tot t./year	TSS t./year
1	Vardar	1.066.533	119.783.943	21.021	4.983	895	73.964
2	Strumica	51.534	6.397.115	1.046	241	42	3.574
3	Crn drim	81.901	10.576.715	1.614	383	69	5.680
4	total	1.119.968	137.252.793	23.651	5.607	1.007	83.218

**Table 19: Wastewater pollution load in kg/day - tourists**

no	River basin	Tourists/year	BOD t./year	N-tot t./year	P-tot t./year	TSS t./year
1	Vardar	21.000	256	61	11	901
2	Strumica	1.500	22	5	1	77
3	Crn drim	57.500	248	139	23	1.929
4	total	80.000	826	205	35	2.907

Current condition of the sewage systems is different in certain urban and rural areas. Generally, the systems are rather old, worn out, the collecting network is constructed of different materials, the pipes are cracked and there is leakage of the wastewater in the ground. The capacity very often is not sufficient to collect all the wastewater. The systems are not separate systems for urban wastewater and precipitation water, and during the floods, the pipes are overloaded and suffer from increased pressure.

In the urban areas where the sewage systems are rehabilitated or newly constructed collection and disposal of the wastewater is efficiently performed.

Regarding the current condition of the sewage systems, there are several problems to be

addressed:

- insufficient number of sewage systems in urban and rural areas;
- poor condition of the sewage systems in many urban areas;



- low wastewater collection and disposal efficiency;
- inefficient operation and maintenance of the systems;
- low cost revenues collecting rate of the public utilities;
- no regular monitoring of the urban wastewater quantities and quality;
- only few treatment plants are under operation;
- no database on national level for the information regarding to urban wastewater collection, disposal and treatment;
- low public awareness for wastewater as pollution source and degradation of the environment;
- secondary legislation is not existing (even it is required in the Water Law).

### 3.3.2 WWTP

Discharge of waste water from urban dwellings without treatment into the aquatic recipients (especially groundwater) represents a serious health risk for the population in natural disasters, epidemics, epizootics, epiphotics, and other accidents in the Republic of Macedonia taking into consideration very limited number of properly designed waste water treatment plants and the low sewage network coverage. In practice the only treatment plants in the country are installed and operating in the areas around the three big lakes (Ohrid, Prespa, Dojran), and in : Makedonski Brod., Kumanovo , Sv Nikole. The amount of the wastewater with treatment is 12.509.973 m<sup>3</sup>/y;

### 3.3.3 Future Urban Wastewater Quantities

Estimations for future urban wastewater quantities have been performed in ERWRM, covering two horizons 2010 and 2020. The number of population is taken from the expert report "Projections on population and labor up to 2020". The wastewater norms are defined in accordance to the water supply norms and it is predicted that in the coming period there would be more sewage systems in urban and rural areas constructed. The wastewater norms are 60-80% from the water supply norm. The input data for the estimation of the future wastewater quantities from tourists are taken from the expert report on "Development of tourism and organization of the touristics locations". The applied wastewater norms are from 0,340 m<sup>3</sup>/tourist/day up to 0,480 m<sup>3</sup>/tourist/day.

Table 20. Wastewater Quantities in 2010 and 2020

River basin	WW (m3/year) 2010 – population	WW (m3/year) 2010 - tourists	WW (m3/year) 2020 – population	WW (m3/year) 2020 - tourists
Vardar	182.483.000	2478.400	220.710.000	3.045.300
Strumica	10.183.900	194.400	13.081.600	255.200
Crn drim	17.063.500	4.754.500	21.275.900	6.380.600
Total	209.730.800.	7.427.300	255.067.500	9.681.100

## 3.4 Industry Water Supply and Wastewater

### 3.4.1 General

Industrial capacities are mostly located in the urban areas or in the close surrounding.  
Only



structures and facilities for energy generation (Hydro Power Plants (HPP), Thermo Power

Plants (TPP)), minings, oil refinery are located on larger distance from urban areas. Considering the water consumption, large consumers are industry for energy generation, food processing industry, chemical, metal, non-ferrous industry, textile etc. According to the water resource, industry capacities can be divided in two groups: industry

connected to public water supply systems, using water with high quality and industry with

own water recourse (spring, wells, river diversion, reservoir etc).

Available data for water consumed by the industry are given in the Statistical Yearbooks,

from 1994 to 2002. Totally consumed water for industry (without water for cooling of TPP due to new methodology of data presentation, all water used by ESM is presented in one number) in 2002 was 67.884.000(m<sup>3</sup>/year). The largest consumers are chemical industry, food processing, non-ferrous metal production, textile fiber and fabric industry. Water used for production of electric energy, except for cooling of the thermo plants, is not actually spent or polluted, because it only passes through the turbines, without changing it quantity or quality. Existing thermo plants "REK-Bitola" and "REK-Oslomej", use technological water with recirculation water supply systems. In these systems raw water is used only for covering the water losses. Thermo plant in Negotino is using running water from river Vardar.

In order to define the problems about quantity or quality of the water consumed by the industry, it is necessary to establish database on national level. It is convenient to merge this database with Cadastre of polluters, so in one database to have all necessary information. Currently, there is no data on quality of the used water, whether that industry has water permission for abstraction of water, and if it has, whether it is respected, how much water is used for unit of product etc.

#### 3.4.2. Industry Wastewater

Industry wastewater is one of the most dangerous pollutant of the surface and groundwater. The quantity and quality are rather variable and depend on the technology process and capacity of the industry.

Regarding to the source of the industry wastewater, it can be divided into the following groups:

- wastewater from technological processes,
- wastewater from cooling of the thermo plants,
- wastewater from sanitary facilities in the industry,
- wastewater from maintenance of the premises and devices.

Some of the wastewater contains non-organic matters, other organic matters or wastewater

can have high temperature. Cooling wastewater comes from the melting facilities and from thermo plants. This water has higher temperature and can damage the life in the recipients.

Very dangerous are the wastewater from the mines, which can provoke negative impact on the environment.

Usually, so cold "light" industry is located in the urban area and they discharge the wastewater in the urban sewage systems. Some of the larger industries have their own





sewage system and discharge the wastewater through that system in the near recipient.

According to Post conflict Environmental Assessment performed by UNEP in 2000, main industrial potential water polluters are: copper mine Bucin in Radovis (currently is out of operation), factory for metal lining in Kicevo, industry Jugohrom for ferrolegures, zinc and lead melting factory in Veles, lead and zinc mines in Kamenica, Probistip and Toranica (currently, the last two are out of operation), chemical industry OHIS in Skopje, thermo power plant in Bitola, fertilizer factory in Veles and other smaller factories.

There is no systematic monitoring of the quantity and quality of the industry wastewater. The only available data are from Statistical Yearbooks.

There is small number of industry wastewater treatment plants constructed in the Republic of Macedonia. Most of them have only mechanical treatment, while only limited number has mechanical and chemical (biological) treatment. Some of them are not under operation due to malfunction, there are no spare parts or it is too expensive to run. Even where wastewater treatment plant is functioning, the results are not meeting the requirements.

In the Statistical Yearbooks for the period from 1994 to 2002, there are data for discharge

industry wastewater, purified (treated) and not purified (not treated).

Table 21.

No.	year	Discharged wastewater from cooling and other industries (m3/year)	Discharged unpurified wastewater from cooling and other industries (m3/year)	Discharged purified wastewater from cooling and other industries (m3/year)
1	1994	95.437.000	61.950.000	33.477.000
2	1995	109.627.000	63.123.000	46.459.000
3	1996	344.684.000	325.386.000	19.298.000
4	1997	154.532.000	87.193.000	67.339.000
5	1998	240.602.000	193.586.000	47.016.000
6	1999	196.437.000	174.435.000	22.002.000
7	2000	66.219.000*	51.627.000*	15.197.000
8	2001	96.830.000*	86.746.000*	3.728.000
9	2002	82.394.000*	69.721.000*	41.461.000

Source: Statistical Yearbooks

\*water discharged from cooling of TPP is not included

It is obvious the difference in the purified and unpurified wastewater quantities. The percentage of purified industry wastewater is varying from 11% in 1999 up to 42 % in 1995. These numbers are emphasizing the shortage of the industry wastewater treatment plants.

#### Future Industry Water Demands and Discharge

It is very difficult to predict industry water demands, when there is no firm economic strategy for development. In NEAP II there are predicted industry water supply demands for the horizon 2010 and 2020. The estimations were made on the base of the predicted specific consumption for different industrial products.



Table 22. Industry Water Demands and Discharge n 2010 and 2020

River basin	Industry water demand (m3/year) 2010	Industry water demand (m3/year) 2020	Industry waste water(m3/year) 2010	Industry waste Water (m3/year) 2020
Vardar	243.961.800	243.961.800	193.447.400	193.447.400
Strumica	34.441.700	34.441.700	27.553.300	27.553.300
Crn drim	8.610.500	8.610.500	8.610.500	8.610.500
Total	287.014.000	287.014.000	229.611.200	229.611.200

### 3.5. Water Used for Agriculture

#### 3.5.1. General

The favourable climate and pedological conditions in the Republic of Macedonia create the

basis for intensive agricultural production of specific highly cost effective crops. These crops would not otherwise grow under conditions where the water is limiting factor in space and time. Due to uneven distribution of precipitation in time and space, irrigation in our country is necessary condition for successful agricultural production.

The arable agricultural area in the Republic of Macedonia accounts for approximately 667.000 ha. If fully constructed, irrigation schemes could irrigate around 400.000 ha, or 60% of the total arable land. So far, 106 smaller and larger irrigation schemes have been built covering an area of 163.693 ha of fertile arable land, i.e. 49,9% of the area that may be irrigated. Actual possible area for irrigation is about 126.600 ha. The irrigation schemes are mainly constructed in the period between 1958 and 1980, which means that some of them are under operation for more then 40 years. Out of the total area under irrigation 61% are irrigated by sprinkling, while 39% by other type of surface irrigation.

Due to the long operation period, not regular and on time maintenance, poor condition of

some part of the irrigations schemes (canals, network, lift gates etc), small size of the farmer plots, change of the cropping pattern, irrigation schemes have low efficiency coefficient of 49% up to 78%. This is very low use efficiency of the irrigation schemes and the fact that most of the time not more then 50% of the possible areas are irrigated, it is very concerning, because without irrigation there is no agricultural production and no food production. According to data from the Administration of Water Management at the Ministry of Agriculture, Forestry and Water Management (table 23) it is very obvious that there is a tendency of decreasing of irrigated area. In 1987 total irrigated area was 82.582 ha or 67,5% of the possible area for irrigation. After that year the irrigated area continually decreases reaching the minimum of 36.146 ha in 1999. Also in 1995 percentage of the irrigated area was very low, 31,6%. The explanation for that year is the rather high precipitation during the vegetation period, as well as the spring storms, which destroyed the crops before yield.

There is no reliable data on consumed irrigation water. It is important to explain that most of the irrigation schemes have no measuring devices on irrigation intakes, such as river diversions or canal outlet.



Table 23.

Year	Possible area for irrigation (ha)	Planned area ha	Irrigated area ha	Possible/irrigated %
1993	124.310	69.088	45.231	36,4
1994	125.980	73.610	54.620	43,4
1995	126.617	70.406	40.068	31,6
1996	126.025	73.069	46.351	36,8
1997	124.184	69.946	51.665	41,6
1998	122.964	57.812	51.441	41,8
1999	123.126	56.674	36.146	29,4
2000	122.877	57.823	42.572	34,7
2001	122.494	42.428	23.930	
2002	122.500	15.203*	15.203*	
2003	122.500	27.498*	27.498*	

Generally, irrigation water quality is good. For all larger irrigation schemes, main water resources are the reservoirs, usually located on upstream section of the rivers. In these areas there is no significant population or industry, so the water in the reservoirs is not polluted. Even if polluted water inflows in the reservoirs (exp. Tikves), large reservoirs have high capability for self-purification of the water.

There are monitoring data on water quality in the reservoirs, which are used for irrigation.

The defined class is I or II, which according to the act on classification of water, is suitable for irrigation. From 126.617 ha, about 15.000 ha are irrigated with water from rivers. Main resource is the river Vardar. In this case, defined class of the water can be II, III or IV. If the

water is III or IV class, then is not suitable for irrigation, but there is no control of the used water. There is no regular monitoring of the irrigation water in canals or in the pipelines. Pollution of the soil and groundwater in the regions of intensive use of fertilizers and plant

protection chemicals is noticed, but there are no systematic monitoring and analyses performed. That is very important for areas where ground water is used for drinking or irrigation.

Operation period of the irrigation schemes is rather different and it goes from 10 to more then 40 years. The largest irrigation schemes like: Bregalnica (28.000 ha), Tikves (15.000 ha), Polog (13.900 ha), Strumica (15.000 ha), Prespansko pole (3.600 ha), Lipkovo (8.150 ha), are more then 30 years old. Irrigation scheme Strezevo (20.200 ha), which is the most modern system in the country is built in 1983. This irrigation system has computer center which command the flow (dynamic flow regulation) in the canal and network.

Current condition of the schemes (except Strezevo) is characterized with poor technical condition of the structures, facilities and equipment, high water losses, low use efficiency, not enough capacity for the changed cropping pattern, no flow regulation in the convey structures (canals and pipelines) etc. Very often, the system is not completely built in accordance to the design, so some parts of the systems can not be used.



Reasons for such poor condition of the schemes are numerous: bad quality of the original construction, poor and not on time maintenance of the schemes, not fully built according to the design, inadequate design solutions, insufficient and poor quality of the hydro mechanical equipment, large number of water users, small size of the plots, bad financial situation of the water management organizations, not implemented Water law, rural emigration etc.

Irrigation sector is facing many problems of technical, institutional and financial aspects. Some of the problems can be addressed as:

- poor technical conditions of the irrigation schemes including canals, network, structures, other facilities, equipment etc;
- insufficient capacity of the convey structures and distribution network;
- high water losses and degradation of the soil due to surplus of water;
- small farmer's plots and large number of individual water users;
- low water use efficiency;
- low cost revenues collection;
- bad financial situation.

### 3.5.2 Current and Future Irrigation Water Demands

Irrigation water demands are defined in NEAP II document for assumed irrigation area of

126.617 ha and average irrigation norm for certain areas (depending of type of crop irrigated, climate and soil conditions).

Construction of irrigation schemes is very expensive and long-term activity. It is not likely that in new future (5-6 years) there will be large new irrigation schemes, which will require new water quantities. Priority in irrigation sector has the rehabilitation of the existing schemes, their modernization and installation of new equipment, application of water saving techniques and flow control in the main canals.

In the NEAP II document, future irrigation demands are estimated for the horizon 2020. New planned areas are 139.710 ha, and all together with the existing, totally 266.327 ha.

Table 24. Current and Future Areas and Irrigation Water Demands up to 2020

River basin	Current condition		Planned new areas and demands		Future area and demands up to 2020	
	Area (ha)	water demand (m3/y)	Area (ha)	water demand m3/y	Area (ha)	water demand m3/y)
Vardar	99.918	731.732.000	122.982	807.022.000	222.900	1.538.754.000
Strumica	18.432	117.941.000	8.300	51.402.000	26.732	169.343.000
Crn Drim	8.267	49.662.000	8.428	48.952.000	16.695	98.614.000
Yotal	126.617	899.335.000	139.710	907.376.000	266.327	1.806.711.000

### 3.6. Water Used for Energy Production

From the total installed capacity of 1.443,8 MW 30,05% or 433,8 MW are installed at hydropower plants.



Table 25. Water Used for Energy Production

no	year	Total water used for energy production (m3)	Water used for Hydropower plants HPP (m3)	Water used for Thermal power plants TPP (m3)
1	1994	1.775.020.000	1.550.213.000	143.750.000
2	1995	1.678.356.000	1.411.439.000	143.498.000
3	1996	594.614.000	339.728.000	13.531.000
4	1997	2.473.776.000	2.270.170.000	14.448.000
5	1998	1.864.143.000	1.719.954.000	93.290.000
6	1999	2.167.298.000	2.022.161.000	101.033.000

Source: Statistical Yearbook 1995-2000

It has to be emphasized that this category of water use is not actually using the water as a resource, because the water is not consumed. Due to this fact, we do not treat energy production sector as real user of water, especially water for HPP, because the water is only passing through the turbines, without losing the quantity or quality.

### 3.7. Minimum Acceptable Water Flow (Biological Minimum)

Data for the minimum acceptable water flow (biological minimum), which should be all the time available in the riverbeds for survival of life in the water as environment, are defined in the NEAP II document as 10% of the average discharges of the particular river.

Table 26. Minimum Acceptable Water Flows

River basin	Water quantities as minimum acceptable water flows (m <sup>3</sup> /year)
Vardar	457.000.000
Strumica	13.000.000
Crn Drim	164.000.000
Total	635.000.000

It is necessary to establish a methodology for estimation of the minimum accepted flows on the base of not only average river discharge, but, taking under consideration many other factors important for the life in the water as environment.

### 3.8 Total Future Water Demands

Sums of the total water demand including: population, tourists, irrigation industry and minimum accepted flows are calculated for two time periods: current



total water demands and in 2020. The results are presented in the following Table/

Table 27: Total water demands – 2020

Water demands (m <sup>3</sup> /year)					
River basin	Drinking water	Industry	Irrigation	Minimum accepted flows	Total water demands
Vardar	293.213.500	243.961.800	1.538.754.000	457.000.000	2.532.929.300
Strumica	18.233.400	34.441.700	169.343.000	13.000.000	235.018.100
Crn Drim	36.814.400	8.610.500	98.614.000	164.000.000	308.038.900
TOTAL	348.261.300	287.014.000	1.806.711.000	635.000.000	3.076.986.300

### 3.9 Water balance

In the NEAP II, water balance of the available surface water resources and total demands by river basins has been performed. The experts who prepared that document emphasize in the text that this water balance should be treated only as approximative one, because there is no sufficient data on real consumed water, recharged water from irrigation, water supply and fishing nursery. Also, for the catchment's areas of Ohrid, Prespa and Dojran Lake and for evaporation or underground connection with the groundwater aquifers, there are no data. Because of the uncertainty of the input data, output data should be treated as approximative.

Analysis on the available water resources were performed for average dry year, 75% and

98% dry years, and the main findings are:

- Current demands do not exceed the available water resources in all river basins for average year and 75% dry year, except in Strumica river basin, 40% of the demands are not covered for average year and 66% of the demands in 75% dry year;
- Current demands are not meet in 98% dry year in regions of Middle and Downstream Bregalnica, Pelagonija, Strumica and Dojran;
- In 98% dry year, there are surplus water in the regions: Polog, Skopje, Treska Pcinja, Upstream Bregalnica, Middle Vardar, Downstream Crna and river Crn Drim basin;
- Future demands do not exceed the available water resources for average dry year, except in Strumica river basin, 77% of the demands are not covered;
- Future demands in 75% dry year exceed the water demands in the regions: Middle and Downstream Bregalnica, Pelagonija and Strumica.
- Future demands in 98% dry year exceed the available water resources in the regions: Polog, Pcinja, Bregalnica, Pelagonija, Downstream Crna river, Strumica, Dojran and Crn Drim;
- In 98% dry year, there are surplus water only in the regions: Treska, Skopje and downstream Vardar;
- Poorest areas with water resources are the regions of Strumica, Middle and Downstream Bregalnica and Pelagonija.



### 3.10 Drainage systems

The drainage systems cover a total area of 82.195 hectares.

The current status of the drainage systems in the Republic of Macedonia is not satisfactory in relation to the recipients and other drainage network with its facilities, as well as the detailed canal network. Therefore, there is a need of maintaining, reconstructing and rehabilitation of the existing drainage systems, as well as final construction of the detailed drainage network. As a result of malfunctioning of the drainage systems, many areas were flooded in the past. High groundwater appears on the surface and damage the agricultural production, constructions, infrastructure etc. There are no data for quantity and quality of the water drained from the systems.

### 3.11 Flood Protection Systems

Large systems for flood control are built for the protection of the following areas: Skopje, Pelagonija, Strumica, Struga. Short description of these flood control systems is given as follows:

Flood control system in Skopje area:

- River Vardar: total length of trained river 18,7 km
- Markova River: total length of trained river 1,5 km
- Momin Potok with Serava River: total length of trained river 10,0 km
- Lepenec: Downstream, total length of trained river 1,0 km
- Treska with Grupchin River: Locally at the Treska Lake 1,0 km
- Treska: total length of trained river 0,5 km

Flood control system in Pelagonija:

- Area: 54.000 ha
- total length of trained river River Crna: 58,10 km
- total length of trained River Dragor: 10,74 km
- total length of trained River Semnica: 12,17 km
- total length of trained River Elaska: 1,32 km
- Total length of trained rivers: 96 km and defending embankments 173 km

Flood control system in Strumica Pole:

- Area: 9.000 ha
- total length of trained River Strumica: 34,50 km
- total length of trained River Turija 9,05 km
- Monospitov Canal: 10,25 km
- total length of trained River Vodoca and River Buc: 20,50 km
- total length of trained river Trkanja: 4,96 km

Flood control system in Struga Pole:

- total length of trained River Crn Drim: 10,85 km
- Diverging the River Sateska into the Ohrid Lake with a new trained riverbed.

### 3.12 Erosion

Soil erosion is the dominant type of soil degradation in the Republic of Macedonia. Natural conditions (climate, topography characteristics, vegetation cover and geology) contribute to high rate of erosion processes. Also, inadequate practices in arable farming, grazing man-



agement and deforestation in the past have contribute to erosion, a problem spread all over the country.

According to the report of the European Environmental Agency, Republic of Macedonia, together with Serbia and Monte Negro, and Albania, is placed in the so called "red zone of water erosion in Europe". The Erosion Map of Macedonia was prepared in 1992, in scale 1:50.000. Following this map, 96,5% of the total area of the country is under processes of erosion. The total annual production of erosive materials on the whole territory is about  $17 \times 10^6$  m<sup>3</sup>/year or 685 m<sup>3</sup>/km<sup>2</sup>, out of which  $7,5 \times 10^6$  m<sup>3</sup>/year or 303 m<sup>3</sup>/km<sup>2</sup> are transported. Significant part of these deposits, about  $3 \times 10^6$  m<sup>3</sup>/year are deposited in natural lakes and reservoirs.

Processes of water erosion are dominant in the country. In the western part of Macedonia

configuration of terrain is rough and steep, so deep erosion processes are dominant. In the

central part of Macedonia processes of sheet erosion are dominant. There is wind erosion in this part, but its intensity is not so high. Mixed processes are spread in the eastern part of Macedonia, while gully erosion is spread all over the country. Inadequate plowing and irrigation lead to different processes of sheet and rill erosion. There are high losses of topsoil, humus and nutrients from the agriculture land located on the steep slopes. Although plowing on slope more then 15% in not allowed, a lot of people in the hilly mountain region do that to survive.

Annual soil loss represents an annual average loss of arable soil layer of 20 mm depth on an area of 8.500 ha, which means 1.700.000 m<sup>3</sup> of soil are lost every year. The economic cost of erosion impacts is considerable.

Torrent erosion is also a significant problem. Shallow and deep landslides also exist in the

country. Landfalls are also evident, more in the western part of Macedonia.

Sedimentation into the reservoirs is one of the most concerning problems. WMO's are responsible for protection of erosion processes in upstream area of the reservoirs. Every year due to amount of sediments of  $3 \times 10^6$  m<sup>3</sup>, that volume of storage from the reservoirs is lost.

## **4. Conclusions**

### **4.1 General**

Through undertaking research and analysis of current conditions and trends in water consumption this paper aims to provide strategic direction for improved water sustainability within the country. Securing safe and reliable water and sanitation services for all is one of the leading challenges facing sustainable development.

Macedonia faces a considerable challenge in improving its water sustainability, but it is a challenge worth working towards. If Macedonia continues consuming water at its current rates, total demand will nearly double by 2020 This projection is based on water use and anticipated population and urban growth, assuming there are no significant changes in community behavior.

Despite the fact that there has been no sign of improvement in river water quality since the midnineties, a very positive development is the growing consciousness and understanding of the unsatisfactory situation. The EU accession goal gives a strong impulse to Macedonian water policy. But in some respect this policy appears





imperfectly grounded in reality and needs. A clear strategy with the financial and human capability to implement it has still to be set.

The new Water Law of Macedonia will be an excellent framework for the development of sustainable water management. Its implementation will be long, difficult and expensive, more than is usually expected in the country, and the actual building of this solid foundation for sustainable water management should be the highest priority.

#### **4.2 Integrated water resource management (IWRM):**

Water management involves balancing complex economic, social and environmental objectives. The development of integrated water resources management (IWRM) plans, an objective that all countries agreed to at the World Summit on Sustainable Development, is a key step towards a sustainable governance regime. A whole-of-government approach is also necessary to ensure policy coherence and efficient management as to achieve progress towards the three 'E's of integrated water resources management: 'economic efficiency', 'social equity' and 'environmental sustainability'.

IWRM is an emerging concept that covers the entire water cycle, including rainwater, ground and surface water, etc., as well as storage and distribution, treatment, recycling and disposal, and the protection, conservation and exploitation of water resources at their origin. It also covers empowering local communities to decide on the level of access to safe water and hygienic living conditions, the need to produce more food, and the need to create more sustainable livelihoods per unit of water, and the need to manage human water use to conserve the quantity and quality of freshwater and terrestrial ecosystems that provide services to humans and all living. The efforts that Macedonia made so far towards improving water related issues have been neither sufficient nor comprehensive enough to reduce the overall trends of increasing water shortages, deteriorating water quality, and growing ecosystem stress. To address this gap, according to the recommendations of the Commission on Sustainable Development, following priority areas have been identified.

- access to urban and rural water supply and sanitation
- water for sustainable food production and rural development;
- the use of clean and efficient wastewater technologies for industry
- a greater appreciation of the water resource requirements of ecosystems
- the efficient use of water based on its economic value; and
- strengthening water management institutions

With improving integrated water resource and water demand management Macedonia will try to change unsustainable production and consumption patterns and ensure the sustainable management of natural resources.

IWRM is a process which promotes the coordinated development and management of water, land and related resources in order to maximise the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems.

It addresses water governance in a broad societal context and provides an approach to building compromises between competing demands for water among societal



sectors and stakeholders at all levels. As such it is an important instrument for developing countries to address poverty reduction and work towards the achievement of the Millennium Development Goals, all of which depend on good water governance for their achievement.

Thus, at the national level IWRM provides a basis for harmonising the different demands on a country's water resources that will be required to implement the MDGs. IWRM is not a dogmatic framework, but a flexible, common-sense approach to water management and development. While there are no set IWRM "rules", the approach is founded on the Dublin principles, which assert that:

1. Fresh water is a finite and vulnerable resource, essential to sustain life, development and the environment

– Since water sustains life, effective management of water resources demands a holistic

approach, linking social and economic development with protection of natural ecosystems. Effective management links land and water uses across the whole of a catchment area or groundwater aquifer.

2. Water development and management should be based on a participatory approach, involving users, planners and policy-makers at all levels

– The participatory approach involves raising awareness of the importance of water among policy-makers and the general public. It means that decisions are taken at the lowest appropriate level, with full public consultation and involvement of users in the planning and implementation of water projects.

3. Women play a central part in the provision, management and safeguarding of water

– This pivotal role of women as providers and users of water and guardians of the living environment has seldom been reflected in institutional arrangements for the development and management of water resources. Acceptance and implementation of this principle requires positive policies to address women's specific needs and to equip and empower women to participate at all levels in water resources programs, including decision-making and implementation, in ways defined by them.

4. Water has an economic value in all its competing uses and should be recognized as an economic good –

Within this principle, it is vital to recognize first the basic right of all human beings to have access to clean water and sanitation at an affordable price. Past failure to recognize the economic value of water has led to wasteful and environmentally damaging uses of the resource. Managing water as an economic good is an important way of achieving efficient and equitable use, and of encouraging conservation and protection of water resources.

## Recommendations

Facing gradual reform of water-sector policies Macedonia will have to address realistic and pragmatic objectives and priorities in order to perform the reform successfully.

First, water resources planning needs to be strongly linked to a country's national sustainable development strategy, particularly since social and macro-economic policies are often the primary drivers of change in water management and use.

Second, water reform should involve a gradual, step-by-step approach tailored to a country's current stage of development and to its economic, social and political



conditions. Doing this means defining priorities clearly and tackling the most pressing water problems first, taking into consideration the existence of realistic solutions and the level of public support. Such an approach is more likely to succeed than an attempt to fix all problems at once.

Third, water strategies need to be adaptable, to allow decision makers to act on opportunities and identify and correct problems as conditions and needs change.

### **Key policy recommendations**

- Develop water resource planning and management strategies in relation to the specific development model in place in a given country.
- Adopt an integrated approach to economic, social and water-resource planning and management, by including the widest possible range of sectors—to ensure successful water resource management and sustainable development.
- Consider using a phased approach to water-resource management as opposed to policies that call for immediate integration of all water-related planning and management—  
economic development resulting in social benefits may enable environmental objectives to be met in the long term.

### **Objectives**

- Stabilize water demand through the reduction of water losses and the wasteful use of water and increase the added value per cubic meter of water used.
- Promote the integrated management of watersheds, including surface and groundwater;  
and eco-systems, and foster depollution objectives.
- Achieve the Millennium Development Goals concerning access to safe drinking water and sanitation.
- Promote participation, partnership, active cooperation and solidarity for the sustainable management of water, at local and national level.

### **Actions**

#### **Water demand management**

1. Determine precise global and sector efficiency goals in national strategies. Reorient water policies to integrate water demand management in agriculture and other sector policies and encourage demand-side approaches with the aim of improving water use efficiency, reducing unnecessary losses, implementing water saving techniques in irrigation and water supply , and involving industry, tourism and cities in controlling waste water.

2 Establish appropriate fiscal and pricing systems and encourage investment in demand-side management and the development of financial mechanisms for the internalization of external costs and the expected benefits from water-saving measures.

#### **Integrated water resource management**



3. Encourage the establishment of appropriate bodies and organizations for integrated watershed management (surface, groundwater resource and ecosystems), in qualitative and quantitative terms. Strengthen international commitments undertaken for the management of transboundary water resources.
4. Preserve and increase water resources through soil and water conservation measures, agricultural and forestry practices, small-scale irrigation, run off and spate irrigation and the mobilization of non-conventional sources of water, as well as the recycling of urban and industrial wastewaters and drainage water, taking into account quality standards.
5. Strengthen regulatory and other instruments, where appropriate, to reduce the over-exploitation of groundwater and non-renewable water sources and promote the artificial replenishment of groundwater, where necessary.
7. Protect aquatic ecosystems .

#### **Access to water and sanitation**

8. Support investment to halve by 2015 the proportion of the population without access to safe drinking water and sanitation, pursuant to the MDGs.
9. Strengthen regulations, where appropriate, and promote investment in wastewater treatment systems to prevent and reduce pollution from urban and industrial sources.

#### **Water management governance**

10. Promote schemes for the integrated participatory management of water resources, including partnerships with local authorities, the private sector and NGOs.
11. Take action to educate users about the need to save water, and protect its quality.

#### **Financing sustainable development**

For Macedonia as a country with transition economies, a main challenge will be to finance the replacement of decaying and leaking infrastructure. Much of the stock of water supply and sanitation infrastructure is coming up for renewal, and in most cases there are no provisions for financing the costly replacement and repairs that will be required. Another challenge will be the development and successful implementation of basin-level water management plans to address problems of over-drawing and degradation of water resources, particularly groundwater sources. Significant government spending on infrastructure projects is needed to address the challenges of reducing environmental problems, improving access to basic services, promoting research and development, establishing sustainable water systems, introducing incentives to change consumption and production patterns, strengthening capacities and providing support for sustainable agriculture and rural development. Reliable financing is needed to expand water supply and sanitation services to those without access. Financing can come from a range of sources, including public spending, international development assistance, private financing, and charging for the use of water services. Over the longer term, a sustainable financing system should rely primarily on water charges, with provisions for affordable access by the poor. Full cost recovery water charges can help to generate the necessary funds for infrastructure development, renewal and maintenance, and provide incentives for efficient water use.



**Prof. Naume Marinoski Ph.D.**  
**Regional opportunities for maintainable development of tourism  
in Republic Macedonia**

## **1. Skopje-Kumanovo tourist region**

The attractiveness of the area enables differentiation on eight tourist zones where total of 17 localities are found. Beside the cities Skopje and Kumanovo, the localities Vodno, Matka, Kozjak, River Pateska, Karadzica, Kitka, Zelenikovo, Ljubanci, Brodec, Spa Katlanovo and Kumanovo, Tabanovce, Lipkovo and Matejce are very attractive as well.

The attractiveness is of different nature. The favorable conditions are based on the relief structure, climate conditions, and hydrographic characteristics, resource of flora and fauna and landscape attractiveness. The tourist values of this region belong in the group of most reachable attractions. The region is being marked as positioned and transit.

### **- Transit characteristics**

The area of this region owns different transit opportunities. The Airport Aleksandar the Great in Skopje enables communication and transparency for visitors from all over the world.

The highway E75 and the international railways, which spread in this region and the Vardar valley, represent a main overland traffic artery of R.Macedonia. The openness of the overland road is being accomplished through the borders Tabanovce, Pelince, Sopot, Blace and Volkovo.

Tabanovce is the most frequent border crossing because it is on the main overland corridor. Visitors from North, West and Middle Europe are being met across it. Across the border crossing Pelince openness is being provided towards South Serbia and the monastery complex Saint Prohor Pcinški where the First session of ASNOM was held, when Macedonia was announced as a Republic.

The border crossing Sopot is interstate crossing with R. Serbia, located on the old road towards Bujakovac.

With the border crossing Blace circulation of passengers is enabled on the direction E 65 between Skopje and Pristina. It enables connection with the Region of Adriatic Sea through Kosovo and connection on the direction of the Ibar highway road.

The railway traffic on this corridor happens over the border crossing Volkovo.

### **Basic for eco-tourism**

This region is consisted of the Skopje and Kumanovo Valley and the mountain area that surrounds them. The mountain Skopska Crna Gora is spread north of Skopje valley and west of Zegligovo or the Kumanovo valley.

East of Zegligovo is Kozjak. The Skopje valley from south is hedge with the mountain sides of Jakupica, from west with the mountain Zeden.

The pleasant stay is owed to the favorable climate conditions. The mid-month temperatures in the summer period of the year measures around 22°C, in the winter period the mid-month temperatures are 1,8°C. Spring and autumn are rather temperate. In Skopje they have values from 6,7°C in March up to 20,1°C in June, while in Kumanovo from 6,3°C in March up



to 20,3°C in June. The relative low level of rainfalls is a characteristic. The mid-year sum is 532mm. In addition, the biggest quantity appears in May. In the winter period snowfall appears. The sunny period is accented, the number of sunny hours in Skopje is 2100, in Kumanovo 2168.

Beside the organized localities as Ljubanci and Bordec, Skopska Crna Gora is open for tourists and the curiosities it owns. They are the basaltic plates and towers in the localities Nagoricane and Zebrnjak. It is about eight unique shapes of volcano origin. Some of them have red layers of light sponge mass of lava.

The woodland is a tourist value of the mountain area. Only the mountain Zeden is poor in this point. On Jakupica the reservoir of Krivulj is located. The locality Rucica north of the Solunska Glava is the southern locality on the Balkan Peninsula.

A very beautiful view stretches from the locality Kitka which organized area represents a special attraction.

The natural accessibility from the surrounding mountain area is determined over the ravines that are very impressive as for the passengers so for the visitors.

In the valley of river Pcinja north from the village Pelince close the Macedonian-Serbian border an interesting ravine is located by which this locality has gained on its meaning.

The Ravine Derven presents a natural door from the Skopje Valley towards Polog, indented between the mountains Zeden and Skopska Crna Gora in the Valley of Vardar.

In this valley beside the Veles Valley, the interest is kept by the Taor Ravine. However, the most attractive is the canyon Matka in the valley of river Treska. The geo-morphological value of this valley is contained as in the distinguished canyon sides also with the attraction of the caves.

### **Speleological characteristics**

The cave Nad Vrelo is evaluated as a special important cave. The richness of the decorations is defining it as the most suitable for tourist visits.

Notable value is being given to the cave Vrelo near the spring Koritiste and the cave Krstelna 30 m above the artificial lake Matka. At the very beginning of the canyon Matka is Meckina Dusa where catering services can be received.

In this tourist region, other caves can be found as well as Dona Duka on the mountainsides of Zeden near village Rasce that is a natural rarity, because of the channel interlacing of several levels at the length of 650 m and the temporary siphon lakes, while Dracevo cave on Kitka is marked as important.

### **River and lake accumulative characteristics**

The region owns number of different hydrographic natural resources and it should be said that it is a hydrographic knot. River Vardar has a significant place. In Skopje valley it enters from the Derven valley, while exits from Taor valley. The quay of this river is an impressive promenade. Number of fishing admirers found possibility to be occupied by this kind of recreation. Tributaries of Vardar in the Skopje Valley are Lepenec, Treska, river Markova and Kadina and river Pcinja. Opposite Lepenec which water possesses much drift, Treska has relatively pure water.

The accumulation Matka has the role of a filter. This lake with the surface of 0,25km<sup>2</sup> is real bait for the visitors. The locality is a favorite picnic place suitable for swimming, fishing,



hunting activities and water sports. From the headwaters of Treska the riverbed is organized for sport on wild waters and is a place of international reputation. Markova and Kadina rivers are suitable for fishing activities. Special attraction is river Kadina that springs under Solunska Glava and flows across the picturesque hillsides of Jakupica, which is a reason for a notable visit on its shores.

River Pcinja is the biggest watercourse in Kumanovo Valley. Its left tributary is Kriva Reka, and the right is river Kumanovska.

On river Kumanovska, two lakes are built. Lake Lipkovo is on 2km distance from village Likovo and 12 km from Kumanovo. Its surface is 1,7km<sup>2</sup>.

The accumulation Glaznja is 5km distant from the dam of Lake Likovo. On basis of the possibilities for picnic, walks, swimming, sunbathing, and fishing activities this area is defined as an attractive tourist locality.

### **Balneological possibilities**

Among the most visited attractions in this region are the thermo mineral waters in Spa Kumanovo and Spa Katlanovo.

Spa Kumanovo is located near village Proevce and that is why it is also called Spa Proevska. It is situated in a pinewood and organized area with parks and verdure. The lavishness of the water is 6 l/sek. and the temperature is 30°C.

The spa can be used for treating nerve and stomach diseases and diabetes, the pool and the sport terrains for recreation and rehabilitation.

Spa Katlanovo is located over the eponymous village. Its interesting because of the thermal and hydrographic rare phenomenon. The water springs from 5 springs with different temperatures. The highest is 50°C. The spa is used for treating rheumatism, nerve, stomach, genital, kidney, skin, and diseases with metabolism and respiratory problems. Because of that, she was used since Roman period. The picturesque and wooden valley of river Pcinja where the spa is situated makes the locality very interesting.

### **Mountain tourism**

The region is characteristic by the noticeable mountain relief structure. The most distinguished is the massif Jakupica. The mountain Vodno belongs to this massif. It is located near Skopje and represents a favorite picnic place. From this locality, you can see Skopje and its surrounding as on a palm. Beside Vodno from the south side of the Skopje Valley, it is jointed with the mountains Dautica, Golesnica and Suva Planina, which belong to the massif Jakupica. This massif is considered as one of the tallest in R. Macedonia. It has even 12 peaks, higher than 2000 m, the highest is Solunska Glava (2540m).

The mountainsides are suitable for locating ski tracks, which determines the massif as one of most potential winter-ski capacities in Republic Macedonia.

Mountains are rich with quarry. In function of the hunting are the hunting ground and the pheasantry Katlanovo.

### **Rural tourism**



The region owns rural environments where the traditional agricultural production and ethnography are preserved. There are villages characteristic by the vital population and they own form of mountain pasture for stock-breeding that represent basis for development of the rural tourism .

## **Cultural-inheritable characteristics**

The region is rich with considerable cultural values that are determined as a cultural heritage. The Neolithic culture is present in Govrlevo and Skopsko Kale. The Antic culture on Skopsko and Zlokukansko Fortress, the Early Christian period in Skupi, from the churches and monasteries special attention deserve Saint Pantelejmon, Saint Nikita, Markov Monastery, the Monastery Matka Saint Andreja, Saint Gorgija, Saint Bogorodica and Saint Spas. From the mosques attention deserve Sultan-Murats Hjundzar Mosque, Isak-begova, Isa-Begova, Mustafa-Pasina, Jahja -Pasina and Hesin Sah Pasina Mosque. From the monuments of culture in the type of towers, trade-centers, Turkish baths and seraglios, the aqueduct, stone-bridge, Daut-Pasin bath, Kursumli and Kapan inn, Clock tower and the Feudal tower and the Trade center are represented, as well as numerous other cultural institutions and ethnographic values.

## **2. Sara - polog region**

The Sara-polog region is located on the north-west part of R.Macedonia. Characteristic is the openness towards the surrounding. The motorway that leads from Skopje to Ohrid is spread there as well as the railway to Kicevo. The air connection is accomplished through the Skopje airport. With Kosovo area the communication is accomplished across the border crossing Jazinec. This crossing is on the road direction Tetovo-Pristina. The region owns tourist values that represent a basis for maintainable development of different types of tourism.

### **Mountain tourism**

This area has valleys and mountains. Polog represent a fertile valley, Sar Planina the most significant mountain for the development of tourism in R. Macedonia.

Sar Planina is very high. The highest peak is Titov Peak (2748m), magnificent views spread from Rudoka (2610m), Crn Vrv (2582m), Kobilica (2526m), Ceripasina (2525m) and Piribek (2522m).

The best terrains for winter-ski activities are located around Popova Sapka. The organized paths and the cable railway enable continuous skiing.

Impressive beauty it is also owned by the locality Lesnica. Over this locality are raised Dzinibeskata, Lesnickata and Sredna Cliff. Their absolute height reaches 600 m. They are suitable terrains for alpinism.

The biggest rainfalls appear as snow that is positive circumstance for winter ski activities. The snow mantle stays averagely 200 days, while on the highest parts it stays over the whole year. During the summer period of the year, it has the least rainfalls that is suitable for other tourist activities. In this context is the optimal humidity in the air. It is evenly





arranged and its average is 72%. Another positive side is the sunny days of 2330 hours per year, which means it is the sunniest mountain in R. Macedonia.

### **Possibilities for eco-tourism**

This region is characteristic by the exotic nature, conciseness woodland, climate values and clean air as a basis for development of eco-tourism.

Sar Planina was occupied with glacial process. Glacial forms Circa appear in the spring part of Pena, in the valley of Lesnicka, Kazanska and River Skakalska under the peak of Karanikola, Titov Vrv and Brustovec. From the forms **Валовите** interest is kept of the **вал** under Dzinibeski Circa and the **VALOVI** of the spring part of Lesnicka, Skakalska and River Vesalska.

From the geo-morphological occurrences, attention deserves the cave Ubavica located in Gorna Gjonovica and belongs in the group of natural rarities. Unfortunately, it is not organized for visitors.

The stay at Sar Panina is nice because of the great climate conditions. The Holy places and temperate winters are mark of this mountain area. During the summer period of the year the mid-month temperature measure 10-13°C. In the winter months these values measure from -3,8°C to -1,2°C. The spring and autumn mid-month temperatures are from 2,6°C to 8,1°C meaning 2,4°C до 9,8°C.

The pleasantness of the area at Sar Planina derives from the natural resource of the vegetation. The woods are different. The lowest zone is constituted from formations of oak and tame chestnut. From the deciduous tree, the most spread is beech tree. From the coniferous tree, the silver fir, white and black pine tree and the five-needle pine trees (pelister pine-molika) dominate. Representative are also rare coniferous tree are junifer and another type of pine(munika).

Because of the value that junifer has, it is protected as a reservoir. The reservoir is located near the ski center Popova Sapka. Its expansibility on 5,2ha enables a pleasant stay.

The mountain tea, blueberry, yellow gentian and St. John's wort are just some of the plants that can be picked on Sar Planina.

### **River and lake tourism**

The region has noticeable hydrographic values. In Vrutok springs Vardar, across Tetovo flows Pena, while across Sar Planina flows numerous springs, streams and rivers towards the valley and Vardar.

Beside them, special tame of the region is given by the glacial lakes. Their number is total of 27, of which 19 are constant and eight are temporal.

Bigger and more significant are the following: Bogovinsko, Crno, Golem and Mal Gjol, Krivosicko, Golemo and Malo Delbosko, Gorno and Dolno Dobrosisko, Karanikolisko and Livadicko.

### **Hunting tourism**



The region is very rich of quarry, more specific are the roe-deer, ibex and bear that on Sar Planina have the optimal conditions for existence. The hunting surface of the hunting associations Gostivar, Tetovo, Tearce and Pirok are around 200.000 hectares.

### **Rural tourism**

Over the wooden zone pastures are spread. They are used for grazing sheep. For the tourist the mountain pasture for stockbreeding is interesting. Also in this region, relative vital rural population is character tic.

Actually, it should be stated that the agricultural activities could be performed only if the effort intensity is being solved by including the vital population.

Speaking about the area Polog itself and the mountain village environments that belong to the group of most important agricultural units in Republic Macedonia, which represent a true potential. However, the revitalization of the rural tourism seeks certain approaches that should be covered by an action plan. In this sense, activities should be taken for maintainable development of the rural tourism on this space.

### **Potential for development of cultural tourism**

The tame Polog valley represents a space with primeval civilization characteristics. Significant cultural values appear in the region. In the museum of the Tetovo area artifacts of the bronze period are found, while the fortress reflects the medieval ages. One of the most attractive monasteries in Republic Macedonia is Lesovo Monastery dedicated to St. Atanasie. In this complex is the church Saint Bogorodica as well.

The Aladza Mosque or the Sarena dzamija belongs in the group of most significant and most beautiful cultural-historical monuments of this kind in Republic Macedonia. Very interesting cultural-historical monument is the Arabati-Baba Dervish Lodge or Sersen Ali-Baba. Beside the museum of the tetovo area in this town other can be found as well, among which specially the museum of the Polog fauna should be pointed. Multi-ethnicity is the basis for a marvelous coverage of ethnographic values.

## **3. Mavrovo-debar region**

Mavrovo-debar region is characteristic for the different opportunities in maintable development of the tourism. They are based on the relief configuration of the space, the good weather conditions, hydrographic values, the nature resource of vegetative content elements of the environments, the variety of the animal world and the interesting cultural heritage.

Across this area, the west highway is spread that connects it to Skopje over Tetovo and Gostivar and Ohrid and Struga over Debar. The border crossing Blago enables access from Albania, from the Adriatic Sea, Tirana and Piskopeja.



## Potentials for mountain tourism

The Mavrovo-debar region is mainly mountain tourist unit. In the area along the Macedonian-Albanian border the mountain Korab, Desat and Krcin are stretched. Central position has the mountain Bistra, at south is the mountain Stogovo. The mountain Bukovik is situated on the north-east part of the region, at north it is hedged with Mountain Nicpurska. The region beside the mountains is consisted of the Mavrovo basin, the valley of Radika and Debar field.

Bistra belongs in the group of the most visited mountains in R.Macedonia. This mountain belongs to the sar-pid system formed with Alps gathering. It is smaller than Sar Planina and Korab. The highest peak is Medenica (2163m) and has total 12 peaks over 200 m, and between 1500-2000m even 84 peaks. The organized paths enable winter ski activities and manifestation as for example the Mavorvo memorial. Beside the built cable railways and the organized paths new opportunities appear. The capacity of this mountain is estimated on 7200 skiers. The height of the snow mantle is at least 15cm, during the year it stays 150 days which means the season can last for 5 months.

Korab Mountain has a special value in this region. Its highest peak is Golem Korab (2764m) and it is the highest peak in R. Macedonia, which is evaluated as a special curiosity. From this peak, a marvelous view is spread to the surrounding. The great height of this mountain is a reason to be covered with glaciations. Beside the highest peaks, interest is kept on the glacial forms Circa. From the localities, the most famous one is Siloverte. Conditions exist for marking paths with a total capacity of 4200m.

Stogovo is the highest mountain located between Lake Debar and the valley Mala Reka. The high mountainsides are suitable for marking ski paths with a capacity of approximately 4100 skiers. They are most suitable around the highest peak Golem Rid (2273m). The tourists at Stogovo can visit the beautiful glacial lakes. They are the Gornoto with a surface of 372m<sup>2</sup>, Dolnoto or Crnoto to the Gornoto with 130m<sup>2</sup> and lake Marusa with surface of 167m<sup>2</sup>.

## Conditions for development of eco-tourism

The climate conditions have a significant meaning for the development of eco-tourism. The Alp mountain climate appears on the higher parts, while in Debar valley the district climate with appears sub-Mediterranean influence, which comes from the Adriatic Sea in this area. The indicator of temperatures of the air in Lazaropole measure from 13,7°C to 16°C in the summer period of the year. That directs on coolness as favor on the stay. Winter months have middle values from -2,3°C to -0,1°C which speaks about equability. Sunny period on Bistra are 2142 hours during the year. In Debar Valley the temperatures are considerable lower in the winter and the summer period of the year. Even 4 months in the year the temperature has the value over 15°C. The mid-month values measure from 18°C in September up to 22,2°C in July. The winter mid-month values are positive and measure from 0,7°C in January up to 3°C in February.

Sunny days are similar to the one at Bistra. In Debar there are 2129 hours. This region is character tic by the high amount of rainfalls as a fruit of the closeness of Adriatic Sea and the height of the mountain position, which keeps the humid air masses.

Characteristic is the clear air as a fruit of the climate conditions. Beside the climate conditions, eco tourism is based on the impressive and rare geo-morphological forms. On the higher parts of the mountain, traces of glaciations are preserved. Best kept are Medenica and Causica. At Causica exist three glacial forms Circa at the height of 1900-2000m. The karts relief is represented with karts fields and caves. Tonivoda, Suvo Pole, Sultanica, Salomonica,



Cuknitapanica and Gorno and Dolno Polce have educative meaning, but represent suitable terrains for marking paths for Nordic disciplines.

From the caves as a special important Alilica is evaluated, on the right part of River Tresonecka, and Simka near the mouth of the river of River Hadzina in Radika and Kalina Dupka near Lazaropole are in the group of important caves.

The region beside the geo-morphological and hydrographic values owns impressive colour of vegetative samples and complexes that are habitat of the animal species. Beside the extraordinary natural and cultural heritage that owns, in 1949 the area from the south parts of Sar Planina, west and central part of Bistra and the mountain unit of Korab and Desat from the Macedonian side are being announced for a national park Mavrovo.

It is the biggest national park in R. Macedonia with 73780 hectares. In the park, 80 kinds of ligneous plants or 30% of all that growth in R. Macedonia can be found. Special attraction for the tourists represent the complexes of conifers located in the valley of River Mavrovska, on Senecka Mountain in the locality Ostrov where the authentic nature is preserved and over the village Volkovija where the oldest silver fir wood in Republic Macedonia is preserved. Beside this, in the park rare plant forms are preserved as wild chestnut, cocksfoot, Istrian campanula and sara saxifrage.

### **Assumptions for lake and river tourism**

Dominant place in this region has Lake Mavrovo. It fills the biggest part of mavrovo basin. The surface of this artificial accumulation is 13,7km<sup>2</sup>.

With Lake Mavrovo the waters of many water courses are tied up among the biggest are Radika and River Mavrovska. Although it is located at elevation of 1233m, the water temperature in the surface zone measures 22,5°C in August which enables swimming activities.

Lake Debar is a water accumulation that ties up the water of Radika and Crn Drim. Its surface is 13,2km<sup>2</sup> and it stretched along the road communication Debar-Struga-Ohrid, near the Macedonian -Albanian border and the border crossing Blago. It is suitable for walks on its shores, water sports, swimming and sunbathing. The fish resource enables fishing activities.

One of the most significant tourist values in the region is the ravine Baric in the valley Radika. It is one of the most beautiful and biggest ravines in R. Macedonia. Valley sides are rather steep and on some places, the height difference is 1500m.

The high mountains were involved with glaciations and glacial lakes were formed. Korab has numerous of them. On the Macedonian side, there are eight such tourist attractions. The highest and the biggest is Lake Korab. Its surface is 800m<sup>2</sup>. In the spring part of River Dlaboka is the lake Mal Korab with surface of 1500 m<sup>2</sup>. In the locality Kobilino Pole in the valley Dlaboka reka there are two such lakes. Lake Bacilski kamen is located in the spring part of river Ribnica. Immediately to it is lake Sredno and another smaller lake of 30 m<sup>2</sup>. In the spring part of the right tributary of Ribnica is the lake Babin kamen which surface is 277m<sup>2</sup>.

Fast rivers that have ravine and canyon valleys are very attractive.

The biggest tourist meaning has Radika that is a main artery in the region. In it from the mountain right side the river Setura, Dlaboka Reka, Ribnica and Reka Zirovnicka are flowing. Especially attractive is River Zuzanska from her spring on her whole course. Beside the attractive springs and the stone sides there is a waterfall Dlabok Doll high 138m, the highest waterfall in R. Macedonia. Through the mountainsides of Bistra many rivers flow among which the biggest are Mala, Tresonecka, Galicka, Belicka, Studencica, Selecka, Zaeska and Lazoropolska River. Lazoropolska River and Saren Pejko are samples for rivers that continuous



its course underground. The waters of Golema and Mala River create the Rostuse waterfall Duf, high approximately 30m that represents a special attraction on this spaces.

### **Potential for spa tourism**

Among the most important values in this region are the thermo-mineral springs. Spa Banjiste is located at elevation of 870m under the mountain Krcin. Spa tradition dates from the Turkish period. Namely in the spa spaces Turkish bath is still in function. It fits the modern part, equipped for giving therapeutic service. Water springs at many places. The highest temperature is 39,3°C. The thermal and chemical content enables treatment of rheumatic, genital, skin, stomach, kidney, respiratory disease and slight types of hepatitis as anemia and colonic inflammation.

The locality is characteristic by the decorative, landscape content, and the recreation possibilities.

Spa Kosovrasti is one of the most attractive spas in R. Macedonia, located on the estuary of Radika in Lake Debar. That way the values of these three hydrographic attractions are joined. The lavishness of springs is 120 l/cek. that represents the biggest value in R. Macedonia. Water temperature is 48°C. The organized and equipped spa space enables treatment of rheumatic, women, stomach and skin diseases as well as recreational activities.

### **Opportunities for development of the hunting and fishing tourism**

The resource of animal world and the special hunting species are basis for the hunting and fishing tourism. The hunting ground Brezovec is considered the most organized in R. Macedonia, while as fishing ground Lake Mavrovo, Radika and Mala with River Gorska are differentiated. In addition, it is characteristic that the mountain relief of Bistra, Stogovo and Korab, Desat and Krcim represent significant area for development of the hunting tourism.

### **Cultural heritage in function of the cultural tourism**

The cultural heritage in this region is being differentiated as monumental and ethnographic heritage. Saint Jovan Bigorski has dominant place and folklore and tradition are represent through customs and folklore. From the manifestation Galicka wedding should be pointed as an example for joining the ethnography in this region.

### **Including of the rural environments in function of developing the rural tourism**

Activities in relations with developing the rural tourism are found in the context of a traditional village, rural environments with vital population and mountain pasture for stock-breeding.



## **4. Kicevo-brod region**

The region owns interesting conditions for maintainable development. They are contained in the heterogeneous possibilities given by the area of this regional unit. The analysis of this region has showed that there are preconditions to maintain the development of the following types of tourism:

### **Ecotourism**

This region belongs in the group of regions with significant authenticity of the values of the environment. It consists of the Kicevo Valley and Porecie. Kicevo Valley is fenced at west with Bistra and Stogovo, at north with Bukovik, at east with Celojca and Pesjak, at south with Ilinksa, Ljuben and Mountain Buseva. Between Buseva and Pesjak there is a saddle through which this valley is connected with Porecieto.

Porecieto on the west side is fenced with Mountain Suva, Celojca and Pesjak, from the east side with Karadzica and Dautica. To the south are the mountain sides Buseva and Baba Sac.

Across Kicevo valley the communication from Skopje to Ohrid is spread, from Makedonski Brod to Prilep. The railway ends in Kicevo. The surrounding mountain area is rather attractive. The most visited locality is Krusino. It is located in the frames of Dren Mountain that is actually one ridge of the mountain Bistra.

From the tourist localities attention deserves Lopusnik that is famous for the marvelous woods. It enables pleasant stay.

Samokov represent a picturesque area in Porecieto. This one and the localities Belica, Buseva Cesma and Pesna are the most important tourist space units. The climate in this area is continental. The mid-month temperatures in July and August measure approximately 20°C. Spring temperatures vary from 5,7°C to 15°C. The winter ones are somewhat lower from 6,7°C to 16,4°C. Winters are rather cold. The mid-month temperatures are from -0,1°C to 2,7°C. The amount of rainfalls is pretty high and it's 761mm. They mostly appear during the winter months. The smallest quantity falls in the summer months. This schedule has positive influence on the tourist development.

### **River tourism**

For tourists, special meaning has the valley of river Treska. It is attractive because of the spring part, to the flow of Porecieto. The locality Izvor is an organized area in the spring part of this river. Its position, beside the highway road Ohrid-Kicevo-Skopje enables significant tourist visits.

Treska flows through the valley and it is attractive for visits and sports on wild waters. The narrow jointed sides are owed to the lime-rock structure of the cliffs.

### **Possibilities for speleological tourism**

In this space unit numerous caves appear, that is basis for the development of the speleological tourism. Among them as a natural rarity, the cave Slatinski Izvor is marked near



the mouth of the river Slatinska in Treska. The cave is long around 800m. In the cave there is a hall with imposing dimension (20x15m) and river flows in it long 557m, and there are smaller lakes in which mountain crayfish are living.

Cave Pesna in the valley of Treska is evaluated as important cave, while Slatinska cave situated on the valley side of River Slatinska belongs in the group of significant caves.

Between the valley Kicevo and Demir Hisar, Cersko Pole is situated which is considered as the biggest karts field in R. Macedonia.

### **Hunting and fishing tourism**

The amount of rainfalls stimulates the exuberant vegetation where quarry appears. The Kicevo and Brod hunting ground occupy around 117000 hectares, and the watercourses are the basis for fishing activities.

## **5. Ohrid-prespa region**

Ohrid-prespa region is the most significant tourist area in R. Macedonia. In relief sense it is consisted of Struga and Ohrid valley, valley Debarca and Prespa and the surrounding mountains. The Struga Valley is fenced from west with mountain Jablanica, from north and east with Karaorman. Karaorman is situated north from the Ohrid valley. Through the narrowing by Botun between Karaorman and Mountain Ilinksa it is connected with Debarca, and Galicica is situated between Ohrid valley and Prespa valley. Debarca is situated between Karaorman and Mountain Ilinksa north from the Ohrid valley. Prespa valley is situated between Galicica, the arms of Mountain Plakenksa and Bigla on northeast and mountain Baba on east. The region is situated in the border area with Albania and Greece. Towards Albania three border crossing exits, towards Greece it is till not opened. The most frequent border crossing with Albania is KafaSan, It enables connection of the region across the valley at river Skumba in Albania towards Elbasan, Tirana and Drac on the Adriatic Sea.

The border crossing Saint Naum is situated near the monastery Saint Naum and enables connection of the east coast of Lake Ohrid with Pogradec and Korca in Albania.

Across the crossing Stenje communication is set of the Prespa valley and the southern parts of Albania.

The region is transparent towards the world across the airport Saint Apostol Pavle in Podmolje. The connection is accomplished by the highway roads to Skopje, through Kicevo and through Bitola to Prilep and Skopje. There are conditions for traffic on water at the lake Ohrid and Lake Prespa, but the navigation has more attractive than communicative meaning, while there is no railway in this area.

Although the bearers of the tourist development in this region as tourist most developed part in Republic Macedonia in the past period did not pay attention on the needs for maintenance of the development, the conditions for maintainable development of tourism exist specially in the following types of tourism:

### **Mountain tourism**

With tectonic and erosive processes, attractive geo-morphological activities are created.



Mountain Jablanica rises from the valley area on river Crn Drim and the north west part of the shore of Lake Ohrid, where the Macedonian-Albanian border spreads. Its peaks are high over 2000m, the highest among them is Crn Kamen (2259m). In the glaciation's process, glacial forms of valleys **(ЦИРКОВИ И ВАЛОВСКИ)** are created. The mountainsides are suitable for ski activities. On that basis the tourist localities were being discovered such as Visni, Gorna Belica, Strizak and Lakavica. Among the terrains suitable for alpinism the rocky section is distinguished which vertical side is 150m.

Mountain Galicica represents typical karsts, raised between the Prespa valley and the Ohrid valley. The highest peak is on Stara Galicica (2265m). From these spaces, a wonderful view spreads to the surrounding so that at same time you can watch lake Ohrid and Lake Prespa. At this mountain, suitable complex for marking ski paths is Suvo Pole from the peak Tamaros as well as the locality Korita.

In Debrca near village Velmej the cave Jaorec is located classified in the group of significantly important caves.

From the geo-morphological occurrences, attention deserves the pseudo volcano shape Duvalo in Kosel by Ohrid. It is created from a miniature crater which diameter is 0,5m and depth of 30m.

### **Ecotourism**

From the ravines, Belicka River deserves attention with its picturesness. The loess enables creation of karsts shapes among which typical representative are the Vevcani springs. This cave is an important one.

The valley of Crn Drim is very attractive because of the ravines where its riverbed is spread. The most attractive one is Runica.

On the mountain Karaorman the untouched nature enables extraordinary conditions for stay and walks. Under the tallest peak Golem Rid (2273m) there is possibility for marking ski paths. At the arms of this mountain on the shore of lake Globocisko in Tasmarunista the cave Lecnik is situated and represents a monument of nature.

The loess at Galicica is basis for the occurrence of karsts shapes. Samoska Dupka, an important cave is situated there, Leskoecka cave from the Prespa side is noticeable one and there are also Crna Pestera and Meckina Dupka.

Because of the remarkable natural and cultural heritage, this area is declared for a national park. The national park Galicica is declared in 1958. It covers surface of 22750 hectares. Beside the geo-morphological and hydrological values, the flora variety is important. In this area, 600 types are represented of which 170 are of ligneous vegetation.

The climate conditions in this region especially in the Ohrid and Struga valley represent one of the basic affirmative factors in the tourist development. Under influence of the Mediterranean climate the temperatures in the summer period of the year are equable, in the winter period are relatively mild. The mid-month temperatures in Ohrid in July and August have the value of 20,7°C. In the winter months these values are positive and vary 1,7°C in January to 3,8°C in December. To such condition, Lake Ohrid has a certain influence. Considering the continental Debrca, in this valley the values are somewhat smaller.

The temperatures of valley Prespa have lower values. The summer winter months are from 0,2°C in January to 2,4°C in December. Prespa receives higher quantity of rainfalls in the Ohrid-Struga valley. The yearly sum in Resen is 730, in Ohrid 708 mm. Nevertheless, for tourism it is important that the biggest quantity appear in late autumn and early winter when it is out-of season period. In addition to the tourist development are the sunny days. Mid-year





duration of the sunny period in Resen measures 2295, in Ohrid 2233 hours. Nice winds in the area of Ohrid lake are Strmec, Veternik and Belicki, in the Prespa valley are the South, Dolni and Bezimeni.

Among the special attractive localities is the swampland Sini Viroj near Novo Selo.

From the hydrographic values special attention deserve the springs by Saint Naum. The waters of these springs are in relation with Lake Prespa, so that these lakes represent a joint hydrological system.

Springs Biljana are located near Ohrid and because of that, they are one of the favorite promenades.

Very attractive are the Springs of Vevcani that represent a part of the group natural monuments. It is about rare pseudo-periodic-siphon hot springs located in the cave space, which makes the area complex and very attractive. For Vevcani one can say that it is attractive also because of the River Vevcani which pure foamy waters is irresistible bait for the visitors.

Special attractiveness deserves the glacial lakes. Under the peaks Crn Kamen and Strizak are situated the Lakes Vevcani, Podgorecko, Gorno and Dolno Labunisko.

The region is characteristic by the woods and the vegetative variety. Under the peaks, Crn Kamen and Jablanica space units are differentiated from oak and chestnut to beech that is most represented.

At Prespa side of Pelister appear great conifer woods. On the locality Rupa by Brajcino is the reservoir of silver fir with surface of 7,6 hectares. The swamp vegetation appears in the locality Sini Viroj, Stenje, and as ornithological station, it is a protected area in Ezerani.

### **Lake tourism**

Defining the region as the most significant and most developed in R.Macedonia derives from the values that Lake Ohrid and Prespa have and their surroundings.

Lake Ohrid has the surface of 348,8km<sup>2</sup>, which of 229,9km<sup>2</sup> belong to R. Macedonia. The volume of the water is 54280km<sup>3</sup>. It is the deepest lake on the Balkan Peninsula. Although there are measurements that determine bigger depth, mostly it is considered that it is 286 m. The water level is above sea level of 695m.

The transparency of the water in the lake is 21,5 m which is one of the greatest values in the world. The mid-month temperatures of the water in June to September have the values higher than 18°C. In July 21,3°C, in August 22,5°C. That means that in these four months there are optimal conditions for swimming tourist activities. The watercolor that has all the shades from olive-green to blue sky represents a beauty that points that is a piece of sea dropped between mountains. Because of that, the shores of this lake are among the most visited in R. Macedonia.

The most famous beaches are located in Struga, Radozda, Elen Kamen, Kalista. Evrohotel, Podmolje, Andon Dukov, Gradska Plaza, Kaneo, Park, Gorica, Saint Stefan, Lagadin, Elesec, Pestani, Gradiste, Trpejca, Ljubanista and Saint Naum. Special beauty and noticeable attractiveness has the place on the flow out of Crn Drim from lake Ohrid. Actually, through Struga this river has regulated its riverbed. Because of the dark-green color, it is considered as the decoration of the town.

Lake Prespa is at elevation of 853m. Its surface is 274km<sup>2</sup>. R. Macedonia has 176,8km<sup>2</sup>. The biggest depth of the lake is 54,2m. Mid-month temperatures of the water are over 18°C in three months of the year. The transparency of the water is 1,5 to 7,2m. The color has shades



from green-olive to blue color from the shore towards the lake wide. As coastal localities: Konjsko, Stenje, Otesevo, Carina, Sir Han, Asamati, Pretor, Krani, nakolec and Dolno Dupeni. are distinguished.

In the region of the Struga valley the artificial lake Globocica has a tourist value. The surface of this lake is 2,7 km<sup>2</sup> and its depth is 91m. Beside the conditions for pleasant walks by the shore, there are conditions for swimming activities, surfing and fishing. Tasmarunista is one of the biggest fishing centres in R. Macedonia.

In valley Debrca near village Slatino lake Slatino is situated. It can be used on a similar way as lake Globocicko.

### **Cultural tourism**

This region is notable because of the very significant cultural heritage. It should be stated that cultural layers date from the Neolithic period. Neolithic diggings have been found in Crkveni Livadi-Struga on the locality Usta in Struga, than the pile-dwellings in Gradiste - Ohrid. The Bronze Age is also represented in Crkveni Livadi-Struga, while the Iron Age in Trebenista-Ohrid. from Antic pre-roman period specially are pointed the locality Ohrid and Saint Erazmo-Ohrid, while from the Roman period culture is represented by the locality Plaosnik in Ohrid.

This area is rich of early-Christian basilicas as the one found on the locality Plaosnik, Saint Erazmo and Studencista-Ohrid, in Radolista and Oktisi - Struga. Nevertheless, the churches and monuments are specially emphasized by its monumentality and esthetic beauty. Such monasteries are: Saint Pantelejmon on Plaosnik, Saint Naum on the shore of lake Ohrid, the church Saint Sofia, Saint Gjorgjija in Kurbinovo, Saint Bogorodica Perivleptos in Ohrid, Saint Jovan Blagoslov Kaneo, the Monastery Kalista with the church Saint Bogorodica-Struga, Saint Bogorodica -Zaum, Saint Bogorodica Pestanska, Saint Erazmo, Saint Nikola Bolnicki, Saint Konstantin and Elena, Saint Bogorodica Celnica, Saint Dimitrija-Ohrid, Saint Petr on Golem Grad-Prespa, the monastery Slivnicki-Prespa and other churches and monasteries. Special attention attracts the cave churches in Struga: Saint Arhangel Mihail - village Radozda, Saint Bogorodica - Kalista and Saint Spas in Visni.

From the above mentioned towns attention deserves the Ohrid fortress, Zejnel-Abdin Pasina mosque and Krst Dzamija (Mosque).

The old town complexes are impressive in Ohrid. The Public museum, museum of Slavonic literacy and the Gallery of Icons are in Ohrid, while in Struga is the Natural History Museum Dr.Nikola Nezlobinski. In Resen a ceramic colony is kept and there is a museum collection.

### **Rural tourism**

The coverage of the rural population in great part of the villages points to the possibility for tourism. In that sense the Drimkol area can be differentiated, where specially in village Vevcani this tourism comes to life, than Debarca where considering the activity of the



maintainable development the place of village Slatino should be defined and in Prespa the villages Ljubojno, Brajcino and Stenje.

## 6. Pelagonic-pelister region

For a tourist visit of this region there is air communication through the Ohrid airport Saint Apostol Pavle. At this area the road Ohrid-Bitola-Prilep-Skopje spreads, from Kicevo the road leads to Demir Hisar and Prilep and the road to Mavrovo.

The railway leads from Bitola through Prilep to Skopje. To Greece very frequent is the border crossing Medzitlija which region is connected with the lerin area of Republic Greece.

The area that belongs to this region is consisted of several differentiated units. The biggest surface belongs to Pelagonija. From west it is fenced with the mountains Baba and Bigla, the valley area Demir Hisar situated between the mountains Plakenska and Ilinska and Ljuben and Buseva at north. At northwest the mountain Buseva also fence Pelagonija. At north it is fenced with Dautica, on northwest with Babuna, on east with Dren and mountain Selecka. These two mountains fence the upland Mariovo. This area on south is fenced with the mountains Nidze and from east with Kozjak.

The characteristic of this region own possibilities for the following types of tourism:

### Mountain tourism

Tourist most significant area units in the region are the mountain massif Pelister and mountain complex Krusevo at Buseva Mountain. Pelister (2601m) is one of the tallest mountain in R. Macedonia. There are 24 peaks higher than 2000 m. This mountain represent typical **хорст** raised between Prespa valley and Pelagonija. The height of this mountain is the reason for glacial and per glacial forms. The most interesting are the forms **цирковите, валовите** and moraines as typical glacial ones and the glided block, iced chippings, **туфарите** and the grass terraces as peri-glacial forms. From the geo-morphological shapes attention stays on the impressive canyon as in the valley of River Crvena and Klisurica. The Mountain sides are suitable for ski activities. This mountain represents one of the biggest capacities in R. Macedonia with its total capacity of 22 500 m.

The biggest traditions in these activities are the organized and equipped with funicular railway ski paths on the locality Kopanki.

Mountain Busev is considerable smaller than Pelister. The highest peak is Stara Musica (1791m). However, the mountain owns one curiosity.

The town of Krusevo is situated on the highest elevation in R. Macedonia. This mountain area is distinctive by the mild sides suitable for winter-ski activities. The small elevation is reason, the ski paths and the funicular railway to be located on the higher parts and near the town of Krusevo.

### Assumption for development of eco-tourism

From the geo-morphological occurrences, attention deserve the impressive stone forms in the locality Markov Kuli near Prilep, estimated as monument of culture.



In the Mariovo area special attraction represents the Skocivirska ravine. Situated at Crna Reka in the eponymous locality.

The climate conditions vary. However, generally they are in function of tourism. The equability of climate at Pelister is characteristic for the winter and the summer period of the year. The mid-month temperatures in July is 18,4°C that shows perfect pleasantness. In the winter period the mid-month temperature value is -2,6°C. Between the area of Pelagonija and Pelister temperature inversion appears. That means that in the winter months the air temperature is higher at Pelister in relation to the one in the plain part, which represents a special climate phenomenon. Notable equability of temperature appears as well at Busava. In Krusevo the mid-month January temperature is -1,6°C, while the middle month summer temperature have the value of approximately 18°C.

In the region, smallest quantity of rainfalls appears in the summer, and the biggest in the winter months. This schedule is very significant for the tourist stay. Special importance has the quantity of snow at Pelister and Mountain Buseva. The snow mantle is over 15sm. In Krusevo it last 75 days, at Pelister the number of snowy days is 135. Sunny days in the whole area are very noticeable. In Prilep the number of sunny hours in a year is 2368, in Bitola 2321, in Krusevo 2109, and Pelister 2000.

Water values are very attractive. At Pelister there are 20 springs with lavishness bigger than 1 l/s. Mountain rivers as Semnica, Caparska, Rotinska, Bukoska, Bistricka, Velusinska, Loznicka, Crvena and Sapuncica are true decoration at Pelister.

The most impressive beauty represents the “горските очи” (gorski eyes) on this mountain. It is an impressive experience to be by the glacial Lakes Golemo and Malo. Lake Golemo is situated at elevation of 2218m. It has improper shape which biggest length is 223m, width 162m. Its depth is 14,6m. It is determined as the deepest lake of this kind in R. Macedonia. Lak Potok flows out of it.

Lake Malo is situated northwest from Golemo and by its surface and depth is smaller. The length is 79 m, width 68m and depth 2,8m.

River Crna is very attractive from her spring Crna Dupka by Zeleznec to the mouth of the river in Lake Tikvesko. However, beside the composition of its valley special attention deserves the Waterfall Brnicki. Situated on the hillside of Mountain Selecka under the village Brnik, near the mouth of the river ate Brnicka in Crna Reka. Its high 18, surrounded with interesting wood.

The region is characteristic by the picturesque deciduous and coniferous complexes of the vegetative coverage. Among the picturesque areas, Mariovo is very attractive. Several reservoirs are situated there.

Reservoir of black pine is located in Menkova Livada, of beech and fir in Tumba, and in the spring part of River Bistircka under Golem Kozjak the reservoir of the white pine.

Of the woods at Mountain Buseva, Korija is famous.

Significant importances have the plant kinds at Pelister. Together with other forms of natural heritage, they represent basis for declaration as a national park. It was proclaimed in 1947, which means that it is the oldest in R. Macedonia. Its surface is 10,400ha. The coverage of almost 88 ligneous plants or 29% of the total dendro-flora in R. Macedonia makes it a natural arboretum. The most important is the five-needle pine (Pelister pinewood - моликовата шума). It represents a relict of tertiary age. Beside this wood attention deserves the special oak (ПЛОКАЧОТ) and turkey oak, Sessile oak, silver fir and the beech wood.

## Potential for development of the lake tourism



In the region, three artificial lakes are located. The biggest is lake Strezevo. Its surface is

4,3m<sup>2</sup>, depth is 29m. It is situated on river Semnica, as from Bitola the distance is 22km.

Lake Prilepsko is located in the place Gladno Pole near the city. Its surface is 0,54 km<sup>2</sup>, the depth is 28 m. It is suitable for recreational activities.

Lake Krusevsko is situated in the locality Gumenje at River Golema. It has surface of 0,55 km<sup>2</sup> and depth of 13m. Considering the destitution of water resources, it is an important component or the attraction of this area.

### **Possibilities for hunting tourism**

The natural resource of the animal kind is basis for planned hunt, hunt with camera and watching the animals in the whole region. The most famous hunting ground is Bigla, Demirhisarsko. However, the region is characteristic by the considerable opportunities of the mountains and the plain area of Pelagonija. In the National park, this kind of tourism is differentiated by respecting strict rules for the mountain hunting activities.

### **Rural tourism in function for maintainable development of the rural environments**

It is based on the developed agriculture in this region and the impressive mountain villages. The villages in the plain can be used for developing the farm form of rural tourism while the mountain one, can dimension the rural component of development. So, Magarevo and Nizopole could be suitable for starting activities that will enable their maintainable development.

### **Assumption for development of the urban tourism**

Urban tourism beside its foundation of the cultural component, it also determines its basis from the business life and the business activities, trade, science and education. The towns of Bitola and Prilep belong in the group of towns with noticeable business characteristics and developed trade net, because of the business relations and shopping activities visitors not just from our state but the surroundings came as well.

### **Cultural tourism**

The cultural layers in this area have deep traces. They stretch to Paleolithic ages. An artifact as pocket tool dates from the old Paleolithic age near village Bikovo, Prilepsko. The Velusinska hillock, in Bitola, is representative of the Neolithic period, while Neolithic appears also Crnobuki-Bitola and Cepigovo-Prilep. The Bronze period appears in Karamani-Bitola and Varos-Prilep. Beranci – Bitola is one of the most important localities for Iron Age.

Antic culture from pre-roman period is represented in Herkleja Linkestis – Bitola and Markovi Kuli – Prilep, while from the roman period in Varos and Cepigovo and Herakleja Linkestis.



The Early-Christian period appears also in Herakleja-Bitola, but also through the basilica in Treskavec, Zrze, Debrešte and Brailovo-Prilep. From the churches and monasteries special meaning should be given to the monasteries Treskavec and Zrze, the monastery Slepce, the monastery Saint Nikola Toplocki in Zvan.

From the monument of Islamic religion notable are Ajdar-Kadi, Jeni and Isak-Celebi Mosques in Bitola and Carsi and Orta Mosques in Prilep.

Markovi Kuli are representative of Prilep, where the Clock Tower is situated, in Bitola interest deserves the Clock Tower as well, Deboj and the Baths Usni and Jeni and the Trade center.

The old town complexes of architecture are best preserved in Krusevo, while some isolated complexes appear in Bitola and Prilep. From the monuments several should be selected: the Monument of the Ilinden rebellion in Krusevo and Meckin kamen, while in Smilevo the Monument of the Smilevo Congress.

Museums and galleries are covered in all towns of this region, and ethnographic tourist values are present.

## 7. Mid - vardar region

The area of this region covers the valley of Vardar from the ravine Taor to the exit of R. Macedonia towards Greece, Dojran valley and the arms of the mountain Golesnica, Jakupica, Babuna, Kozjak and Kozuv and the west part of Belasica.

### Possibilities for development of transit tourism

The region has a good traffic connection. The corridor E75 passes across and there are railways also. Bogorodica is one of the most frequent border crossings of R. Macedonia. Across it, it is connected to Greece, the Thessalonica airport the Aegean Sea. The Greece communication is accomplished across the crossing Star Dojran as well to Kukus. The Vardar line makes it one of the most important transit regions in R. Macedonia.

### Possibilities for mountain tourism

Attractive localities at the mountain Jakupica in this part are Breza, Gorno Jabolciste and River Patiska. Most suitable terrains for ski activities are found under the peaks Ubava and Gorno Begovo. The most suitable terrains for alpinism are the Nezilovo cliffs. Their absolute height is from 200 to 700 m. At the foot of the mountain is the spring Babuna which makes the locality very attractive. It is considered that this mountaineering ground is the most quality in R. Macedonia. From the glacial period **ЦИРКОВИ** appears which are in the spring part of River Salakovska and **ВАЈЛОВИ** in the upper part of River Patiska. For tourist, the ravine Pesti is also attractive. In this ravine, the cave Makarovec is found which belongs to the group of particularly important caves.



It is famous for the fossil fauna and according some authors as a Paleolithic location. In the spring part of river Babuna are the caves Alena in the karsts field Silegarnik and Damjanica that are evaluated as significant.

Kozuv belongs in the group of high mountains. The highest peak is Dudica (2171m). Its sides are very suitable for marking the ski paths and it becomes one of the most attractive winter sport center in R. Macedonia.

### **Possibilities for development of eco-tourism**

At mountain Kozuv some interesting values of curiosity appear.

On this mountain the karsts shapes are attractive as the karsts field Brce that is impermanent karst lake. Mountain Kozuv is interesting also by the occurrence of the volcano relief. Interesting are the Kravic Stone raised in the shape of a tooth and the volcano tower Vlasov Grad.

From the relief shapes in this region the most impressive and the longest is the Demirhisar ravine on Vardar. Special attractive is its entrance.

In the Demirhisar ravine the cave Bela Voda is situated. It is the biggest from the researched caves in R. Macedonia, The total length is 955m, and it is classified as a natural rarity.

Near Demir Hisar under the peak Krastavec is the cave Goren Zmejovec that is a noticeable cave.

The good conditions for stay in this region are owned to the climate that is characterized with Mediterranean influence. The middle temperatures of the air have the highest value in R. Macedonia. In Valandovo it is 14,5°C, in Gevgelija 14,2°C. The temperature is highest in July. Its mid-month value in Kavadarci is 24,6°C. It is one of the basic reasons that here the most qualitative grape is raised. Winters are also the hottest in R. Macedonia. In Valandovo it is from 3,6°C in January to 8,8°C in March.

In addition to the development of the winter tourism, comes the climate conditions of mountain Kozuv. On the height bigger than 1500m, the snow mantle stays 240 days. One of the interesting localities in the Kozuv area is the mineral spring Smrdliva Voda. It is very visited because of the picturesque surrounding and the healing properties.

Most sunny days in R. Macedonia has right this region. The number of sunny days in Gevgelija is 2609 hours, in Valandovo 2564. At mountain Jakupica in the spring part of River Salakovska, under the peak Ubava (2353m) two glacial lakes are located. The lake Golemo Salakovsko long 46,4 m and wide 38,5m and deep 1,3m. and the Small lake long 42,5m, wide 30,5 m and deep 2m,

Special attractive is the karst area under the Nezilovi cliffs at the elevation of 1760 m as the spring of river Babuna.

Considering the resource of vegetative type special place takes the reservoir in the valley of River Iberliska in Demir Kapija, the wooden complexes around Lake Dojran and the mountain Jakupica.

### **Potential for lake tourism**

In the region interesting lake tourist resources appear. The most significant tourist resource in the region is Lake Dojran. It belongs in the group of tectonic lakes. It is 1478m



above sea level. With surface of 42,7km<sup>2</sup> of which 27,1km<sup>2</sup> belong to R. Macedonia and 15,6km<sup>2</sup> to Greece. The biggest depth is 10km. The capacity of four beaches is around 7000 swimmers. The water temperature on the surface part is very suitable for swimming. Its monthly values from May to September are higher than 18°C. That means that this lake is the warmest of this kind in R. Macedonia. The climate conditions are very suitable for swimming and sunbathing, water sports and walks by the shore. The resource of mineral elements determines its healing properties.

The waters of Lake Tikvesko open its arms for the tourist with its greatness. Its surface is 14km<sup>2</sup> and it is considered for the biggest artificial lake in R. Macedonia. The middle month temperature of the water in the period from May to October has the value higher than 21 °C which speaks about the long-term period for swimming and sunbathing. The promenades, fishing and water sport are also possibilities that are provided by this lake.

Near Veles at river Otavica is the lake Mladost. That is one of the most important picnic places on this space and complement tourist content of the transit tourism.

### **Conditions for spa tourism**

In regards to the healing properties special place in this region belongs to Spa Negorski. It is one of the most significant spa complexes in R. Macedonia. Its surface is 25ha. The color of the wood and the verdancy gives special attractive dimension. For this complex, a specialty is related. It is about the unique area in R. Macedonia where natural thermal peloit appears.

That is mud with healing properties, famous in the treatment as **phango**. The temperature of the water in the spa has the value of 36°C to 43°C. The spa is used for treatment with the locomotive system, post-operational conditions, genital and urological diseases, cardiovascular and nerve diseases.

### **Use of the water potential for tourist-recreational activities**

Tourist values appear at river Vardar and its tributary: Topolka, Babuna, Otavica, Bregalnica, Crna and Dosnica. The attractiveness of these rivers is consisted by the pure water and the fast courses in the mountain part, and the wide riverbeds specially at Vardar that enables swimming activities.

Lake Dojran is considered as the richest lake with fish, and the fishing centers in the region are also Kavradci-Negotino at Vardar and its tributary and Veles at lake Mladost. The region is familiar by the opportunities for hunting tourist activities. In the group of most famous hunting grounds in R. Macedonia are numbered Kozuv and Salandzak.

It should be pointed that the fishing activities appear in the mountain watercourses where trout hunting represent a special attraction.

### **Hunting tourism**

The region is famous by the opportunities for hunting tourist activities. In the group of most famous hunting grounds in R. Macedonia are Kozuv from Gevgelija and Salandzak from Valandovo. However, the area is suitable for hunting activities in other mountain parts in this region as well.





## **Rural tourism**

Rural tourism in this region according to the characteristics of the agriculture it encompasses above all wine production and fruit farming. It is a good possibility for involving the tourists directly in the agriculture activities, production and getting wine and wine products, as well as activities in relations with fruit farming.

The region is suitable for developing stockbreeding and possible traditional forms of production. The dominance of the wine-production opens a possibility for establishing wine roads as a special tourist offer in this region.

## **Cultural tourism**

In this region cultural layers appear from Paleolithic to modern culture. The Paleolithic locality represents the cave Makarovec in the Valley of Babuna, where the Metal period appears also in the locality Dedeli-Valandovo. From the Roman period, the richest diggings are in the ravine Prosek by Demir Kapija. In addition, very important complexes are: Stobi near Gradsko, Marvinci-Balandovo and Vardarski rid-Gevgelija. There are Early-Christian basilicas in Demir Kapija, Nov Dojran and Nikolik by Dojran.

From the monasteries, the Monastery Polog and Mokliski in Kavadarci should be pointed out, from the fortresses Prosek in Demir Kapija and Markova Kula in Kavadaraci.

Veles is characterized with a preserved urban architecture, there are monuments from present history and manifestation contents.

## **8. Strumica-radovis region**

This region covers the area between the mountains Belasica, Plaus, Gradiska, Serta, Jurukluci, Plackovisa, mountain Malesevski and Ograzden. It is about the confluence area of river Strumica i.e. Strumica-Radivis valley in the lower part. Across the valley the road of communication from Stip to Radovis and Strumica stretches. Through Valandovo this communication is related with the communication E75 as a main artery, through Novo Selo with Petric and the interior of Bulgaria. This region disposes with the following opportunities for development of individual types of tourism:

### **Ecotourism**

The Mountains Belasica, Plackovica and Ograzden are extraordinary areas for picnic and walks. The pleasant stay in this region is owed to the climate conditions. Under subtropical influence from the Aegean sea, the temperatures are relatively high. In the summer period the mid-month temperatures are from 21,7°C in June to 23,8°C in July, in winter in January from 1,6°C to 3,9°C in February. That is one of the sunniest areas in R. Macedonia. The yearly number of sunny hours in Strumica is 2472.



River Strumica is the main watercourse in this tourist region. It springs at elevation of 1540m at mountain Plackovica and flows across an interesting component valley. Between the valley of Radovis and Strumica, the ravine Derven is found, while at the section where Strumica leaves R. Macedonia the ravine Klucna is found. The possibilities for walks, stay and fishing are at disposal to tourists.

In this area at the mountain side of Belasica, in the valleys at river Baba the Kolesinski waterfall is located, one of the most attractive waterfalls in R. Macedonia. Its high 13,8m, there are several smaller waterfalls spread in a row of 2 to 4 m, that downstream from it. The waterfall belongs in cultural monuments. The Smolarski waterfall at mountain Belasica belongs in the group of most attractive eco-tourist values.

The forms of the vegetative types are different. In Monospitovo there are swamp types, in the mountain parts wooden vegetation. Among the most significant protected areas is the reservoir of the Crimean pine tree located at 2,5km south of Strumica. It spreads from Cam Ciflik near village Pehcevo and lake Vodoca which speaks for the true tourist complex.

### **Spa tourism**

An important tourist locality represents the spa complex Spa Bansko. Located in the picturesque surrounding, at the foot of the mountain Belasica at 12,5km distance from Strumica. The easy access and the extraordinary organization are just some of the characteristic that determines it as the most attractive spa in R. Macedonia. Thermo mineral water springs from 13 springs with lavishness of 54l/sek. Spring Parilo has the hottest water. The temperature is 72°C. It is the hottest temperature of water in spa in R. Macedonia.

The chemical-mineral structure and the thermal characteristics are basis for preventive, healing and rehabilitation activities. The medical and the recreational equipment go in addition to the meaning that this complex has for the tourist stay. The spa enables treatment of rheumatic, stomach, cardio, allergic, asthmatic, gynecological and urological diseases, and it is used in post-traumatic conditions, conditions in post-operative procedures, inflammation of the gall etc. The promenades and other recreational activities circle the opportunities of this complex. The attractiveness is related with tradition for using spa from the roman or antic period.

### **Lake tourism**

From the hydrographic tourist values in the region the artificial lakes as well deserves attention. Lake Vodoca is located in the confluence of the rivers Vodoca and Trkajna. The surface of the lake is 1,9km<sup>2</sup>, and the depth is 42m. The distance from Strumica is 8km and it is determined as attractive picnic place.

Lake Turije has similar picnic characteristics. Its surface is 0,16km<sup>2</sup>, and depth 70m, and since it is near Strumica it is determined as attractive place for a visit.

Lake Mantovo is an attractive place near Radovis. The orderly area enables pleasant stay and recreational activities in the upper confluence area of the river Lakavica where the lake is located.

### **Cultural tourism**



In this region monumental and esthetical meaning have the Early-Christian basilica dedicated to the fifteen Tiveriopol martyrs, the monasteries Veljusa and Vodoca, the King Towers (Carskite Kuli), Museums, ethnographic heritage and manifestation contents (specially the Strumica carnival).

## **9. Bregalnica region**

This region covers the north sides of Plackovica, Mountain Malesevska, Pijanec, valley of Bregalnica and the south sides of the Mountain Osogovo. The access is relatively good because from the highway road E75, the road line is divided at Kocani-Kamenica-Delcevo, and one from Kocani-Vinica-Berovo. Across the border crossing at Delcevo, the region is connected with Blagoevgrad area and the interior of Bulgaria. The biggest potential of this region in function of development of individual types of tourism is in the following areas:

### **Possibilities for development of mountain tourism**

The mountains Malesevski and Plackovica are added in the area unit. Although they are not higher than 2000m, they are very suitable for tourist activities. From the highest peak Kadinica (1932m) an extraordinary view spreads towards the surrounding rich with beautiful landscape. These mountains are suitable for winter-sport activities. Such terrains are located around the peaks Lisec and Kadinica.

Very interesting divided relief is at mountain Osogovo. Their height is over 2000m. The highest peak is Ruen (2252m). The winter-sport center Ponikva is situated here.

Interesting tourist values are the ravines. In the valley Bregalnica are the Razlovska and Ovcepole-istibanja ravine, on the space of Osogovija the narrow ravines of Zletovska, Kocanska and Orizarska Rivers.

In this region attractive geo-morphological formations appear. In Delcevo one can found samples of selective erosion. That is the Kukuljeto in village Nov Istevnik.

### **Ecotourism**

The climate conditions are in favor of the tourist stay. The mid-year temperatures in Berovo measures 8,7°C. The summer in the mountain area opposite to the plain area is rather equable. In Berovo the mid-July temperature has mid-rate of 15,3°C, in Stip 23,8°C. Winters are relatively temperate. The mid-January temperatures in Berovo measures 1,2°C, in Stip 1,3°C.

In the summer period of the year the amount of rainfalls is very low. In Stip in August it measures only 29,3mm which means that it is about one of the lowest values in R. Macedonia, which can be acceptable as suitable circumstance for a tourist stay. In this context is the number of sunny days which in Berovo measures 2330 hours per year, in Stip 2369.

The wooded area is one of the most attractive factors for stay in the locality Golak that is visited in the summer as well the winter period of the year.

The mountain areas in the region are rich with healing and aromatic vegetation, which represent basis for herbal tourist activities.



## **Lake tourism**

Artificial lakes are one of the most significant tourist values in the region. The most visited lake is Ratevo situated at River Ratevska at 6km from Berovo. Its surface is 0,57 km<sup>2</sup>, and its deep around 50m. The attractiveness of this lake is based on the organization and the arborous area, as well as the possibility for swimming and fishing activities.

One of the most attractive lakes in R. Macedonia is lake Kalimanci. The surface of this accumulation is 4,23 km<sup>2</sup>, the biggest depth is 80m. It is a recreational space for the population from Kocani, Vinica and Delcevo and suitable picnic areas for many tourists.

## **Spa tourism**

In the valley of river Kocanska is the lake Gratce. Its surface is 5km<sup>2</sup>, and the depth is 29m. It is suitable for swimming and fishing, and represents a pleasant place for picnics. This space is famous for the geo-thermal waters. Their usage has tradition, which reaches to the roman period and the period of the Turkish domination.

Spa Kocani is situated at 6km from Kocani in village Banja. The lavishness of the springs measures 65l/sek that speak about an extraordinary potential. The temperature of the water measures 64°C that numbers it in one of the hottest waters in R. Macedonia. The physical and chemical content of the water in this spa enables healing of rheumatic, gynecological, stomach and respiratory diseases, diseases with the gall, urethra, inflammation of the nerves and condition of traumatic nature. Near this spa in village Dolni Podlog, a spring of hot water was created with drilling which temperature measures 80°C. That is the highest value of the famous geo-thermal waters in R. Macedonia.

The possibilities for visit are related to Istibanja, which is situated in the ravine Istibanja. The spa Kezovica is situated immediately to Stip. The lavishness of the spring measures total 20l.sek. The temperature of the water measures from 69°C that speak about considerable hyper thermal water. The value of the water is being used since Turkish period. It is used for healing rheumatic, women, stomach and inflammation of joints and chronic diseases of the respiratory organs.

## **Hunting tourism**

The region is very rich with quarry that represents the possibility for hunting tourist activities. Among the hunting ground are Plackovica in Vinica with 14.708 hectares that belongs in the group of the biggest in R. Macedonia, famous hunting grounds appear also in the Mountains Malesevski and Osogovski.

## **Cultural tourism**

Suitable natural conditions are basis for occurrence of cultural values from the Paleolithic up to present. In the river drift by Zletovo two artifacts were found from this cultural period. In Amzabegovo - Saint Nikole, Neolithic artifacts are discovered, while the localities Orizari - Kocani and Tarince-Stip mark the Metal period from the culture in this region. As an example of the antic culture from the roman period the localities Isar, Stipa and from the Early-Christian period Bargala also in Stip are famous.

The most important monastery in this region is the Monastery Lesново, while the region notes other cultural values in the type of trade centers, feudal towers and monuments from present history, memorial and historical institutions.



## **10. Kratovo- Kriva Palanka region**

This region covers the north-west part of R. Macedonia. Those are the north and the east parts of the Mountain Osogovo, the valley Slaviste and the east part of the mountain Kozjak and German.

Over the area of this region an important road communications is spread. The most frequent road is of international meaning that from Kumanovo through this area leads towards the border crossing Deve Bair on the Macedonian -Bulgarian border. This border crossing enables connection with Kustendil and the interior of Bulgaria.

From the valley of Bregalnica towards Probistip, Kratovo and Stracin leads a road communication that enables notable access.

### **Possibilities for development of ecotourism**

The relief structure of the area is very interesting. Osogovo is characteristic by the high flatten parts with high peaks. The highest peak is Ruen (2252m) Special interest is the volcano relief. In Kratovo there is volcano crater that gives a special tourist value. The locality Kuklica is ranged as a natural monument because it is an example for selective erosion.

In the higher part of the region prevails mountainous climate, in the valley space temperate-continental. Mid-month summer temperatures in Kratovo are 21,5°C, in Kriva palanka from 20°C to 22°C. The winter temperatures are relatively high. In Kriva Palanka the mid-January temperature measures -0,3°C, in Kratovo 0,4°C. The number of sunny days is notable, Kriva Palanka measures 2291 hours.

At the mountainside of Osogovo, flow number of rivers and streams. Among them, the biggest is Kriva Reka, long 69km.

The woods are story positioned. From oak woods: Sessile Oak, Italian oak and the Turkey Oak appear, but the Beech woods prevail.

Picking wild strawberries, raspberries, blueberries, rose-hips and cornel tree are part of the rich possible activities of the visitors.

### **Hunting tourism**

The animal world is various, which opens the possibility for hunting, photographing and watching this attractiveness. The hunting ground of Kratovo and Kriva Palanka measures around 60 000ha.

### **Cultural tourism**

In this region Osogovo Monastery represents the most attractive monument.

Attention also deserves the Monastery Psaca, and the special attractive Towers as Simikeva, Emin-Begova and Hadzi-Kostova as the bridges of Kratovo and the Turskih Bath. For the visitors the old-city culture of Kratovo is interesting and the museum collection of Kriva Palanka.



## **Conclusion and recommendations:**

The analysis of the potential for tourism in the differentiated regions of Republic Macedonia states that the basic presumptions present for development of tourism are based on the expansibility of the natural values and the attractiveness and the cultural heritage. However, it should be stressed that the number of existing types of tourism is small, but of the potential ones is big. That is why for future planning for development of tourism it is necessary to have into consideration the possibilities for development of some types of tourism but with obligatory attention of their maintenance and that is to say the following:

### **1. Assumption for sustainable development of the mountain tourism**

- Marking ski trails at the mountains where possibilities prevail
- Building cable railway and ski-lifts
- Establishing, ordering and equipping the localities for belle-views
- Establishing mountain and alpine trails
- Establishing educative-recreational trails
- Ordering and equipping the localities for tracing, photographing and recording animals
- Forming a center for logistics in the mountaineering and the hunting-tourist activities
- Establishing mountain trails
- Opening centers for presentation of the mountain tourist values
- Determining locations for mountain lodges, hunting lodges and other kinds of shelters and catering capacities.

### **2. Assumptions to sustainable transport in function of the tourist development:**

- Equipping the infrastructural contents for the visitors' stay
- Location of catering and tourist capacities on most significant and most frequent road artery
- Horticultural arranging of the areas
- In function of protecting the environment, sanitary and hygienic protection should be provided

### **3. Eco-tourist activities**

- Taking over measurements and activities for maximum protection of area
- Defining and differentiating eco-tourist units in the region
- Establishing educative-recreational trails
- Encouraging activities for surviving in nature
- Encouraging organic food production

### **4. Valorization approach toward sustainability of speleological tourism**



- Providing access to caves
- Arranging tableland in front of caves for educative-cultural activities
- Arranging and equipping the caves for visit
- Animation of the area through illumination and audio effects
- Encouraging travel agencies activities for determination of the speleological tourism in tourist offers
- Providing speleological guide service and service for facilitating the stay

#### **5. Activities on rivers and lakes as a component of sustainability**

- Swimming activities that means arranging and equipping beach spaces
- Walks and stay on paths that should be arranged on the coasts
- Water sports
- Arranging the green area and protection of the wood surrounding
- Fishing activities with stockings and maintenance of the population
- Determination of points for fishing contents
- Sport-recreational and entertainment programs

#### **6. Activities for sustainable development of spa tourism**

- Arranging the spa area and surrounding
- Modernization of the spa infrastructure
- Equipping the spa with modern medicine diagnostics and other means
- Arranging the area for health-recreational activities (walking paths, open swimming pools)
- Including programs for dietetics, relaxation, beauty treatments etc

#### **7. Activities for enhancing sustainable development of rural environments**

- Organizing platforms, lectures and meetings with citizens for the benefiting of development of the rural tourism
- Arranging and equipping the area to include them in the tourist offer
- Encouraging of enriching the live-stock fund in size and variety
- Establishing programs (agri-farming-entertainment) for stay and activities during the period of stay of tourists
- Providing infrastructural and hygienic-sanitary function of the area for visit

#### **8. Activities in function of sustainability of the cultural heritage**

- Tourist valorization of monuments of culture and arranging the areas around them
- Providing localities from danger of devastation (pot-hunters, thefts etc)
- Intensifying the cultural-research activities
- Revitalization of the cultural heritage through including the catering
- Definition and establishing of heritage trails



**Support to the Preparation of a  
National Strategy for Sustainable Development  
in the Republic of Macedonia**

**A Sida-funded project in cooperation with the  
Ministry of Environment and Physical Planning,  
the Republic of Macedonia**

**Sub-Sector Analysis Report  
Secondary Professional Education**

**Borko Handziski**

July 2007



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## **1. Executive Summary**

**The education system is the main determinant of the human capital in the country. The education level of the labour force as well as the quality of education has a direct affect on labour productivity. It determines the competitiveness of the economy and its potential for sustainable economic development. Education system reforms take time, and the impact on available human capital takes even more. Thus, urgent and comprehensive reforms in education are essential for achieving higher and sustainable development.**

**This report focuses on primary and secondary education, and aims to show the links between education and sustainable development. The report starts with an overview of primary and secondary education, including the organization of the systems, the key actors, and the government policies in the area. In addition, problems identified and recommendations from all relevant strategic documents are analyzed, and links to relevant European documents are included.**

**Then, the report deals with the scope of work and the results achieved in the phase of analysis and assessment. It includes an overview and scrutiny of the existing documents of the secondary occupational education such as: strategic programmes, regulations, other relevant documents and SWOT analysis.**

**The consolidated findings from the various activities are presented, and consolidated conclusions are identified.**



## 2. Scope of Work and Results of the Initial Analysis

### 2.1 Overview of primary and secondary education

The education system is the main determinant of the human capital in the country. Human development plays a key role in achieving sustainable development as it aims to: reduce Macedonia's high levels of unemployment, and prepare the country for entry into the EU.

The level of education attained of the Macedonian population is very low, compared both to EU-15 countries as well the EU-8 (see Table 1). To compare, 68% of the population (aged 25-64) in the New Member States was with a high school degree in 2003, compared to 45% of Macedonia's population<sup>1</sup>. This means that the country's human capital has a low base, which is then reflected in the structure and competitiveness of the economy. According to a recent regional World Bank study, the share of capital and skill intensive exports in Macedonia's total exports was only 35.2% in 2005, compared to 67.2% in the New Member States. Furthermore, FDI inflows in the region show that regions with higher human capital get more investments. Thus, building up human development, in terms of both quantity and quality of skills, is crucial for achieving faster growth. This points out to an urgent need to start building skills now and to undertake reforms towards increasing the education level of the population.

**Table 1. Highest level education attained of the population above 18 years of age**

Education attained	Census 2002	Labour Force Survey 2005
Less than primary education	18.0	13.6
Primary education	35.1	33.5
Secondary education	36.9	42.5
Higher education (including advanced degrees*)	10.0	10.5

\* Advanced degree is obtained with two years of university studies

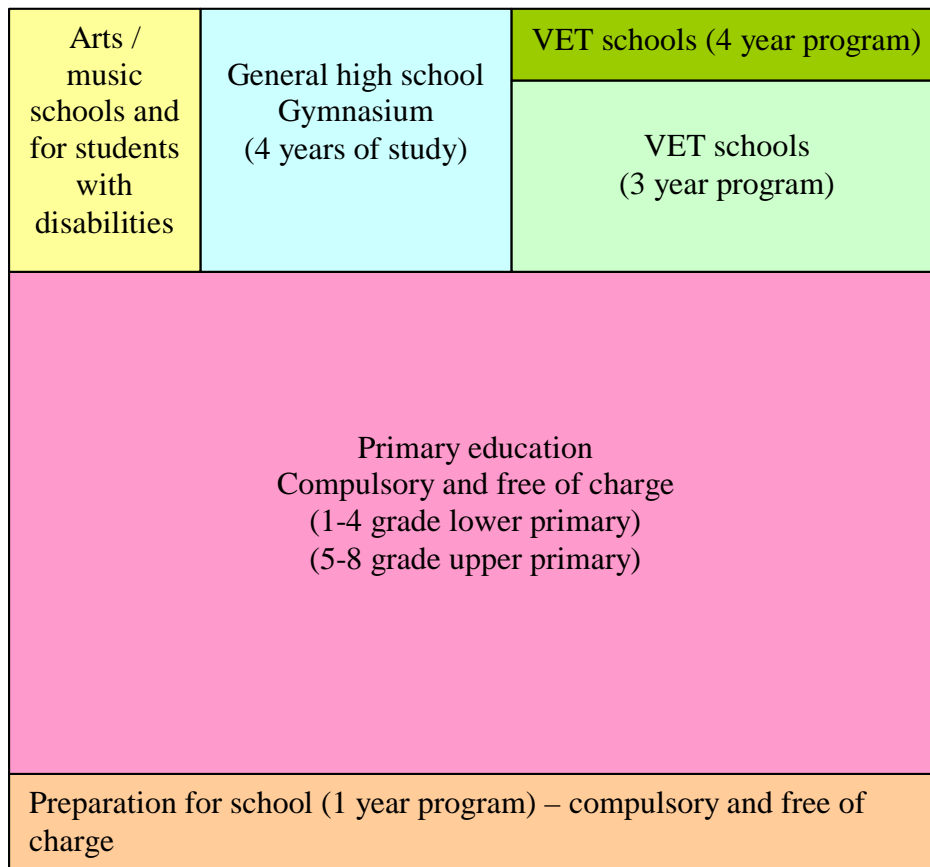
The structure of the system of primary and secondary education systems is presented in Figure 1. Primary education is compulsory and is divided into lower primary (grades 1 to 4) and upper primary (grades 5 to 8). Last year, a preparatory (zero) year was introduced as obligatory. Primary education has been compulsory for decades, and enrolments rate are relatively high (some 96%), though there has been a slight decline in the past decade.

<sup>1</sup> Source: for Macedonia, Labour Force Survey, for NMS, OECD, Education at a glance 2005.



Secondary education comprises three types of programmes: gymnasium, Vocational Education and Training (VET) schools, and specialized art schools and schools for students with disabilities. VET schools offer two types of programmes, three and four-year, and the four-year programmes allow students to enrol in a tertiary programme.

Figure 1. Primary and secondary education structure



### Overview of primary education

Primary education is only provided by public schools; it has been compulsory since before the country's independence, and enrolment rates are relatively high. The primary education is financed almost entirely from the central budget. The total budget for primary education amounted to some MKD 5.2 billion, a decline compared to 2003. The network of schools is well developed, some 340 central schools and some 700 satellite schools (entirely in rural areas). However, the infrastructure has deteriorated in the past decade, mainly as a result of insufficient funds for maintenance and capital investments. About one half of all school buildings are more than 40 years old. Funds for maintenance have been low and declining, while the costs for teacher salaries have increased to some



**90% of total expenditures in 2005, compared to 85% in 2002. Furthermore, Macedonian schools at all levels of education receive much less funds for capital investments compared to the EU.**

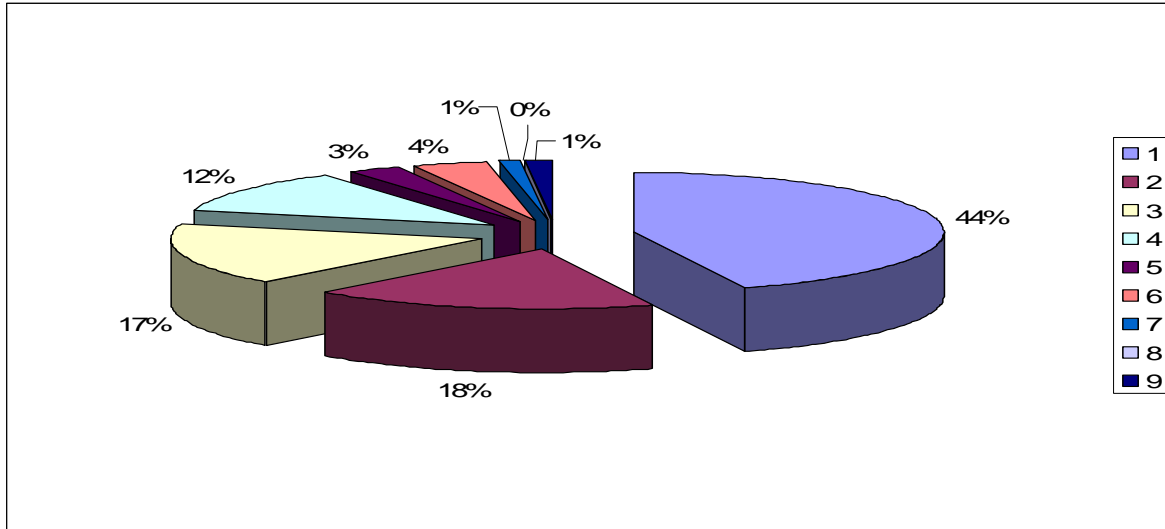
### **Overview of secondary education**

**Secondary education is provided by public and private schools. There are some 100 secondary schools in the country, of which five are private. However, enrolments in private secondary schools are limited, compared to EU countries (both EU15 and New Member States). Secondary education is financed four fifths from public sources (central government), and about one fifth from private sources. The network of schools is used relatively efficiently, teacher to student ratios are similar to those of the New Member States, and most schools operate in double shifts. However, similar problems exist as in primary education concerning school infrastructure. Although the share of maintenance and capital expenditures is somewhat higher than in primary education, teaching conditions have deteriorated over the years.**

### **Vocational Education and Training**

The VET is regulated by the Law on Secondary Education (of 2002) and the Law on VET (of 2006). In 2005 Macedonia had 40 percent of secondary students enrolled in gymnasias and 60 percent in VET programs, 51% in four-year and 9% in three-year VET programmes. 83% of Macedonia's secondary schools offer VET programmes, and about 80% of those offer no more than 3 different kinds of programs.

Figure 2. Share of VET schools by number of distinct VET programmes



**Source:** Ministry of education

The table below shows the distinct VET programmes offered by VET schools. Each of the programmes has several sub-specializations. 44% of all VET programs are four year programs; 28%, three year programs; and 28%, mixed three and four year programs. The structure of the VET programmes needs to be analysed in great detail in order to see how it meets labour demands. Focus should be made in particular whether three-year or four-year programmes suit better market needs. At the present stage, unemployment data shows that VET graduates have just little advantage in terms of being employed compared to those which have finished only primary education or gymnasium. Apart from the clear factor of having structural unemployment in Macedonia, this could also mean that VET programmes do not respond to the reality of the market.



Table 2. List of VET programmes

Occupation	Occupational Education	Number of schools
	Mechanical	22
	Electrical	15
	Transport	5
	Textile-leather	10
	Economy and law	15
	Agriculture and veterinary	11
	Medical	10
	Forestry and wood processing	6
	Geology-mining and metallurgy	5
	Chemical-technological	6
	Graphics	4
	Construction and geodetics	4
	Tourism and services	6
Personal services	4	

### Quality of primary and secondary education

Macedonia has participated in all three international assessments of learning: the Third International Mathematics and Science Study (TIMSS), OECD's Program for International Student Assessment (PISA), and the Progress in International Reading Literacy Study (PEARLS). The results of these assessments are alarming: Macedonian students have performed badly on all of these assessments compared both to EU countries and its neighbours. Some of these tests measure students' knowledge in certain areas (such as math or science) where as others measure general reading, comprehension and problem solving skills; the latter are crucial for answering the market needs in a modern (and knowledge-based) economy.

Macedonia's public spending on education as a percent of GDP has declined from 2002 to 2005, and the gap in spending on education as percent of GDP between Macedonia and the EU-15 reached 1.2 percentage points. This could be one of the reasons for the poor performance of Macedonian students. Urgent reforms are needed to improve teaching curricula in order to better prepare students for the facing challenges in the modern



**economy. Furthermore, Macedonia should spend some additional €60 million per year on education to have the same relative share as the average EU country.**

### Decentralization of education

In 2005, a decentralization process started which strongly affects primary and secondary education. Under the first phase of decentralization, functions and financing for primary and secondary education (except for special secondary schools) were transferred to local governments. This means that ownership of school facilities and their assets was also transferred on local level. The transfer in operations of schools included: maintenance (heating, materials and services, the salaries of maintenance staff, and the transport of students to school). In 2006, a formula-based system was introduced for allocation of funds for the above mentioned functions. During the first phase, salaries of school directors, teachers, and pedagogical staff are paid by the Ministry of education to the schools. This function is expected to be decentralized in Phase II, now tentatively planned for 2007. In the second phase of decentralization, which is expected to begin in the latter half of 2007, municipalities should receive block grants instead of earmarked funds, and allocations will be based on a capitation formula. This means that municipalities will have to rationalize school operations (network, number of teachers etc.). In the future, local government will have greater discretion over their responsibilities concerning primary and secondary education, thus, will play an even larger role in creating sound conditions for sustainable development.

Table 3 shows the projected changes in the number of school-aged children in the period until 2030<sup>2</sup>. All age groups are projected to decline in size, with the total age group of 3 years to 25 years expected to shrink by 13 percent across the quarter century. The age groups representing the largest percents of losses are those for secondary and tertiary education, the former being expected to decline by about one-sixth and the latter by almost one-fifth. These demographic changes should be

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<sup>2</sup> Source: World Bank.





incorporated in future education and employment policies. Policy makers should consider that the school-aged and work force will decline in the next three decades. For employment policy, this would mean that focus should be on the current abundant labour force (retraining and further education of unemployed), as the quantity of labour supply will only decrease in the future.

These developments are also of great importance for municipalities in the planning of future costs of primary and secondary education. The reduction of the number of pupils will force municipalities to rationalize the school network and the number of teachers, that is unleash funds that could be used for capital expenditures.

Table 3. Absolute and percent changes in size of school-age cohorts, 2005-2030

Age group	2005 to 2030: Approximate loss	Percent loss by 2030 relative to 2005
6-10 year olds (lower primary)	11000	7.5
11-14 year olds (upper primary)	16000	12.9
15-18 year olds (secondary)	20000	15.8
19-25 year olds (tertiary)	43000	18.6
Total 6-25 year olds	90000	12.8

**Source:** World Bank demographic projections.

## 2.2 Key Actors

**The Ministry of Education and Science (MES)** is the main institution responsible for policy development as regards primary and secondary education. The Ministry has competences related to governing, organisation and financing of the education. However, the decentralization process which is ongoing, transfers some competencies to the local governments. Once the second stage of decentralization begins, the ministry and local governments will share the responsibilities in the sector: overall policies will remain in the domain of the ministry (which is normal, otherwise huge discrepancies might be created among the various municipalities, and local governments will have a say over management and expenditures (e.g. appointment of school directors, where to



focus capital expenditures, a new gym or a new library etc.). The main shortcomings that have been identified in primary and secondary education, actually will remain for the ministry to address. Issues such as quality of curricula, teacher training systems, VET education, remain centralized, and these should be the urgent priorities for the ministry. Local governments will play a role as regards to funds for teaching materials and equipment, and capital investments, which is another urgent issue that needs to be addressed. The ministry needs to strengthen its capacities to better deal with its responsibilities. First of all, data gathering and management is very weak (see chapter 8), and this is the basic tool for any policy making. Secondly, communication channels with all relevant stake holders should be further developed. For local governments, responsibilities in the area of education is something new, so basic understanding and capacities should be put in place, and the ministry should assist municipalities in this process.

**The State Educational Inspectorate** is a body within the Ministry of Education and Science which supervises the fulfilment of educational standards, the quality of education, the effectiveness of the educational institutions as well as the application of laws, other regulations and general acts relating to the educational process.

**The Bureau for Development of Education (BDE)** is a body within the Ministry of Education and Science responsible for development of pre-school, primary, secondary, and adult education. The BDE has the authority to develop and amend curricula (plans and programmes), design and promote teaching methods, and to propose plans for textbooks. The capacities of the BDE have been weak and the budget it receives is insufficient to perform its task. Its work requires modernization and learning about the current developments in this area, in particular policy developments in the EU.

The **Centre for VET** was recently established, but lacks the necessary administrative capacity (it has only 6 staff, of which 2 were recruited just recently). The CVET should play a key role in developing VET programmes that meet the needs of the market.



Furthermore, it is aimed to promote entrepreneurial skills and strengthen the role of the business community in the development of VET programmes. The CVET, once fully operational, will have a key role to play in developing modern VET programmes, based on collaboration with the private sector, that will respond to the labour needs. Thus, fully developed CVET is a matter of urgency.

**The National Examination Centre** operates within the Bureau for Development of is responsible for evaluation of the achievements of pupils. It also conducts national examinations in primary and secondary education including the final mandatory exam for high school graduates.

**The Administration for Development and Advancement of the Languages of Ethnic Minorities** is mandated with organisation of classes for the members of the various ethnic groups, in line with the Constitution and the Law on Use of Languages.

### *2.3. Governmental Goals and Policies*

The programme of the Government for the period 2006-2010 has an increase in capital expenditure as one of the key and immediate priorities; education (together with health) has been identified as one of the priorities for increased capital investment. The new investments are expected to be realized for procurement of IT equipment in the schools (project “Computers for all students” was launched in 2007) and to improve the schools’ building infrastructure. Furthermore, the programme envisages public spending on education to reach 5% of GDP, which would eliminate the current gap with the EU countries. The government also aims to develop “Life long learning” programmes, which is especially important for increasing the human capital having in mind the low level of attained education of the labour force. Modernization of the teaching programmes and course syllabuses is also one of the key objectives of the government. The list of policy actions that are planned for the next period is quite long, and having in mind the characteristics of the education system, these changes should not be expected in the



short-term, some of them will take even more than four years. It is essential that all policy actions are complementary to each other and are part of one overall strategy, otherwise the expected results will not materialize. For example, putting a computer in front of each high school student will not increase the level of acquired knowledge, if teachers don't know how to use computer. And to teach the teachers, an institutionalized teaching system is needed, and this is lacking at present. So, higher spending on education should be done only in a manner that fully addresses the short-comings of the system.

All of the planned reforms require well-developed administrative capacity of the relevant institutions, something that is also lacking at present. In the future, the limited capacity could become a key constraint for the implementation of the reforms.

#### *2.4. Link between primary and secondary education and sustainability*

Education is an essential factor in achieving sustainable development. Primary education provides a basis for further educational attainment of the students, and also develops basic skills such as reading comprehension, critical thinking and problem solving. These skills are of crucial importance for meeting the needs of the modern economy. Secondary education plays two important roles: it prepares students (that enrol in gymnasium) for university, and develops specialized professions through VET programmes. The latter can be an impediment to sustainable development if programmes do not address the market needs.

To support development, the education system itself needs to be sustainable. This would mean, first of all, sufficient financing is provided by the state. Secondly, authorities should constantly work on achieving efficient use of the resources available. Thirdly, the system should be inclusive, taking into consideration different geographical regions (rural areas) and ethnic groups.



## *2.5. Indicators for Sustainable Development in the Occupational Education*

The adequacy of Macedonia's human capital for supporting a transition to investment-driven growth can be judged by evaluating:

1. Macedonia's enrolment rates;
2. Macedonia's expected years of education;
3. The educational profile of Macedonia's working age population;
4. The quality of the human capital produced by Macedonia's education system;

## *2.6. Sustainable Development in the European and National Documents*

### *European Documents related to education*

At the end of the 1990s, discussions on education in the European Union became increasingly focused on VET. The various proposals for development of VET were included in the "White Book on Education" (1996). The White Book laid down the key principles of a modern European education system – compatibility of social integration, employment and personal satisfaction of every citizen. The concrete steps for the future joint EU activities in the area of education (innovations, research, education and training) were defined in the document "Towards a Europe of knowledge" for the period 2000-2006. The new approach towards education was a came from the need to develop life-long education and promote life-long approach to education. The need for life-long education was further stressed at the Lisbon Council where EU Member States agreed that the future development would be directed towards "lifelong education as a precondition for creation a learning society and a knowledge-based economy". At the end of 2000, on the basis of this conclusion, the European Commission issued a full basic document "Memorandum for Life-long Learning". In the Memorandum, the term "life-long learning" is defined as a learning activity aimed at improving the knowledge, skills and competences."



There are two equally important reasons for introduction of the principles of life-long education as one of the main education priorities of the EU, as follows:

- Europe is developing and moving forward as a society and economy based on knowledge, skills and competences. The information technology creates opportunities for more competition, more employment opportunities and adaptability of the workforce.
- Today, the citizens of Europe live in a complex social and political world. The individual, more than ever, needs to plan his/her life, actively participate in the works of society, learn and live in a community with cultural, ethnic and linguistic differences. It is the education that should respond to all those challenges.

The above two aspects directly lead to two equally important tasks of life-long learning: promotion of active citizenship and promotion of employment.

Unlike the dominant role of the formal education that has prevailed thus far, the principle of life-long learning attaches equal importance to the other two categories of education (non-formal and informal).

The Memorandum promotes six basic postulates for practical application of life-long learning:

- Ensuring full and constant access to education for the purposes of gaining and renewal of skills necessary in a knowledge-based society;
- Investments in human resources development;
- Development of efficient learning and instruction methods as well as creating conditions for achieving continuity in the life-long and life-wide education;
- Improvement in the manner of understanding and evaluation of the educational processes, with a special emphasis on the non-formal and informal education;
- Ensuring simplified access to quality information and advice in relation to acquiring knowledge education during the whole life;
- Provision of broad access to life-long education for the citizens (in their place of residence).



The gap between Macedonia's education system and the one of the EU is described in the analytical report to the Opinion for the application for EU membership (of November 2005) and the Progress report 2006. The reports state that the modernisation efforts (of VET in particular) should continue and that sufficient financing needs to be ensured. Progress has been made as regards adoption of legislation, but implementation is lacking in some areas (e.g. law on VET).

### Relevant National Documents

The most relevant document concerning education is the National Programme for Development of the Education in the Republic of Macedonia (2005-2015), which was adopted in 2005. However, education is an area which has a broad impact of many economic and social issues. Thus, it is also covered in other strategic documents of the country, including:

- Pre-accession Economic Programme 2007-2009;
- National Development Plan 2007-2009;
- Strategic Coherence Framework;

## **3. Scope and Results of Work in the Analysis and Assessment Phase**

### *3.1. Review of Existing Documents (strategies-programmes, laws and other relevant documents)*

#### Strategies/Programmes in the area of education

In 2006, a National Programme for Development of the Education in the Republic of Macedonia (2005-2015) was adopted. The general programme contains a number of specific programmes such as:

- programme for development of secondary and post-secondary education,
- programme for professional development of teaching staff,



- programme for quality assurance and quality control in education,
- programme for institutional support to the reforms in the educational system,
- programme for development of information and communication technologies in education, and
- programme for adult education.

**The National Programme for Development of Education** sets out the long-term needs and objectives in the area of education.

**The Programme for development of secondary and post-secondary education** aims to help achieve an efficient secondary and post-secondary education, including equal opportunities for all and professional development in line with the social and economic needs of the country. Apart from the formal secondary education system, the programme envisages creation of possibilities for informal education, as well as stronger linkages between the two systems. The programme also aims at providing better compatibility with the EU standards, equal opportunities for inclusion, prevention of marginalisation of certain groups and a broad range of options to achieve those goals. Furthermore, the programme foresees: flexible educational system in terms of its structure, selection of programmes and occupations, methods, organisation, stages and places of education, more general occupational education to acquire skills to respond to the fluctuating labour market and the needs of the contemporary information society, application of contemporary educational and professional standards, improved curricula, etc..

**The Programme for professional development of teaching staff** provides an analytical overview of the current situation and examines the trends pertaining to teaching staff in primary and secondary education. The programme addresses the need for developing stimulating career advancement system for teachers.





**The Programme for quality assurance and quality control in the educational system** aims at developing a comprehensive, modern and coherent system for quality assurance and quality control in pre-school, primary and secondary education. The quality assurance and quality control system is an integral part of the educational system and its strategic goal is to ensure quality of educational setting, quality of instruction and quality of results.

**The Programme for Institutional Support to the Reforms in the Education** opens opportunities for capacity-building efforts that are pivotal to the process of harmonization of the education system with the EU.

**The Programme for development of information and communication technologies in education** envisages progress of the Republic of Macedonia towards a knowledge-based economy through sustainable development of the information society.

**The Programme for adult education in the context of life-long learning** deals with the educational policy concerning education for all age groups. Education should be accessible for the entire population, irrespective of the age, sex, religion, ethnic affiliation, medical condition or social and financial circumstances. In addition, the education and training system must meet all the conditions for ensuring efficiency and effectiveness in order to be apt to provide sufficiently general and sufficiently specific (occupational) education. The goal of life-long learning is to maintain and preserve a positive and active approach towards learning at any age.

#### *Other strategies linked to education*

Education is an overarching area with a strong impact on economic growth and development, thus it is part all key strategic documents of the Government that are focused on economic development. The **Pre-Accession Economic Programme (PEP)** points out to the need to increase financing for education; public spending on education has been maintained around 3.7% of GDP, much lower than most EU comparators. The



PEP, which is a three year strategy identifies the following key priorities in the sector: (1) to link the education process with market demands (particularly VET and higher education programmes), (2) to develop life-long learning, (2) to make education a key pillar in developing a knowledge-based economy. The **National Development Plan**, which is another three-year document adopted in February 2007, points out to similar short-comings and priorities related to education. This strategy links the education system to Research & Development, an area which has been marginalized in Macedonia for decades (R&D spending amounts to only 0.2% of GDP, whereas the Lisbon Strategy aims to bring R&D spending to 3% in the countries of the EU by 2010. R&D is closely linked to education, as most public R&D work is done in university research centres, and to have R&D in the private sector, the education system (higher education) must develop well trained graduates and scientists.

The **Strategic Coherence Framework (SCF)** notes that there is low quality and quantity of education in the country. Out of 34,000 pupils that enrolled in first grade in 1991, only 24,000 (69%) finished secondary education. The average years of schooling for the Macedonian population aged 25-64 is only 10.3 years, compared to 11.8 years in the EU-15 and 12 years in the New Member States. Furthermore, the expected years of schooling for a Macedonian 5-year old is only 13.4 years, compared to 17.6 years for the EU-15 and 16.6 years for the NMS. The SCF also notes the discrepancies in education attained among the various ethnic groups in the country. The level of education is particularly low for the Roma and Albanian minorities. Furthermore, gross enrolment rates in rural areas are quite low. The low enrolment rates have been identified as a key constraint for increasing employment in the National Strategy for Employment. This strategy has a target that by 2010 at least 75% of 22-year olds will have a secondary education degree. The recent introduction of obligatory secondary education is key step towards achieving this target. However, strong efforts will be needed to ensure full implementation of this legislative change. Rural areas will particularly be problematic, since large number of the population in these areas works in the agriculture sector.

## Laws



The Law on Secondary Education deals with organisation, operation and management in the secondary education, as part of the overall educational system. The secondary education encompasses programmes and plans for comprehensive and specific (occupational) education.

The Law on VET contains provisions for organisation, structure and management of the system of occupational education and training.

According to the Law on VET, the occupational education and training include:

- *Secondary VET* as part of the secondary educational system whereby the students acquire occupational qualifications of first, second and third degree.
- *Post-secondary VET* as part of the educational system, which provides for acquiring fourth level of qualification for persons who completed secondary school.

### 3.2. SWOT Analysis

Table 4. SWOT Analysis for primary and secondary education



<p><b><u>Strengths</u></b></p> <ul style="list-style-type: none"> <li>- Government programme puts an increased focus on education reform<sup>3</sup></li> <li>- Basic infrastructure is in place (good school network)</li> <li>- Primary and secondary education is now compulsory</li> <li>- High enrolment in primary education</li> <li>- Legislation and strategic documents are well developed</li> <li>- Some parts of the education system have been significantly improved through donor support<sup>4</sup></li> </ul>	<p><b><u>Weaknesses</u></b></p> <ul style="list-style-type: none"> <li>- Low quality of the education system (poor results on international assessments)</li> <li>- Insufficient resources, in particular for maintenance and capital investments</li> <li>- Mismatch between supply of skills (through VET programmes) and labour demand</li> <li>- Outdated curricula and teaching methods</li> <li>- Low level of institutional and human resources capacity of the Ministry of Education and Science and its bodies</li> <li>- Low level education in some groups (minorities, rural population)</li> <li>- Systems for training and professional development of teachers do not exist</li> <li>- National qualifications framework not yet developed</li> </ul>
<p><b><u>Opportunities</u></b></p> <ul style="list-style-type: none"> <li>- Use of IPA funds (components I and IV) to further develop the educational system</li> <li>- Introduction of ICTs through the project “Computer for all students”</li> <li>- VET programmes redesigned to meet the needs of businesses</li> <li>- Systems developed to motivate teachers</li> <li>- Exploitation of synergies and complementarities between different policies, including social, employment and education policy, defined in the Strategic Coherence Framework 2007-2013<sup>5</sup></li> </ul>	<p><b><u>Threats</u></b></p> <ul style="list-style-type: none"> <li>- Failure to implement strategic documents</li> <li>- No additional financial resources</li> <li>- Procurement of computers is not complemented with training of teachers and changes in teaching methods</li> <li>- Continued slow implementation of the law on VET</li> <li>- Aging of the population and expected decline in the number of school-aged population</li> <li>- Problems could arise from the decentralized system of education, which will start in 2007</li> </ul>

## 4. Consolidated Findings

<sup>3</sup> Government Programme (2006-2010) submitted to the Parliament of the Republic of Macedonia on 14.08.2006 (pp. 2-3)

<sup>4</sup> E.g. CARDS VET programmes

<sup>5</sup> Strategic Coherence Framework 2007-2013



The analysis in the previous chapters identified and described the developments in the areas of primary and secondary education. Furthermore, the key challenges that these sector face in the process of accession to the EU (and meeting the Copenhagen criteria<sup>6</sup>), have been discussed. This chapter summarizes the findings of the analysis, and the following chapter contains policy proposals on how to address these challenges.

**One of the biggest problems, in terms of strengthening the country's human capital is the low quantity and quality of education.** Enrolment rates are relatively high in primary education, but decline in secondary education. On the other hand, the quality of programmes is low in both primary and secondary, which is proven by very weak performance of Macedonian students in international assessments. Teaching methods and curricula are largely outdated.

**The focus of policy makers and the relevance attached to education can be seen through the amount of funds provided for this sector.** Macedonia spends less funds on education than the EU countries, which to some extent determines the poor performance of students<sup>7</sup>. The lack for financial resources for teaching materials, supplies and capital projects is of a great concern. The share of teachers' salaries in the total budget has increased in recent years, which in turn has decreased the share of the other categories.

**The structure of the secondary education is similar as to some other EU countries, but what is taught is not aligned with market demands.** Macedonian secondary education comprises a dual system of general secondary education (gymnasium) and VET. The VET programmes have not been reformed (mainly due to

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<sup>6</sup> See Analytical Report to the Opinion for application for membership (COM (2005) 562).

<sup>7</sup> See World Bank (2007), data sources are Ministry of Finance for Macedonia, and OECD Education at a glance, for the other countries.



lack of resources), and skills provided in VET do not meet the labour demand of the market. There is little collaboration between businesses and VET schools.

**The capacity of the key institutions concerning primary and secondary education policy is weak.** Policies to motivate teachers are almost non-existent. The Ministry of education has not developed a system for continuous training of teachers, nor a system for professional advancement of teachers exist. The Centre for VET, which is to play a key role in development of appropriate VET programmes is not fully functional yet.

**Use of ICT is not at a sufficient level, however there are ongoing projects to increase the usage.** Primary and secondary schools only recently started to introduce ICTs in the education process. These activities were mainly donor driven in the past (assistance from China of 5,000 computers, and free internet provided to all schools through a USAID project, were the largest projects in this area), but now the government has shown determination to lead this process.

Several strategic documents have been developed and important legislative changes have been made in recent years, however, it is too early to assess the implementation of these. The National Programme for Education Development is a key document in this area, however the implementation requires both additional financial resources and strengthening of administrative capacity (both at central and local level).

## **5. Consolidated Conclusions**

This chapter aims to present the key and most urgent recommendations to policy makers, based on the above mentioned findings as well as on the key demands of the EU accession process. The analytical and progress reports of the European Commission have noted the key areas that need to be addressed in the medium-term, including: to continue the modernization efforts, to provide sufficient financing, in order to



create a modern educational system in line with EU employment and social policies<sup>8</sup>. The acquis in the area of education is to some extent limited (most competencies lie within the Member States), however, education plays a key role in meeting the other Copenhagen criteria, that is, the establishment of a functioning market economy, as well as the capacity to cope with competitive pressure and market forces within the Union<sup>9</sup>. The recommendations present below also draw on the conclusions of key strategic documents related to economic growth and development.

**Primary and secondary education require additional financial resources.** Public spending on education was increased with the 2007 budget by 16.2% compared to the preceding year. This positive trend should continue in order to reach a similar level of education spending relative to GDP as the EU countries. However, it is essential that resources are focused on targeted areas, which will ensure effective use of resources.

**Implementation of the laws and strategies related to education should continue.** The National Programme for Development of Education, and the accompanying programmatic documents should be implemented, and for that purpose action plans need to be developed which would facilitate the implementation. The implementation will require both strong political will and sufficient administrative capacity.

The accession process requires actions in those areas covered by the acquis such as: participation in Community programmes, education of children of migrant workers and development of quality education. The shortcomings identified in the European Commission progress reports, as well as the priorities of the European Partnership, should be addressed with urgency.

**To develop human capital, overall enrolment rates should increase.** The Government should take steps towards improving enrolment rates (such as the recent introduction of compulsory secondary education) should continue, and particular focus should be made on groups such as Roma minority, rural population etc.

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<sup>8</sup> See Analytical report to the Opinion for membership (COM (2005) 562).

<sup>9</sup> See Conclusions of Copenhagen European Council of 1993.



**Much stronger focus should be put on VET, as it especially relevant for businesses and for developing entrepreneurship.** VET programmes are of crucial importance for producing a labour force with appropriate skills for number of professions. VET schools must collaborate more closely with the businesses in order to better identify the market needs and develop curricula that would address these needs. A national framework of qualifications, harmonised with the European framework of qualifications, should be prepared.

## **6. Sufficiency, Reliability and Accuracy of Data**

Data availability is a big challenge in this sector. The data gathering and management systems are poor and underdeveloped (not using information technologies). Thus, the availability of data for the sector is limited, and some potential inaccuracies might exist. The Ministry of education, as the lead policy maker in this area, needs to put a greater focus on upgrading the data management systems, as good data is essential for making right policy decisions.





**Support to the Preparation of a  
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**A Sida-funded project in cooperation with the  
Ministry of Environment and Physical Planning,  
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**Sub-Sector Analysis Report  
Higher Education**

**Borko Handziski**

July 2007



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Table 1. Percent of total enrollments in private universities for Macedonia, the EU15, and recent EU entrants



## 1. Executive Summary

Sustainable development in the modern global economy can only be achieved through building a knowledge-based society. This is a goal to be pursued by both developed and developing countries. In 2002, the European Union promoted the Lisbon Strategy and its ultimate goal to become the world's most competitive knowledge-based economy by 2010. Macedonia is on the path to join the European Union, and it therefore needs to pursue the same goals in order to achieve convergence with the economy of the EU.

The obligations in the *acquis* as regards higher education are not very extensive, and the analytical report of the European Commission states that the country “should not have major difficulties in applying the *acquis* in this field in the medium term”. However, the report also states that “considerable efforts will be necessary to create a modern educational system in line with EU employment and social policies”. Thus, higher education is an important factor in achieving economic convergence between Macedonia and the European Union.

Higher education plays a crucial role in building up the human capital of the country and increasing the knowledge base of the population. This analysis focuses on the higher education sector, and in the following chapter it is presented: an overview of the Macedonian higher education system, government policies in this area, a SWOT analysis of the higher education, and consolidated finds and conclusions in this area. The conclusions of this analysis point out to several policy areas which require urgent attention. First of all, the biggest concern for the country should be the low level of enrolment in higher education. To achieve higher enrolment rates, policy makers should promote private provision of higher education, and should improve the quality of state university. One way to ensure good quality of programmes is to fully implement the Bologna process. Last but not least, larger focus should be put on the R&D role of higher education institutions. At present, these institutions lack the necessary human and financial resources, and R&D can have a huge impact on economic growth.

## 2. Scope and Results of the Work Conducted at Initial Phase

### 2.1. Overview of tertiary education

Despite the long tradition of higher education, and the relatively high focus on education in the former socialist system, the share of population is relatively low. About 23% of the population (aged 25-64) of the EU-15 had completed



(4-year) higher education<sup>10</sup>, compared to 9.4% in Macedonia<sup>11</sup>. Furthermore, in the last decade (196-2005), the share of the population with university degree increased by only 1.5 percentage points. This means, it would take some 90 years for Macedonia's labour force to equal the share with tertiary education that the labor force of the EU15 now has. It should be noted that the EU itself has embarked upon a number of reforms to increase the knowledge-base of its labour force (as outlined in the Lisbon strategy), so its share of the labour force with a university degree is expected to increase in the future.

#### *2.1.1. The System of Higher Education*

Until 2001, higher education was provided solely by state universities. The state universities are financed from the central budget and have enjoyed a high level of autonomy. Apart from the two state universities (St. Cyrill and Methodius in Skopje and St. Kliment in Bitola), which were established before the country's independence, a state university (in Albanian language) was established in Tetovo (Western Macedonia) in 2003, and the government recently announced the establishment of a fourth university in Stip (Eastern Macedonia). In 2005, the two state universities in Skopje and Bitola had some 46,000 students, data are not available on enrolments in the Tetovo state university. The number of students increased only slightly, to 47,000, in 2006. The number of students enrolled in first year (new students) was also modest, 12,811, compared to 12,077 in 2005.

The law on higher education allows for private provision of higher education. Enrolments in private universities are still limited, compared to EU countries (both EU15 and New Member States). However, since 2003 there is a strong growth trend in private university enrolments, and new higher education institutions have recently been established, so this trend is expected to

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<sup>10</sup> See OECD Education at a glance 2005

<sup>11</sup> State Statistics Office, Labour Force Survey.



continue. The increase in total student enrolment in the past two years is mostly driven by the private universities.

Table 1. Percent of total enrollments in private universities for Macedonia, the EU15, and recent EU entrants

Comparator	Tertiary type B*	Tertiary type A*
Macedonia (2005)	8.1	
EU15 (2003)	23.3	11.4
New Member States (2003)	23.6	11.8

**Source:** Macedonia: State Statistics Office; EU15 and recent EU entrants: OECD, *Education at a Glance, 2005*, Tables D5.1 and D5.2.

\* Tertiary type A programs are university programs; tertiary type B, other types of post-secondary programs, such as vocational-technical programs.

Since 2001, a number of private universities have opened, with South East European University in Tetovo being by far the largest one, with some 7,000 students in 2006. Even though the university is private, the establishment was financed by several donors, including the European Union. Another half a dozen private universities have also been established, which have more than 3,000 students enrolled<sup>12</sup>.

The establishment of private universities brought competition into the area of higher education, and had positive effects on the quality of services. Some of the private universities have co-operation agreements with foreign universities, thus bring modern teaching methods and materials. The services offered by these new institutions forced state universities to modernize their programmes, as about one half of their financing comes from tuition and other student fees<sup>13</sup>.

### 2.1.2. Key Actors

<sup>12</sup> Data on enrolments in private universities in official publications is only partial, information was collected from university websites.

<sup>13</sup> Ministry of finance, central government budget 2006.



**The Ministry of Education and Science** has a shared role with the universities' management in developing higher education policies. It is mandated to provide the Government of the Republic of Macedonia with opinion on the proposal for establishing higher educational institutions. It has a key role to play in a sense that it is responsible for the higher education budget. The ministry also is responsible for international cooperation, and validation of foreign diplomas. In addition, the ministry has a key role to play in data collection and management, however this very important activity is marginalized, despite the huge importance of detailed and accurate data for policy making. The data collection and publication is shared jointly with the State Statistics Office. The inaccuracies as regards data on higher education are so large, that the publication on enrolments in universities completely disregards the recently established Tetovo state university and at least two other private universities. The ministry appoints members in the Council for Development and Financing of Higher Education as well as in the Board for Accreditation and Evaluation of Higher Education.

**The State Educational Inspectorate** is a body within the Ministry of Education and Science which supervises the application of laws, other regulations and general acts relating to higher education and scientific institutions. Its mandate includes supervision over: the quality of conditions to perform the activity, the procedure for election of educational, teaching, scholarly, and associate titles. In addition, it monitors the enrolment process for admission of students, accommodation in students' dormitories, inspects schools' records and documentation, oversees the application of the rules on the number of teachers and associates, the procedures for adoption of curricula etc. The long list of responsibilities of this body does not correspond to the administrative capacity of the institution.

**The Council for Development and Financing of Higher Education Activities** is an independent advisory body composed of 15 members, of whom 8 are proposed by the inter-university conference and 7 by the Ministry



of Education and Science. It holds powers for deciding and distribution of resources for financing of Universities and higher education activities, for setting up conditions and criteria for financing the activities at Universities and higher education institutions, for the international cooperation, publishing and IT activities, decides on different investments, maintaining the existing and provision of new equipment, grants resources for purchase of professional literature, decides on scholarship system and crediting of students, establishes measures and criteria for talented students, for co-financing of studies and other fees of the students, etc.

**The Board for Accreditation and Evaluation in Higher Education** is an independent body which is responsible to oversee the system of quality assurance and evaluation in the higher education, which includes: granting accreditations, approval and recognition for conducting higher education activities in accordance with law, evaluating the quality of work in terms of management, financing of academic and other activities and priorities.

**The Council and the ministry should put a strong focus in the medium-term on the implementation of the Bologna Process.** The Bologna Process requires an establishment of a system for higher education based on three cycles. Such a system of higher education would require that undergraduate studies be realised within the range of 180 and 240 credits, which equals study programmes of 3 and 4-year duration. The graduate (master's studies) would be in the range between 90 and 120 credits, i.e. with duration between 1.5 and 2 years, depending on the profile. The doctoral studies would last 3 years requiring 180 credits.

The attempt to implement the Bologna principles relating to the reforms of the higher educational structures, primarily in terms of under-graduate and graduate studies, has triggered a heated debate and reactions in the academic circles. At the majority of Universities, undergraduate studies last 8 semesters or 4 academic years; at some Faculties they last 10 semesters or 5



years (technical sciences, for example) or 6 years (medical school). Upon successful completion of the studies, students become eligible to an academic degree of a graduated student in a given area. The practice has shown that higher education institutions are sometimes hesitant to accept the model of three-year undergraduate studies, i.e. the model 3+2+3. Most of the Faculties within the State Universities have preserved the duration of studies of 4 years, and sometimes 5 years, while only a small portion introduced a three-year programme.

### *2.1.3. Governmental Goals and Policies*

On September 19, 2003, Republic of Macedonia became a full-fledged member of the European family of countries that have committed to implement the Bologna Process recommendations and share the common determination for creating a united European higher education area. In the following period, the prime responsibility and the main goal of the Ministry for Education and Science will be to support, foster and facilitate the implementation of the principles and recommendations of the Bologna Process in the higher education in the Republic of Macedonia. The Republic of Macedonia and the Ministry for Education and Science, have committed to adopt this policy by 2010 in order to enable effectuation of the following goals:

- Adoption of a system of easily distinguishable and comparable degrees and introduction of a diploma supplement for provision of employment flux for European citizens as well as international competitiveness for the European higher educational system. The diploma supplement should provide description of the nature, degree, context, contents and status of the studies that were completed by the student.
- Adoption of a system based on three main cycles, namely, undergraduate, graduate and doctoral studies. The access to the second cycle is conditioned by successful completion of the first cycle of studies that must last 3 years at least. The degree obtained after the three year period is considered as a degree recognised by the





European labour market. The second cycle leads to master's studies, while the third leads to doctoral studies.

- Introduction of a credit system as a means for promotion of broadest student mobility and exchange. Credits can be even obtained out from the higher education institutions including the life long education, under the condition that they are recognized by the chosen University.
- Promotion of mobility by surpassing the obstacles for free movement of students, teachers, researchers and administrative personnel.
- Increasing the mobility at doctoral and post-doctoral level and strengthening the institutional cooperation within the doctoral studies.

The new government, which was inaugurated in August 2006, presented to Parliament in September a comprehensive work programme in which the main emphasis was put on achieving higher economic growth. The programme has a strong focus on education, and higher education in particular, which is seen as one of the key pillars for sustainable growth.

*“High quality education is the basic impetus for the society and the economic development. Only through strong intellectual development can Macedonia become equal to the other European countries, and the Macedonian workforce can increase its competitiveness. A successful educational system should continuously combine the central educational policy, the decentralized administration, and the efficient management of schools and other educational institutions.”*

- Government work programme 2006-2010

Most of the policy actions envisaged in the programme are in the area of higher education, including:

- Increase of the public funds for education to 5% percent of GDP, comparable to the EU and OECD average.
- Renovation of student residence dormitories in order to create decent living conditions for the students.



- Construction of a new dormitory in Skopje.
- Free internet access in the dormitories.
- Modernisation of the school syllabus, especially for secondary and higher education, in order to respond to the demands of the modern market economy.
- Support for the establishment of private high schools and universities.
- Attract world-renown universities to open branches in Macedonia.
- Establish a new state university in the eastern part of Macedonia with a main campus in Štip, and faculties in other cities in eastern Macedonia (Strumica, Kočani, Sveti Nikole, etc.). The University should consist of six faculties: Faculty of IT, Faculty of Contemporary Music, Faculty of Agricultural Sciences, Faculty of Economics (departments: health management, international economy, agricultural management, business administration), Faculty of Food Processing Technology, Higher School of Healthcare and Faculty of Law.
- Introduction of a method of project financing for higher education, in order to transform the universities into scientific centres, as is in many other countries in the world.
- Closer connection between the domestic faculties and respective foreign faculties and institutes through joint activities such as: international projects, student and professor exchanges, workshops, seminars and congresses.
- Assessment and ranking of higher education institutions by an independent agency (possibly foreign) in order to stimulate the competition of ideas and syllabi.

These policy actions, if to be implemented, should strongly improve the situation in the higher education sector, in particular the quantity and quality of education. However, these policies must be wisely implemented and take into consideration all relevant factors. Increased spending on higher education should mean better results, but other constraints, such as: availability, quality and motivation of teaching staff, affordability of education (having in mind the



high poverty rates) must be taken into consideration. For example, introducing IT in teaching methods will not deliver results if 90% of the students do not have computers at home to do the assigned tasks.

## *2.2. Higher education and sustainability*

Education is a key pillar for increasing the human capital of the country, and in turn for achieving sustainable development. Primary and secondary education provides students with basic skills required in a modern economy (reading, problem solving, critical thinking) and serve as the basis for further educational attainment. Higher education, on the other hand, builds up on these basic skills, upgrades them, and develops specific skills in a number of areas. In that regard, the quantity and quality of university graduates directly affects the structure of the economy, its productivity and competitiveness. In a modern knowledge-based economy, higher education has an even larger role to play, as the new environment assumes larger level of knowledge in creating value added. It means that natural resources and unskilled labour become less important and create less value added; the drivers of growth are capital and skill intensive industries and services.

Another important role that universities play in a number of countries is that they are the centres of research and development. This case is also true for Macedonia, however the lack of resources and human capacity is an impediment, and the results achieved from these research centres have a very marginal impact on the economy. The EU is also putting a larger focus on this role of universities; with the communiqué of the Berlin Conference (2003), the European ministers committed themselves to strive for synergies between development of “the European higher education space” and the “European research space.”

The Macedonian higher education system must respond to the needs of the modern economy and produce a labour force which has the required skills to



operate in this new environment. Otherwise, it would become the key constraint for sustainable development.

#### *2.2.1. Basic Elements of Sustainability*

To be able to respond to the demands of the market, the higher education system itself must be sustainable. This means that autonomy should be sustained, which is already the case in Macedonia as it is granted in the Constitution. Financial resources should be guaranteed, and spending on higher education (which is already similar is in EU countries, as share of total education expenditures) should be maintained. Competition, as in most sectors, is key for increasing quality. Establishment of private universities should be promoted, however, the minimum quality of services should be maintained otherwise the system will not be sustainable. The legal and institutional setup should be efficient and stable, and focus should be put on higher use of information technology in higher education.

### **2.3. Sustainable Development in the European and National Documents**

#### *European Documents for Sustainable Development*

Certainly, the most important European document is the Bologna Declaration of 1999, which was signed by the Republic of Macedonia in 2003 as a full-fledged member of the European family of countries committed to follow and effectuate the recommendations from this document. The Bologna process in fact paves the way for sustainability and development of the higher education. The actual steps to achieve the vision of this process are defined in the related Governmental goals and policies.

The programmes of the EU (Tempus, the sixth framework programme), COST, the bilateral cooperation and others are of great importance for the Republic of Macedonia, as instruments to increase the mobility of students and employees. In 2005, Republic of Macedonia signed a document for



membership in CEEPUS network, which provides mobility for students and academia through out the higher educational institutions of the Central and Eastern European countries.

In the period 1996-2003, 68 projects, 19 compact measures and more than 260 scholarships for mobility were approved with a total budget of €16 million. The first phase of the TEMPUS project was focused on development of the European dimension of the higher education and restructuring of the course programmes for technical and engineering sciences with the aim to more efficiently address the needs of the market economy. Within the TEMPUS 2, special attention was given to the national reforms of the higher education by including the issues of continuous education, institutional development and IT. The latest TEMPUS 3 phase (2000-2006) deals with the actual needs of each particular country through new kinds of projects, namely, institution building projects, networking projects and mobility projects.

### **3. Scope and Results of Analysis and Assessment**

#### *3.1. Review of Existing Documents (Strategies, Laws and other relevant documents)*

##### National Documents

The following review presents the documents relevant to the education process, including higher education:

- National Programme for Development of the Education in Republic of Macedonia (2005-2015);
- Programme for Development of Higher Education;
- Programme for Quality Assurance and Control in the Education;
- Programme for Institutional Support to the Reforms in the Education;



- Programme for Development of Information and Communications Technologies (ICT) in education;
- Strategy for Development of the University „Ss Cyril and Methodius”(2004-2010).

#### a) Strategies-programmes

In 2006, the National Programme for Development of the Education in the Republic of Macedonia (2005-2015) was adopted. This strategy envisages expansion in the enrolment of youth and adults in higher education programmes. With 2,212 university students per 100,000 inhabitants, the Republic of Macedonia is ranked at the bottom among the countries of Europe. In the period until 2015, the Ministry of Education and Science is to embark on reforms to foster the enrolment in higher education, with the target of 3,500 students per 100,000 inhabitants, a level similar to that of the developed European countries. In that regard, the plan is to take initiatives for enhancing the attractiveness and efficiency of the higher education, along with activities to improve the capacities of the university network, support private initiatives in the higher education, finalise the legal framework, define the norms and standards for establishment of institutions for higher education, invigorate the international cooperation and encourage mobility of students and teachers at national and international levels. Particular attention will be paid to modernisation of the educational process in the higher education and application of ICT in the teaching process.

#### b) Other relevant documents

Education is an overarching area with a strong impact on economic growth and development, thus it is part all key strategic documents of the Government that are focused on economic development. Higher education, in particular, is the main pillar for developing a knowledge-based society, which is the only alternative for achieving sustainable development in the modern global economy. In this regard, Macedonia will have to follow EU's objective



to become the most competitive knowledge-based economy in the world. Of course, the starting levels are quite different, however, Macedonian strategic policy documents should mirror the policies that the EU is undertaking or planning to implement.

The **Pre-Accession Economic Programme** (PEP) points out to the need to increase financing for education; public spending on education has been maintained around 3.7% of GDP, much lower than most EU comparators. The PEP, which is a three year strategy identifies the following key priorities in the sector: (1) to link the education process with market demands, (2) to develop life-long learning, (3) to make education a key pillar in developing a knowledge-based economy. All three priorities are closely linked to higher education. University programmes should develop skills that are needed on the markets, and in particular skills that are needed for functioning in a modern, knowledge-based economy. Having in mind the low level of educational attainment of the Macedonian labour force, focusing on life-long learning is a key for relatively fast acquisition of skills.

The **National Development Plan**, which is another three-year document adopted in February 2007, points out to similar short-comings and priorities related to education. This strategy links the education system to Research & Development, an area which has been marginalized in Macedonia for decades (R&D spending amounts to only 0.2% of GDP, whereas the Lisbon Strategy aims to bring R&D spending to 3% in the countries of the EU by 2010. R&D is closely linked to education, as most public R&D work is done in university research centres, and to have R&D in the private sector, the education system (higher education) must develop well trained graduates and scientists. University centres have been out of the focus of policy makers, have receives very little funds, and their equipment is largely outdate. There have been some improvements in the recent period mainly coming from donor support (e.g. work on the establishment of an Innovation Relay Centre is being financed by Norway).



The **Strategic Coherence Framework (SCF)** notes that there is low quality and quantity of education in the country. The average years of schooling for the Macedonian population aged 25-64 is only 10.3 years, compared to 11.8 years in the EU-15 and 12 years in the New Member States<sup>14</sup>. Furthermore, the expected years of schooling for a Macedonian 5-year old is only 13.4 years, compared to 17.6 years for the EU-15 and 16.6 years for the NMS. The SCF also notes the discrepancies in education attained among the various ethnic groups in the country. The level of education is particularly low for the Roma and Albanian minorities, particularly for higher education (only 5% of university students were Albanians in 2004, whereas the Albanian population represents some 25% of the total).

### c) Laws

The Law on Higher Education covers all aspects of higher education and comprises a number of pieces of implementing legislation. Although the law establishes a good framework for higher education, a number of areas need to be improved in order to comply with the Bologna Declaration.

## 3.2. SWOT Analysis

### SWOT Analysis for Macedonia's higher education system

<b><u>Strengths</u></b>	<b><u>Weaknesses</u></b>
<ul style="list-style-type: none"><li>- Positive trend of increased enrolment in university programmes (particularly private universities)</li><li>- Established institutional framework</li><li>- Commitment of the Government<sup>15</sup></li><li>- Well developed network of higher education institutions across the entire country</li><li>- Several private universities established, which results in higher</li></ul>	<ul style="list-style-type: none"><li>- Implementing legislation for number of laws is lacking, which impedes implementation</li><li>- National framework of qualifications compatible with the comprehensive European framework for higher education qualifications not yet developed</li><li>- Low level of institutional and human resources capacity of the Ministry of</li></ul>

<sup>14</sup> Source: Public Expenditure and Institutional Review (World Bank, 2007)

<sup>15</sup> Government Programme (2006-2010) submitted to the National Parliament of the Republic of Macedonia on 14.08.2006 (pp. 2-3)





<p>competition in the sector</p> <ul style="list-style-type: none"> <li>- State universities are autonomous</li> <li>- Membership of the Republic of Macedonia in the Bologna Process</li> <li>- History of participation in TEMPUS programmes</li> <li>- Basic ICT infrastructure in place</li> <li>- Budget financing for higher education has been gradually but continuously increasing in the past 5 years</li> </ul>	<p>Education and Science and its bodies</p> <ul style="list-style-type: none"> <li>- Low quality signals between labour market and schooling system causing mismatch between demanded and supplied human capital<sup>16</sup></li> <li>- Insufficient use of ICT in the education process</li> </ul>
<p><b><u>Opportunities</u></b></p> <ul style="list-style-type: none"> <li>- Bologna Process fully implemented and higher education system of three cycles established</li> <li>- Use of IPA funds (components I and IV) to further develop the educational system</li> <li>- Possibility to participate in Community Programmes of the European Union</li> <li>- Exploitation of synergies and complementarities between different policies, including social, employment and education policy, defined in the Strategic Coherence Framework 2007-2013<sup>17</sup></li> </ul>	<p><b><u>Threats</u></b></p> <ul style="list-style-type: none"> <li>- Implementation of reforms (as regards the Bologna Process) continues to move slow</li> <li>- Potential benefits from participation in Community Programmes not utilized</li> <li>- Modernization of programmes and curricula gets out of focus</li> <li>- Over-establishment of higher education institutions results in overall low quality of education</li> <li>- Brain drain of both teaching staff and best performing students</li> <li>- Aging of the population and expected decline in the number of school-aged population</li> </ul>

## 4. Consolidated Findings

Higher education is a key determinant of the human capital in the country, thus it is a key pillar for sustainable development. It is also important for reaching convergence with the economy of the European Union. Although, education (and especially higher education) is an area mostly governed by Member States, and not by the *acquis*, its effects on economic development are essential for meeting the economic criteria for membership.

<sup>16</sup> Mojsoska-Blazevski, N. (2006) The Public Employment, Education and Labour Markets in Macedonia, pp. 59.

<sup>17</sup> Strategic Coherence Framework 2007-2013, sections 6.2 and 6.4, pp. 11-12.



The analysis provided in the previous chapter has identified a number of positive developments as well as shortcomings concerning higher education.

The positive developments include:

- recent increase of enrolment which is mainly driven by private universities.
- work on implementation of the Bologna Process is ongoing
- ongoing reforms to improve teaching programmes and methods
- preparations have begun for participation in Community programmes (7<sup>th</sup> Framework research programme)

Despite these positive developments, the shortcomings need to be properly assessed and addressed with great urgency, having in mind the importance of this sector for achieving faster and sustainable growth.

The biggest concern is the very low level of education attainment of the labour force, particularly low share of the population with university degree. This will be probably one of the biggest constraints to move to knowledge-based economy and attain higher growth rates. Numerous actions have been taken to increase enrolments, such as promotion of private provision, and initiative to open new state university. However, other factors that determine higher education enrolments should be considered, such as cost of education, job opportunities after graduation etc.

The quality of higher education is as important, if not more, than the quantity. The present situation shows that teaching programmes and materials are outdated (some subjects are still taught with books from former Yugoslavia). The reforms to implement the Bologna Process have started, but the pace of implementation is not at a satisfactory level. There is a sense of inertia and obstruction towards change within the academia.

The existing legal framework (Law on Higher Education) is relatively well developed and comprehensive. However, further changes are needed, as it is stated in the last progress report of the European Commission. Furthermore, a number of pieces of implementing legislation are lacking, which would enable effective implementation of the primary legislation. The Republic of



Macedonia lacks a national framework of qualifications that should be harmonised with the European framework of qualifications for life-long learning. The introduction of a diploma supplement has not been completed, it is partially applied by some faculties and remains to be standardised.

The basic ICT infrastructure is in place, however, its application in the educational and research processes remains unsatisfactory (especially at the state universities). The financial and human capacities for scientific research work have been insignificant for number of years. R&D can have a large impact on economic growth, and is one of the key pillars of EU's Lisbon Strategy for becoming the most competitive knowledge-based economy in the world.

## **5. Consolidated Conclusions**

The consolidate findings of the analysis on the higher education sector point out to a number of positive developments as well as shortcomings which should be urgently addressed by the Government. First of all, it is important that the positive trends are further reinforced, and immediate actions are undertaken to address the shortcomings.

In order to increase the level of enrolment, the government should continue to promote the establishment of private institutions in the sector, as it would increase the accessibility and quality of education. Furthermore, it should provide additional resources to state universities, especially for capital investments, in order to increase the capacity for new students. This is also linked to the investment in student dormitories, which has been already identified as an immediate action in the Government programme 2006-2010. The investments in student dormitories are badly needed, but they should also be followed with a depolitisation of the process of granting accommodation to students (which was often the case in the past).

Unemployment rate of people with university degree is about one half of the average unemployment rate<sup>18</sup>. Furthermore, salaries of university graduates

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<sup>18</sup> Labour Force Survey.



are higher than the average salary in the country<sup>19</sup>. This should be a strong incentive to promote higher enrolment of students in university programmes. The government should also work on improving the overall business climate, which would create even more job opportunities for university graduates.

The work on improving the legislation is already in progress (new law on higher education will go in a two-phase process in Parliament). As noted in the EC's progress reports, the legislation needs to be fully aligned with the acquis, but implementation is what matters at the end. In this regard, the key institutions, the ministry, the council and universities should speed up the implementation of the Bologna Process. Furthermore, it is of great importance for mobility to introduce the diploma supplement.

Last but not least, the research and development function of (state) universities should be put back into the focus of policy makers. The research centres should be provided with additional resources (equipment and staff). More importantly, the research work should be linked to the needs of the businesses, thus collaboration channels between academia and the private sector need be strengthened.

## **6. Sufficiency, Reliability and Accuracy of Data**

As it is the case in the primary and secondary education, data availability is a big challenge in this sector. The data gathering and management systems are poor and underdeveloped (not using information technologies). Thus, the availability of data for the sector is limited, and some potential inaccuracies might exist. The latest official publications of the State Statistics Office note that some state universities and private universities have not supplied data even though it is a requirement by the law. The Ministry of education, as the lead policy maker in this area, needs to put a greater focus on upgrading the data management systems, as good data is essential for making right policy decisions. On the other hand, the State Education Inspectorate should take actions as prescribed in the law in the case when institutions do not report data as required.

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<sup>19</sup> Source: State Statistics Office.

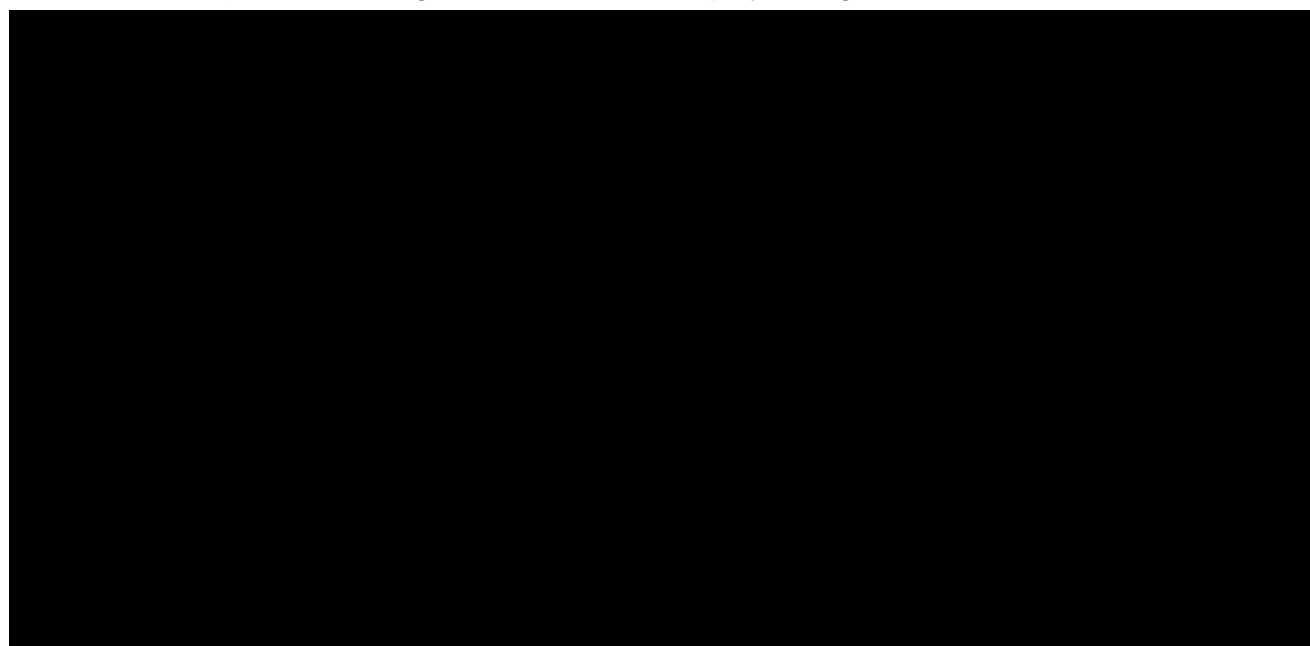


## **Foreign direct investments - Employment**

Attracting foreign direct investments is a key aspect of the economic policy not only for the developing countries but also for the developed industrialized economies. New trends have reinforced the importance of private foreign direct investments as they are seen to complement scarce domestic financial resources. As a result of the move towards more neo-liberal policies, the state's role has shifted from an active economic player with productive activities to a provider of proper environment for doing business and of social risk insurance.

Foreign direct investments are currently seen as a promoter of economic growth, and are expected to modernize the production process through transfer of technology and know how, to increase domestic productivity improving the international competitiveness, and reduce unemployment. FDI should facilitate integration in to the world market, make the country products available to the rest of the world and create forward and backward linkages with the domestic economy. By doing so, it will have the multiplier effect on the whole economy and can be the main element and contributor to the economic growth.

However, on the other side, some economists argue that FDI can led to increased dependence on foreign interest (especially if there is a concentration of investments by one country) which is difficult to control. Further more it can lead to uncontrolled competition among countries and regions in terms of offering fiscal benefits and incentives to attract investments. In addition, most of the investments (except green field investments), can have negative effect on the employment growth.



Source: UNCTAD (United Nations conference on trade and development)



Looking primarily at the effects of FDI on the level of employment, it is clear that be identified circumstances under which it has a significant positive impact (table 1). FDI supplement domestic investments and tend to increase the labor demand. If FDI is concentrated in labor intensive industries, this labor demand increase will be even higher. Furthermore, FDI can also lead to increased employment among local firms as a result of the backward or forward linkages and because of the possible spillover effect to domestic firms. In addition, if foreign investors make strong long term commitment it can provide stable employment.

However, it is also possible to have very little (or even negative) effects on employment. It may displace local investments, so that the effect on jobs is lower than the number directly employed by foreign affiliates. Where FDI involves the acquisition of local firms rather than new plants, there is no initial increase in employment as usually the foreign owner subsequently rationalizes the firm, employment is even likely to decrease. Often, FDI is concentrated in capital-intensive industries so that jobs created per dollar invested are low.

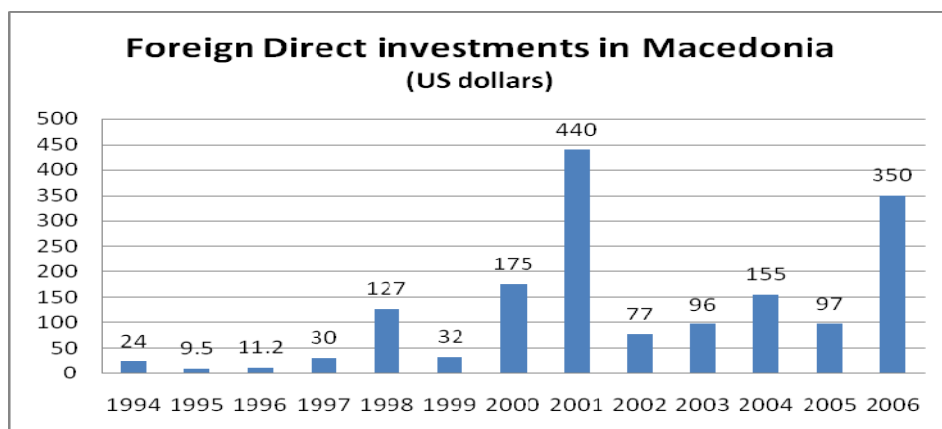
#### Objective

Based on the theoretical assumptions mentioned above about the positive and negative effects of FDI on employment and wage growth, we will try to analyze the FDI's in the Republic of Macedonia during the transition period, to see whether there were positive or negative effect on the employment growth and wages in Macedonia. The analysis will consist of four steps: 1) Analysis of the FDIs in Macedonia and comparisons of it with some countries in the region, 2) Analysis of the FDI by sectors, 3) Analysis of the employment growth in the sectors with largest FDI inflow, 4) Analysis of the wage growth in the sectors with largest FDI inflow and 5) Conclusion

### Foreign Direct investments in the Republic of Macedonia

Republic of Macedonia has failed to attract significant amount of foreign direct investments, which can be seen from the chart 1. If we exclude years 2001 and 2006 (years during which the main natural monopolies were sold - Telecom and the Electricity power company), we can see that the amounts of FDI during the transition period were quite small. Furthermore, it is important to be mentioned that most of the FDI are privatization related, showing that if the country keep up with the same amount of non-privatization related FDI in the future, the inflow might be even much lower.

Chart 1



Source: National bank of the Republic of Macedonia

In order to attract foreign direct investments, the Government of the Republic of Macedonia has created "Programme for attracting foreign direct investments" which is based on the OECD Index of investment reforms as a key benchmark tool for



comparison of the countries in the region. The programme is focused on the following reforms areas:

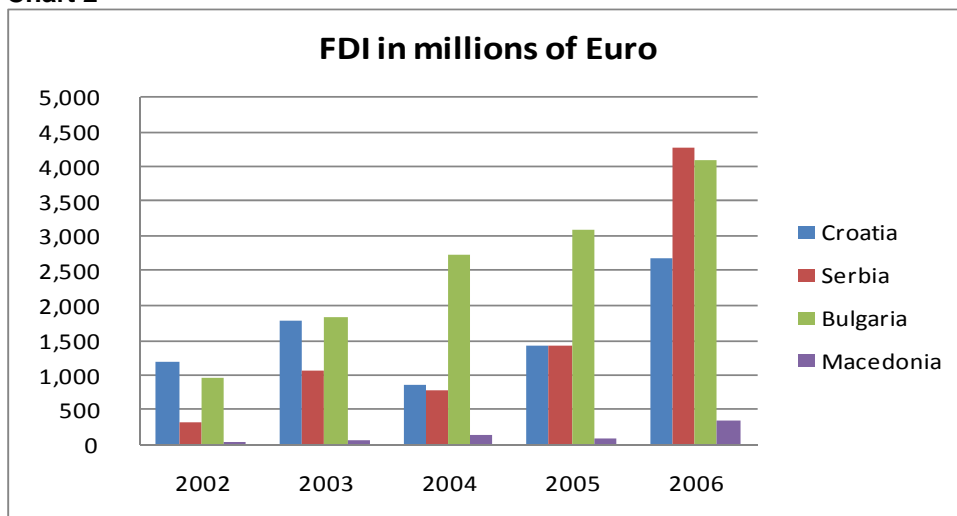
1. Investment policy;
2. Investment promotion;
3. Tax policy
4. Fight against corruption;
5. Competition protection;
6. Trade policy;
7. Regulatory reform;
8. Human resources;
9. Corporate management;
10. SMEs policy.

Even though it is too early to make any conclusions, some positive results are already present. Namely, some big investors are already in Macedonia, such as Johnson Controls (Auto industry), Societe General (Banking) and Agrocort (Agriculture and trade). In addition, there is an announcement of some other big world players to come to Macedonia like: Johnson Matthey (Auto industry).

#### **Comparison of FDI in Macedonia with some countries in the region**

Comparison of the amount of FDIs in the Republic of Macedonia with some of the countries in the region also gives the same conclusion. For the last four years, Republic of Macedonia has the lowest inward FDI inflow. For 2006, the leader in attracting FDI was Serbia with more than 4 billions of attracted FDI, followed by Croatia and Bulgaria. Republic of Macedonia attracted less than 15% of what the other countries did.

**Chart 2**



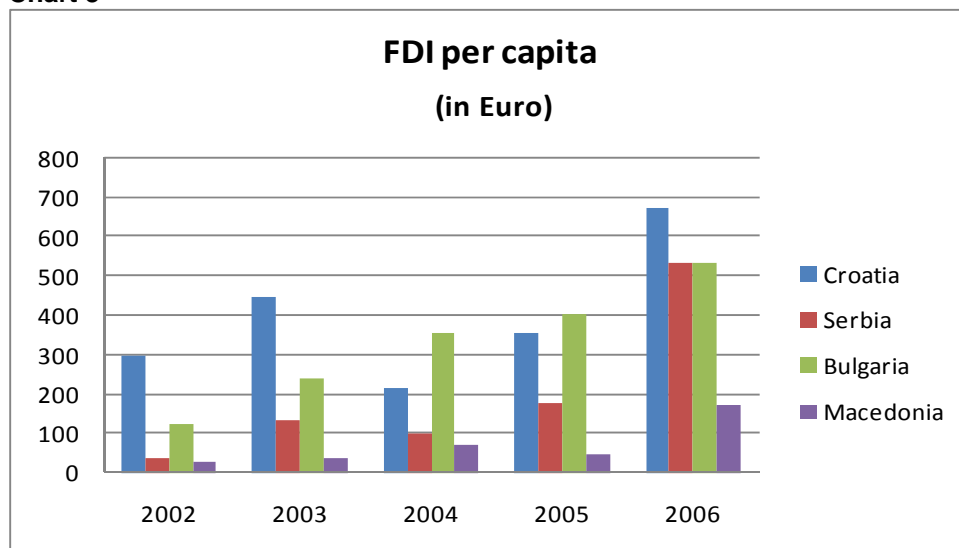
Source: National Central Banks

As we want to be careful and not to make a mistake comparing countries with different population, we present comparison of the FDI per capita. The conclusion is



almost the same a part from the fact that the level of FDI per capita in Macedonia is higher amounting 30%.

**Chart 3**



Source: National Central Banks

**Analysis of FDI in Macedonia by sectors**

Besides the fact that the level of FDI is lower in The Republic of Macedonia compared with the other countries, the analysis of the influence of the FDI on employment and wage growth is very important. We analyze period 2002 - 2006 in order to avoid the previous period which is subject to significant non-economic influences.

For the analyzed period, Electricity, gasification and water supply sector was the one who attracted the highest amount of FDI, followed by Financial intermediation, Telecommunications, Trade, and Metals and Machinery. Table 2 presents ten industries with highest FDI inflow.

**Table 2**

***FDI in the Republic of Macedonia by industries (2002-2006)***

1	Electricity, gasification and water supply	277,903,145.60
2	Financial intermediation	132,249,490.00
3	Telecommunications	118,875,965.57
4	Trade	64,387,695.00
5	Metals and machinery	41,073,085.73
6	Real estate	39,715,103.75
7	Oil and oil industries	33,193,815.00
8	Mining and queering	28,069,367.00
9	Hotels and restaurants	28,303,869.22
10	Food and food industry	27,419,300.43

Source: National bank of the Republic of Macedonia

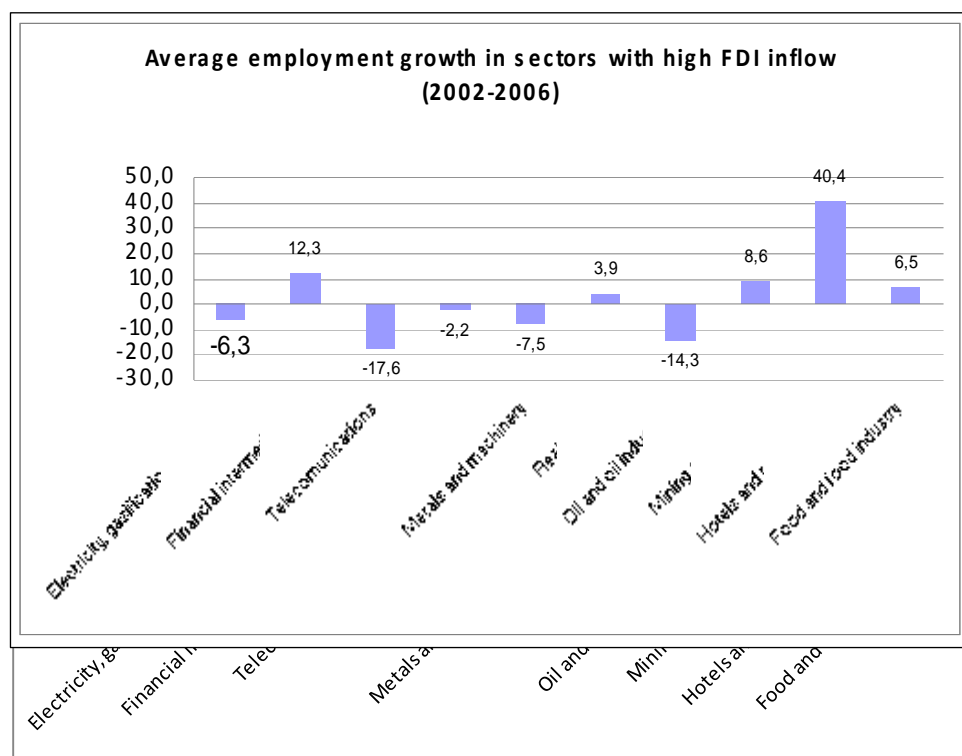
We should be careful when making the analysis as 85% of the Total FDIs in Electricity, gasification and water supply sector is composed of one investment





(Austrian EVN bought Macedonian ESM) which materialized in 2006, showing us that we can not expect significant employment growth in this sector.

### Analysis of the employment growth in the sectors with significant FDI inflow



**Conclusion - with link to education**



**Support to the Preparation of a  
National Strategy for Sustainable Development  
in the Republic of Macedonia**

**A Sida-funded project in cooperation with  
the  
Ministry of Environment and Physical  
Planning,  
the Republic of Macedonia**

**Sub-Sector Analysis Report  
Health Care**

**Evgenij Najdov**

July 2007



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## 1. Executive Summary



The Macedonian health system provides comprehensive health protection to most of its citizens. The coverage with compulsory health insurance and access to services seems adequate at the national level and health outcomes have been improving over the last decade. By signing the Millennium Development Declaration, the Government reaffirmed its objective for sustainable development and commits itself to work to further improve access to and quality of health and consumer protection services. At the same time, the Government understands that sustainable development is one of the key objectives of the EU and that the EU accession process will ensure sustainable development of the country and the health sector specifically.

**Conclusion of the analytical report for the opinion on the application of the Republic of Macedonia for EU membership regarding consumer and health protection**

“The Republic of Macedonia will have to make further efforts to align its legislation with the *acquis* in the area of consumer protection and public health, and to effectively implement and enforce it in the medium term. In particular, the market surveillance system needs to be enhanced in order to meet EU requirements, access to justice should be improved and the development of an independent and representative consumer movement should be supported. The ongoing reforms of the health care sector need to continue in order to provide more effective protection of public health.”

**Conclusion of the Republic of Macedonia 2006 Progress Report regarding consumer and health protection**

There was some legislative progress in the field of consumer and health protection, mainly as regards safety-related measures. Sustained efforts are needed to further align with the *acquis* and establish a functioning system of consumer and health protection throughout the country.

The legal framework for the Consumer and Health Protection sectors is comprehensive, though further progress is needed in order to align certain parts of the sector legislation with the *acquis*. Several strategic documents have been developed and important legislative changes have been made in recent years, however, it is too early to assess the implementation of these. Institutionally, the system has good



geographical coverage but there is general recognition that policy-formulation, management and administrative capacity are weak.

While health outcomes are satisfactory for the current level of development of the country, on some accounts they significantly lag those in old as well as in new EU member states. Despite relatively good outcomes, satisfaction with services is dismal.

While overall health spending is adequate, the system of financing health care contributes to the existence of shadow employment and the growth of the informal sector and there is large prevalence of informal out-of-pocket payment.

Health service provision is very inefficient and there is general recognition that there is over-employment in the health sector which crowds out the budget for badly needed investment.

The Government has taken important steps to reform the health and consumer protection sector but a number of challenges remain. Effective implementation of the National Health Strategy and the Program for Consumer Protection will result in improved service delivery on sustainable basis. To this end the Ministry of Health will need to further strengthen its policy formulation, implementation and monitoring capacities, while the HIF will need to enhance its budget planning, monitoring and reporting instruments. Various other institutions will need to upgrade their human and physical capital in order to accomplish the objectives of the country's strategic documents.

More specifically, the Government should take measures to improve and promote public health, to ensure the long-term sustainability of the health system and improve the efficiency of the Health sector.

Spending patterns should change to allow for additional resources to be allocated towards badly needed equipment and modern technology. In this regard, private sector involvement in the health sector should be supported. The legislative and



strategic framework should be completed and implementation capacity needs to be increased. Investments and reforms in sectors that have direct influence over health outcomes (agriculture, environment and employment) should be actively pursued. Information systems in the health sector need further improvement to ensure better monitoring of developments and outcomes in the health sector and facilitate improved decision-making processes. Capacity of institutions across the board to design, implement, and evaluate policies and to cooperate among each other needs to be strengthened.

This report deals with the scope of work and the results achieved in the phase of analysis and assessment. It includes an overview and scrutiny of the existing documents of the health sector: strategic programmes, regulations, other relevant documents and SWOT analysis.

The consolidated findings from the various activities are presented, and consolidated conclusions are identified.



## 2. Scope of Work and Results of the Initial Analysis

**Health has many definitions, but regardless of which one is chosen, all of them emphasize that health goes beyond the absence of illness only and that it involves the engagement of the entire society.** The WHO defines health as a state of complete physical, mental and social wellbeing, and not merely the absence of disease or infirmity<sup>20</sup>. As such, health is a fundamental human right and the attainment of the highest possible level of health is an important social goal whose realisation requires the action of many other social and economic sectors in addition to the health sector. The EU defines health as protection against illness and disease, ensuring that food is safe and wholesome, and that the products and services on the market meet high safety standards, ensuring a healthy environment and a safe and hygienic workplace and also accessibility to reliable and high-quality health advice and assistance<sup>21</sup>.

Though promoting a healthy society requires a broad cross-sectoral approach, most of the needs of the population are being addressed through the health sector. The role of consumer protection in Macedonia is gradually evolving as well as the importance of sector developments in education, environment, agriculture, economic development etc.

### 2.1. Health Sector Profile

**The health system is the sum total of all organizations, institutions and resources whose primary purpose is to improve health.** It should provide<sup>22</sup>:

- services that are responsive and financially fair, while treating people decently;
- human and financial resources;

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<sup>20</sup> 101st Session of the WHO Executive Board, Geneva, January 1998. Resolution EB101.R2

<sup>21</sup> “Health Strategy of the European Union” – European Communities, Brussels, 2000.

<sup>22</sup> “Health Strategy of the Republic of Macedonia, 2020 – Safe, Efficient and Just Health System” – Ministry of Health, February 2007.



- proper financing of the health sector: raising and pooling of sufficient financial resources, purchasing effective and quality services from health care providers and proper methods for paying health care providers and
- stewardship: effective and efficient organization and management of the health sector.

In order to provide this, the health system needs staff, funds, information, supplies, transport, communications and overall guidance and direction<sup>23</sup>.

The Republic of Macedonia has an insurance-based health care system with the Government and the Ministry of Health providing the legal framework for operation and stewardship, and the Health Insurance Fund being responsible for the collection of contributions, allocation of funds and the supervision and contracting of providers<sup>24</sup>.

The following sections try to provide a brief overview of the Macedonian health system and give a brief assessment of its functioning.

### 2.1.1. Legal Framework

***The legal framework for the Health sector is comprehensive, though further progress is needed in order to align it with the acquis<sup>25</sup>.*** Key legislation includes, among other, the Law on Health Care and Law on Health Care Insurance, and these are guided by national policy. The Law on Health Care lays down the rights to health care of the citizens, the relations and rights to health insurance, the procedures for claiming health insurance and the system and organization of health care<sup>26</sup>. The Law on Health Insurance sets the framework for health insurance of the population, the rights and duties (the benefits package) derived from the health insurance as well implementation of health insurance<sup>27</sup>. Specific legislation regulates areas such as:

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<sup>23</sup> “What is a health system?” - <http://www.who.int/healthsystems/en/>

<sup>24</sup> Gjorgjev D., A. Bacanovic, S. Cicevalieva, Z. Sulevski and S. Grosse-Tebbe, “Macedonia - Health Sector Review” Health in Transition Vol.8 No.2 2006, European Observatory on Health Systems and Policies.

<sup>25</sup> “2006 Progress Report” - Commission of the European Communities, Brussels, November, 2006.

<sup>26</sup> Official Gazette of the RM”No. 38/91; Constitutional Court - 73/92; 46/93 and 55/95 and revised text - 17/97 and amendments 2002, 2004, 2005

<sup>27</sup> Official Gazette of the RM”No. 25/00; Constitutional Court - 85/00; 173/00 and amendments 34/00, 96/00, 50/01, 11/02, 31/03, 84/05, 37/06.





communicable diseases, tobacco, health evidence, pharmaceutical products etc. While the management of core health services and medical care, and as such the core legislation, is subject to national policy, a number of laws and strategic documents addressing certain specific issues will need to be revised in order to be compatible with the *acquis*<sup>28</sup>.

***The Constitution guarantees the right to compulsory health insurance to every citizen of the country, though around 5 percent of the population remain uninsured.*** This represents a potential risk as these persons are not able to exercise their rights and may potentially prevent the Government from achieving the objectives of its policies. The legal framework also allows the possibility for private voluntary health insurance though this is rarely practiced.

***The benefits package provided by the compulsory health insurance is comprehensive***<sup>29</sup>. The package includes both outpatient and inpatient health services and also non-medical benefits such as sick leave and maternity benefits, which is not common in EU countries<sup>30</sup>. Activities are ongoing to redefine the benefits package and cost-effectiveness, allocative efficiency and sustainability criteria will be introduced in its design.

### 2.1.2. Provision of Health Services

***Health services are provided through an extensive network of health care providers (both private and public) providing primary, secondary and tertiary health care which provides for good geographical coverage and easy access for the population to health services***<sup>31</sup>. Around 90 percent of the population is able to access a health service provider in less than 30 minutes<sup>32</sup>. The public sector still dominates the health sector though the health reforms in recent years have focused

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<sup>28</sup> For details see “Pre-Accession Economic Program 2007-2009” – Government of Republic of Macedonia, November, 2006

<sup>29</sup> “Blue Ribbon Report” – UNDP, 2005

<sup>30</sup> “Public expenditure Review” – World Bank, upcoming.

<sup>31</sup> “Blue Ribbon Report” – UNDP, 2006.

<sup>32</sup> “National Poverty Reduction Strategy” - Government of Republic of Macedonia, 2002.



on encouraging greater private sector participation in the provision of health services, and in comparison with other SEE countries this process is well advanced<sup>33</sup>.

**Primary health care is the basis of the system and where the first contact with the health service is made and most of the needs of the population are satisfied.** It includes preventive, promotional and curative services provided by a doctor that is chosen by the insured persons. The system performs well in some areas (for example when providing immunization and antenatal care) and less well in others (for example non-rational prescribing, high referral rates, lack of co-ordination between various treatments). In addition, in a lot of instances the chosen doctor can not provide all required services or provide continuous health care. As a result, too many patients are being seen by emergency care services or by secondary and even tertiary level physicians that could have been treated well at primary care level if the conditions there would have been better, or if gate keeping had been respected better.

**Privatization is well-advanced in primary health care.** As of early 2007, 607 out of 1,722 primary health care physicians were working in private practice. Recent studies have shown that private physicians do exhibit higher productivity<sup>34</sup>, but a more comprehensive and longer-term analysis of the issue is needed.

**Secondary health care provides outpatient and inpatient specialist health care and tertiary health care institutions provide inpatient health services.** Secondary health care is provided in specialist-consultative services, general and special hospitals, offices and institutes. Tertiary health care is provided in clinical hospitals and in the University Clinical Centre. Preventive, curative and rehabilitation health services are provided at these two levels by different types of specialists and sub-specialists.

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<sup>33</sup> *Public Expenditure Review* - World Bank, upcoming.

<sup>34</sup> “*Determinants of PHC productivity and resource utilization: a comparison of public and private physicians in Macedonia*” – R. J. Nordyke, Health Policy 60, 2002.



**Inpatient capacities seem adequate.** There are nearly 10,000 beds in the hospital sector, or 4.8 beds per 1,000 inhabitants, which is less than the EU average (6.2 per 1,000 citizens) but similar to the average for the countries in the region.

**Dental care has been largely privatized.** According to the NHS, as of early 2007, 2,254 dentists were registered with the Dental Chamber, and the number of dental auxiliaries in the country is 1,205. Still, the state of oral health of the population and of children in particular is far from adequate. For 12 years old children, the DMFT-12 index for decayed, missing and filled teeth is 5.13, compared to 1.47 in the 15 old EU countries and 3.71 in the 10 new EU countries (source: HFA-DB).

### 2.1.3. Preventive Health Care

**Due to health improvements, populations are ageing and increasingly, people are living with one or more chronic conditions for decades.** Many costly and disabling conditions - cardiovascular diseases, cancer, diabetes and chronic respiratory diseases - are linked by common preventable risk factors. Tobacco use, prolonged, unhealthy nutrition, physical inactivity, and excessive alcohol use are major causes and risk factors for these conditions.

**Public health refers to the government's policies that create conditions for people to be healthy.** Public health is: "the science and art of preventing disease, prolonging life and promoting health through the organized efforts of society"<sup>35</sup>, a definition also taken up by the National Health Strategy of the Republic of Macedonia. Public health analyses and monitors the health status of the population, and tries to improve this health status by influencing the risk factors. Public health measures include health promotion (including health education), health protection (such as sanitary control), and personal preventive measures (such as immunization).

**The whole health care sector should participate in public health activities.** However, the national Institutes for Health Protection and its regional network of

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<sup>35</sup> "Independent Inquiry into Inequalities in Health: Report" – Acheson D.A., The Stationery Office, London, 1998.



institutes and hygiene-epidemiological-sanitary stations and the network of the Institute of Occupational Health and peripheral occupational health services are specifically in-charge of public health. A Food Directorate and a State Sanitary and Health Inspectorate also operate within the Ministry of Health.

**The country has relatively good control over communicable diseases<sup>36</sup> and infectious diseases.** Regulatory measures concerning a system to control communicable diseases are in place<sup>37</sup>. However, the recent mobilization due to the bird flu threat revealed substantial weaknesses in the system (inadequate laboratories, inability to expediently transfer samples to referent laboratories, etc.). Epidemiological data are processed, analysed and published regularly. The country has been developing a national early warning system since 2004. However, the current list of notifiable diseases is not in compliance with the EU list. The EU case definitions should be adopted, although some of them are already in use (HIV/AIDS). Even though data on HIV/AIDS are most probably unreliable and trends are not very clear, the country is regarded as a low-risk country in this regard<sup>38</sup>. However, modern life styles will most likely lead to an increase in the risk factor in this area and sustained efforts will be needed to stop the spread of HIV/AIDS. The country's efforts to combat HIV/AIDS are addressed through the implementation of the National Strategy on Prevention of HIV/AIDS. Though generally stable and with improved results in treatment, tuberculosis (TB) incidence is still higher compared to countries in the EU. Currently, a National Strategy on Control of Tuberculosis is being drafted.

**Still, preventable diseases are a major concern.** Diseases, like coronary artery disease and cerebrovascular diseases, largely attributed to unhealthy life-styles (use of tobacco, alcohol consumption, unhealthy diet etc.), are an important health

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<sup>36</sup> According to the 2007 World Development Indicators, only 3 percent of total deaths in Macedonia are attributed to communicable diseases and maternal, aerinatal and nutrition conditions compared to 5 percent in EU, 7 percent in high income countries and 6 percent in the countries of Europe and Central Asia.

<sup>37</sup> "Analytical Report for the Opinion on the Application of the Republic of Macedonia for EU membership" – European Commission, 2005.

<sup>38</sup> According to the 2007 World Development Indicators, prevalence of HIV among the adult population in Macedonia in 2005 was less than 0.1 percent of the population compared to 0.4 percent in EU and high income countries and 0.6 percent in the countries of Europe and Central Asia.



problem and expanding at a fast pace<sup>39</sup>. Mortality from cancer related to tobacco and alcohol abuse has increased rapidly in the last decade, reflecting changes in consumption. Given the long lag phase in the progression of many types of cancer, it can be expected that rates will continue to rise for some years to come<sup>40</sup>.

***The legal and strategic frameworks that should guide the government's efforts in the areas such as use of tobacco and illicit drugs and alcohol consumption is still evolving.*** Currently, most resources are currently being spent on treatment rather than prevention. The government adopted a National Strategy for Drugs only in late 2006 and is currently preparing a Law on Control of Illicit Drugs. The legislative framework on tobacco is gradually being harmonized to the *acquis*. A Law on preventing smoking in public places became effective from January 2006 and a Law on Tobacco control, transposing the WHO Framework Convention on Tobacco control, was adopted in 2006.

***The basic legal text on health and safety at work is the 2006 Law on Safety at Work.*** It transposes the *acquis* most areas related to health and safety at work. Institutionally, health and safety at work are covered by the Labor Inspectorate, the Institute for Occupational Health and occupational health services mainly within primary health care facilities. The administrative capacity of the Labour Inspectorate in terms of staff and technical equipment is limited and its ability to enforce effective and dissuasive sanctions is also limited by weaknesses in the judicial system.

#### **2.1.4. Human Resources in the Health Sector**

***Health services are provided by around 24,000 health sector employees, out of which around 20,000 in the public health institutions.*** Around 18,000 of these are medical workers and 6,000 non-medical staff. Compared internationally, the number of medical staff is slightly below the levels in the EU, but still above regional levels. There are around 224 doctors in Macedonia per 100,000 citizens compared to the

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<sup>39</sup> "Health Strategy of the Republic of Macedonia, 2020 – Safe, Efficient and Just Health System" – Ministry of Health, February 2007.

<sup>40</sup> Gjorgjev D., A. Bacanovic, S. Cicevalieva, Z. Sulevski and S. Grosse-Tebbe, "Macedonia - Health Sector Review" Health in Transition Vol.8 No.2 2006, European Observatory on Health Systems and Policies.



average in the European region of the WHO of 353 doctors 100,000 population (source: HFA-DB). Moreover, doctors are not evenly distributed in the country and it is generally recognized that there is a surplus of non-medical staff in the health sector.

**Human resources are generated by the country's Education system.** Health care professionals are educated in secondary-level medical schools or advanced medical schools (the latter comprising 2 additional years of education), and at university level in the faculties of medicine, dentistry and pharmacy of the St Cyril and Methodius University in Skopje. However, admission numbers are not based on any rigid needs assessment and as a result the number of enrolled students is quite high.

#### 2.1.5. Health Sector Financing

**Public financing of health care in the Republic of Macedonia is based on a health insurance scheme and has a long tradition.** The main sources of funds are salary deductions and other contributions collected in a Health Insurance Fund, based on solidarity among the insurance holders. The main function of the Health Insurance Fund is to implement the health insurance for the insured persons and manage the entrusted resources in an efficient and effective manner and in their best interest. However, strong criteria for sustainability, financial control and supervision by the Government are yet to be fully implemented and the implementation of the Action Plan for Improvement of the Operation of the Health Insurance Fund will address these issues.

**The HIF face huge challenges in collection of revenues.** Financing is secured mostly through a mandatory health insurance system in which health insurance payments are deducted from incomes, with pooling of contributions and thus risks. Payroll contributions account for around 60 percent of the revenues of the HIF. As of end-2006, accounts receivable of the HIF based on unpaid contributions was around MKD 2.4 billion, or around a quarter of all contribution revenues in 2006<sup>41</sup>. While having a negative effect on the operations of the HIF and provision of health care, tolerance of soft budget constraints allows unviable enterprises to survive<sup>42</sup> which

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<sup>41</sup> "2006 Annual Report on the Operations of the Health Insurance Fund of Macedonia and an Analysis of the Economic and Financial Operations of the Fund and the Public Health Institutions" - Health Insurance Fund of Macedonia, April 2007

<sup>42</sup> "Analytical Report for the Opinion on the Application of the Republic of Macedonia for EU membership" – European Commission, 2005.



adversely effects the functioning of the market economy, which is a key EU-accession requirement defined in the Copenhagen criteria<sup>43</sup>.

#### Revenues of the Health Insurance Fund, 2005-06

	2005		2006	
	Actual	Structure	Budget	Structure
	MKD mill.		MKD mill.	
<b>Revenues</b>	15,083	100.0	15,697	100.0
<b>(In percent of GDP)</b>	5.3		5.2	
<b>Contributions from employers</b>	8,982	59.6	9,506	60.6
<b>Contributions from the Pension Fund</b>	3,417	22.7	3,583	22.8
<b>Contributions from the Employment Fund</b>	2,062	13.7	2,145	13.7
<b>Contribution from the Ministry of Labor</b>	64	0.4	56	0.4
<b>Transfers from the central budget</b>	46	0.3	42	0.3
<b>For programs</b>	44	0.3	40	0.3
<b>For health insurance for disabled persons</b>	2	0.0	2	0.0
<b>Revenues from co-payment</b>	434	2.9	241	1.5
<b>Other revenues</b>	79	0.5	124	0.8

Source: Health Insurance Fund of Macedonia.

**Most of the rest of the HIF revenues are transferred from other levels of Government.** Revenues are collected from the Pension Fund (for pensioners) and the Employment Agency (for unemployed). Co-payments and revenues from other sources represent a small part of HIF revenues. In addition, there is evidence that the Ministry of Health fails to adequately compensate the HIF for the preventive health programs of the Ministry.

#### 2.1.6. Health Sector Expenditures

**Finances allocated to the Health sector are sufficient, given the possibilities of the country.** The country spends around 8.7 percent of GDP on health expenditures<sup>44</sup>, placing it in the upper part of the distribution of health spending<sup>45</sup> in Central European countries and countries at similar levels of income. However, at around 208 USD per capita in absolute terms, keeping up with modern health technologies available only at international prices represents a challenge.

<sup>43</sup> Conclusion of the Copenhagen European Council, 1993

<sup>44</sup> Public Expenditure Review - World Bank, upcoming.

<sup>45</sup> 2007 World Development Indicators - World Bank



**Public spending accounts for around two thirds of total health spending, or 5.2 percent of GDP.** Compared internationally, this ratio is similar to countries with similar health care systems and to some extent this reflects a legacy of the past, as almost all former SFRY countries are outliers in this respect, and may explain the fact the health outcomes are good for the level of development.

#### Health Spending in Macedonia and Selected Countries

	<b>Total</b> as % of GDP	<b>Total</b> in USD	<b>Public</b> as % of GDP	<b>Private</b> as % of GDP
<b>Macedonia</b>	8.2	208	5.2	3.0
<b>Croatia</b>	8.0	609	6.1	1.9
<b>Serbia and Montenegro</b>	10.1	219	7.3	2.8
<b>Bulgaria</b>	8.0	251	4.6	3.4
<b>Greece</b>	7.9	1,879	4.2	3.7
<b>Italy</b>	8.7	2,580	6.5	2.2
<b>EU NMS 10</b>	6.9	572	4.9	2.0
<b>EU</b>	9.6	2,969	7.2	2.4
<b>Middle income</b>	5.9	141	3.1	2.8
<b>High income</b>	11.2	3,727	6.7	4.5

**At around 3 percent of GDP, private health expenditures are exceptionally high.**<sup>46</sup> Only a small portion of these costs (around 0.1 percent of GDP) are official co-payments for services which are part of the benefits package. Taking into account the generous benefit package, the high private costs means that informal payments are large suggesting that the public health sector does not provide the legally mandated services (for example, positive list drugs are not available in pharmacies or medical appliances in hospitals). At the same time, there is strong evidence suggesting frequent corrupt behaviour in the health sector. Furthermore, informal out-of-pocket payments are the most inequitable form of health financing, which has the greatest negative impact on the lower income groups who are also at greatest risk of ill health<sup>47</sup>. As a result, poor households tend to allocate more of their expenditures to health and are much more likely to suffer from chronic or acute illness compared to

<sup>46</sup> Household Budget Survey – various editions - State Statistics Office.

<sup>47</sup> “Health and Economic Development in South-Eastern Europe” - Council of Europe Development Bank and WHO Regional Office for Europe, 2006.





better-off households. One of the targets of the NHS is to reduce the health outcomes among various socio-economic groups.

Total household spending on health as percentage of non food household expenditures

( by income quintile)

	Quintile					
	Total	1	2	3	4	5
	%	%	%	%	%	%
<b>HBS 2002</b>	6.2	14.3	7.2	7.3	5.3	4.2
<b>HBS 2003</b>	6.7	12.2	9.2	6.5	6.3	5.0
<b>HBS 2004</b>	6.6	10.9	8.6	8.8	5.6	4.4
<b>HBS 2005</b>	6.2	9.8	8.1	6.2	5.9	4.8

Source: Household Budget Survey, State Statistics Office

### 2.1.7 Pharmaceuticals

***The compulsory health insurance defines a list of drugs (positive list of drugs) which is eligible for reimbursement from HIF.*** Poor needs assessment and procurement procedures, poorly regulated prescription mechanisms and very little oversight have resulted in irrational prescription, unavailability of positive list drugs and expensive drugs. The 2004 International Competitive bidding for drugs, supervised by the World Bank, generated savings of around 30 percent. Generic drugs and evidence-based guidelines have only recently been introduced in the preparation of the positive list. The Drugs Bureau regulates this sector but it lacks technical, administrative and financial capacities to take on the responsibility of an independent drug regulatory authority<sup>48</sup>.

### 2.1.8. Health Sector at Outcomes

***Health outcomes in Macedonia have been improving over the last decade.*** The country has registered sound improvements on most health indicators. The life expectancy at birth in 2005 was slightly less than 74 years<sup>49</sup> going up by around 2.5 years per decade over the last thirty years. Similar developments are being registered on various health indicators. Infant mortality rates have been halved over the last decade from around 23 in early 1990's to around 13 in 2005, and there has

<sup>48</sup> Gjorgjev D., A. Bacanovic, S. Cicevalieva, Z. Sulevski and S. Grosse-Tebbe, "Macedonia - Health Sector Review" Health in Transition Vol.8 No.2 2006, European Observatory on Health Systems and Policies.

<sup>49</sup> 2006 Annual Yearbook of the Republic of Macedonia – State Statistics Office, 2007



been a considerable reduction in the maternal mortality rates and the incidence of infectious diseases. Immunization is close to universal, though there are certain vulnerable groups that are not well covered.

**Macedonia shares the disease prevalence pattern of that of other European countries:** cardiovascular diseases, cancer, mental health problems, injuries and violence, and respiratory diseases represent the most prominent causes of morbidity and mortality<sup>50</sup>. According to the National Health Strategy priority health problems are and will continue to be the chronic noninfectious diseases, the new infectious diseases and the emergency cases.

**While outcomes are satisfactory for the current level of development of the country, on some accounts they significantly lag those in old as well as in new EU member states.** Macedonian citizens can expect to live 6 years less than their comparators in old-EU countries and 5 years less compared to high income countries. While child immunization is satisfactory, the country's performance on maternal and infant mortality is significantly worse.

#### Selected Health Indicators for Macedonia and selected countries

	Life expectancy	Maternal mortality ratio	Infant mortality	Child Immunization
Macedonia	74	14.8 – 3.7	13	97
Croatia	73	8	12	96
Serbia and Montenegro	73	7	12	98
Bulgaria	73	6	12	96
Greece	79	1	4	88
Italy	80	7	4	96
EU NMS 10	73	8	8	97
EU	80		4	95
Middle income	70		30	88
High income	79		6	95

Source: 2007 World Development Indicators.

**Composition of public health spending is very unfavourable.** Around a third of all public spending on health or more than half of all funds transferred to public health

<sup>50</sup> Gjorgjev D., A. Bacanovic, S. Cicevalieva, Z. Sulevski and S. Grosse-Tebbe, "Macedonia - Health Sector Review" Health in Transition Vol.8 No.2 2006, European Observatory on Health Systems and Policies.



institutions is spent on labour costs. Despite this, due to over-employment<sup>51</sup>, wages in the health sector are low compared to posts requiring similar qualifications in the rest of the public sector and the economy creating incentives for poor performance of medical staff and corrupt behaviour. The problem is particularly severe for the professional and more skilled medical staff. Expenditures on drugs and medical supplies account for more than a quarter of all public health expenditures. Even though not excessive by international standards, these expenditures are probably very inefficient due to the pervasiveness of irrational prescription of drugs, a pharmaceuticals market that is largely uncompetitive and inadequate legal framework in this area. The prevalence of such expenditure patterns over the last decade limited the scope for badly needed investments and led to a rapid depletion of the capital stock in the health sector.

***As a result, most of the medical equipment available in health care facilities is outdated and in a very poor state and requires frequent repairs.***<sup>52</sup> Procurement is carried out on a case-by-case basis and limited by financial constraints. Relatively limited overall financing heavily burdened by outlays on personnel does not provide huge room for capital investment. At the moment, refurbishment of facilities mainly depends on donations and humanitarian aid. The Government has recently announced a major (Euro 40 million) infrastructure investment in the health sector that should slightly alleviate this situation.

***Similarly, Macedonia lags considerably on the use of modern Information and Communication Technologies (ICT) in the health care system.*** There is not integrated health information system, with few isolated entity-level exceptions. The implementation of such a system should improve planning, development, evaluation and accreditation of health services. The Government adopted a Strategy for Development of the Macedonian Integrated Health Information System<sup>53</sup>. Its implementation should simplify health insurance procedures through the E-health

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<sup>51</sup> “Analytical Report for the Opinion on the Application of the Republic of Macedonia for EU membership” – European Commission, 2005.

<sup>52</sup> “National Strategy for integration of Republic of Macedonia in the European Union” – Government of Republic of Macedonia, July, 2004

<sup>53</sup> “Strategy for Development of the Macedonian Integrated Health Information System” – Ministry of Health of Republic of Macedonia



insurance card, produce decision-making tools that will assist professional in giving better services, should enable better treatment of illnesses requiring input from various specialties and produce common standards and a minimum set of data that would be internationally comparable.

## 2.2. Consumer health

**As mentioned earlier, a broader definition of health also takes into account the safety and wholesome of food products and goods and services available at the market.** The consumer protection *acquis* covers the safety of consumer goods as well as the protection of the economic interests of consumers in a number of specific sectors. It calls for establishment of independent administrative structures and enforcement powers which allow for effective market surveillance and enforcement of the *acquis*. Appropriate judicial and out-of-court dispute resolution mechanisms as well as consumer information and education and a role for consumer organisations should be ensured as well. Macedonia has made substantial progress in aligning its legislation to the *acquis*. The 2004 Law on Consumer Protection transposes 12 EU Directives, however, given the cross-cutting nature of consumer protection various sector legislation will need to be amended to ensure proper consumer protection. This is especially important in the area of public services, given their current monopoly status and the prospect for their privatization<sup>54</sup>.

**The Republic of Macedonia has a system ensuring that products meet mandatory technical requirements before entering the market.** The system is based on the Law on Market Inspection of 1997 and the Consumer Protection Law of 2004. The market surveillance structure required under the new approach still needs to be developed and the pre-market controls need to be phased out. The draft Law on Product Safety and the draft Law on Market Surveillance should contribute to creating a more comprehensive market surveillance system.

**The Law on Safety of Food and Products and Materials in Contact with Food and the secondary legislation adopted by the Ministry of health establish the basic framework for food hygiene in the country.** It achieves preliminary

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<sup>54</sup> “Program for Consumer Protection 2005-06” – Government of Republic of Macedonia, Skopje, April 2005.



alignment with the *general food safety principles* and requirements laid down in the *acquis*. The Food Directorate, as part of the Ministry of health, is in charge of implementing the Law. The Directorate controls around 14,000 entities dealing with food in 12 laboratories whose capacities is deficient and should be further developed. In addition, little attention is paid to the co-ordination of the activities of the established Food, Veterinary and Plant Protection Directorates (bodies respectively within the Ministries of Health and Agriculture) in order to avoid duplication of checks and ensure integration of control plans and laboratory activities.

***The system for consumer protection is two-pronged and gradually evolving.*** On the public sector side, the Government is in charge of policy-making while the Council for Consumer Protection within the Government is in charge of proposing measures and monitoring implementation. The Ministry of Economy, through its Consumer Protection Unit, is in charge of implementation, while the State Market Inspectorate functioning under the Ministry of Economy is the main body responsible for market surveillance. Still, a number of other authorities are also active in this area<sup>55</sup>. Finally, consumer rights are protected by the Court System.

***The implementation capacity for consumer protection needs to be strengthened.*** A co-ordination body for market surveillance activities has been established to coordinate the relevant responsibilities which are divided among a considerable number of separate authorities. Additional human and financial resources should be allocated for setting up test laboratories, training mechanisms, etc. Constitutional amendments adopted in 2005 open the door for surveillance bodies to impose fines or other sanctions directly, without having to pass through the courts. Court procedures are still expensive and lengthy deterring consumers for actively seeking protection. Most recently, a Law on Mediation was adopted which allows for alternative resolution of consumer disputes, in line with the relevant Commission recommendations.

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<sup>55</sup> For details see “Answers to the Questionnaire for the preparation of the European Commission's Opinion on the application of the Republic of Macedonia for membership of the European Union; Chapter 23: Consumer and health Protection” - Sector for European Integration, Government of Republic of Macedonia, February 2005.



On the civil society side, currently, interest of consumers are being addressed by 2 NGO's with relatively large scope of activities including providing information and advice to consumers, representing consumers' interests vis-à-vis the government and the business sector, carrying out comparative product testing and trying to influence consumer legislation and consumer policy. However, their impact seems questionable. They have limited financial resources and cooperation with other agencies (like the Competition Protection Commission and the Consumer Protection Commission) is not regulated.

### 2.3. Key Actors

**Ministry of Health** is the institution in charge of health policy formulation and its implementation as well as quality assurance. Its mission is to provide health protection to the population by improving and achieving quality and efficient health protection. Specific objectives include<sup>56</sup>:

- Improving the health condition of the population;
- Ensuring sustainable, efficient and affordable (economical) system of health care provision;
- Improving the quality of health services
- Improving the health and health protection in the local government
- Adjusting the health system to the globalization patterns and ensuring its compatibility with the EU

A network of one national and ten regional **Institutes for Health Protection** and the network of the **Institute of Occupational Health** and peripheral occupational health services is specifically responsible for public health. In addition, a **Food Directorate** and a **State Sanitary and Health Inspectorate** operate as part of the Ministry of Health in order to assure food safety and hygiene. The **Drugs Bureau** covers areas related to public health policy in the pharmaceutical sector (positive list of drugs) as well as quality, registration, marketing and sale of drugs.

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<sup>56</sup> Strategic Plan 2007-2009, Ministry of Health, Government of Republic of Macedonia, 2006



**The HIF is an autonomous financial institution tasked with the implementation of the compulsory health insurance in Macedonia.** The HIF performs its operations through a network of one headquarter and 30 regional offices employing a total of around 650 employees. Repeated assessments have found that the HIF suffers from poor governance arrangements<sup>57,58,59</sup> with insufficient internal controls at all levels of operations and representing a high fiduciary risk for the Government. This has led to inefficient spending, poor service provision and accumulation of arrears. The adoption and implementation of the HIF Action Plan, together with the comprehensive health sector reforms have shown early results. The arrears of the HIF have been eliminated whereas the imposition of greater financial discipline over health institutions through the introduction of budgets has also stabilized the arrears of the overall public health sector<sup>60</sup>. The role of the HIF Management Board has been considerably strengthened and currently the Ministry of Finance, together with the Ministry of Health share the rotating chairmanship of the Board and have veto power over its decisions.

**The Ministry of Finance plays a key role in the financing of the Health sector.** It sets the annual state budget, including the allocation for funds for health, as well as shares with the Ministry of Health the chairmanship of the HIF. Its active support to the recent health reforms has been crucial in reducing the arrears of the health sector and improving prospects for its sustainability.

**Medical staff associations represent the interest of health care workers.** The doctors', dentists' and pharmacists' chambers license and supervise the conduct of their respective professional groups. Health care workers are represented by a single trade union, which negotiates terms and working conditions.

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<sup>57</sup> “*HIF Macedonia: Audit of the Internal Controls – Final Report*” – Ernst & Young Assurance and Advisory Business Services, August 2004.

<sup>58</sup> “*Country Fiduciary and Accountability Assessment*” – World Bank, 2003

<sup>59</sup> Audit Report of the HIF – various editions – State Audit Office

<sup>60</sup> “*2006 Annual Report on the Operations of the Health Insurance Fund of Macedonia and an Analysis of the Economic and Financial Operations of the Fund and the Public Health Institutions*” - Health Insurance Fund of Macedonia, April 2007



**Local government will have an increasing role in the health sector.** Apart from being involved in the management of local health care facilities by appointing one person in the Management Board, the Law on Local Self-Government also envisages municipalities having more competencies, especially in the areas of health promotion, preventive activities, and occupational and mental health, as well as in the provision of healthy living environments.

### 2.3. Governmental Goals and Policies

**The overarching goal of the Government is to improve the health status and the health protection of the Macedonian population.** The inclusion of health issues as strategic priorities of the Government of Macedonia has helped operationalize this strategic determination. Health sector reforms aimed at improving the quality of services, increasing the transparency and efficiency in the healthcare sector and efforts to harmonize the legal framework with that of the EU has continuously constituted a part of the Government's Strategic Priorities<sup>61</sup> and are also a part of the Government's Pre-accession Economic Program<sup>62</sup>.

The primary objectives of the health reforms in the Republic of Macedonia are<sup>63</sup>: 1) securing universal accessibility to primary, secondary and tertiary health services of high-quality, as well as to most needed medicines; 2) establishing more suitable roles for the public and private sector; 3) ensuring fiscal sustainability of public health spending; 4) increasing efficiency in use of resources and 5) protection of people with special needs, mental illnesses and addictions.

**While substantial reforms have taken place, a number of issues still remain.**

The government recently completed a Medical Map which should guide its future reform efforts, privatization is well advanced and extensive reforms have been undertaken in the governance and financial management of the health sector. Still, the long-term effects of the current policies are uncertain and need to be reviewed to

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<sup>61</sup> Decision for determining the strategic priorities of the Government of the Republic of Macedonia for 2008

<sup>62</sup> "Pre-Accession Economic Program 2007-2009" – Government of Republic of Macedonia, November, 2006.

<sup>63</sup> "National Strategy for integration of Republic of Macedonia in the European Union" – Government of Republic of Macedonia, July, 2004





ensure that they indeed ensure quality and sustainability. In addition, major areas, like the human resources policy have yet to be tackled.

## 2.4. Health and Sustainability

***The concept of sustainable development is inevitably related to the health of population.*** Sustainable development calls for a development pattern that meets the needs of the present generation without compromising the ability of future generations to meet their own needs. As such, it has been widely accepted that health is both an input and an outcome of sustainable development. Healthy population represents a key factor of production necessary for development to take place as it typically translates into larger, more productive and better skilled labor force. At the same time, the health of the population critically depends on the strength of the economy and its ability to meet the needs of the population.

***While a number of reforms have been initiated to improve sustainability of the health sector a number of challenges remain.*** Recent improvements in the management of the health sector (privatization, fixed ceilings budgets, strengthened controls etc.) have significantly improved the medium-term prospects of the health sector. However, poor financing patterns and virtually absent investments, highly unsatisfied personnel and only gradually evolving institutional capacity may pose threats to longer-term sustainability.

### 2.4.1. Indicators for Sustainable Development in Health

It is critically important that the health sector remains sustainable in all its components, meaning that improvement in the outcomes should also take place within sustainable levels of health sector inputs. The following could be used as indicators of health sector sustainability, though these will be finalized at a later stage in the preparation of the Sustainable Development Strategy:

1. Health insurance coverage;
2. Number of health Insurance contributors;
2. Life expectancy;
3. Infant and Mother Mortality;



4. Immunization rate;
5. Health Expenditures as percentage of GDP, both public and private
6. Capital Investments in Health, as percentage of health spending
7. Index of medical / non-medical staff in public health institutions

## 2.5. Sustainable Health Development in European and National Documents

### 2.5.1 Relevant European Documents

**Health and consumer protection feature prominently in founding EU documents (the Treaty).**<sup>64</sup> The key objectives in relation to public health are in Articles 3 and 152 and include: a) contributing towards ensuring the attainment of a high level of health protection; b) improving public health; c) preventing human illness and disease; and d) obviating sources of danger to human health. Article 153 of the Treaty defines the objectives regarding consumer protection as promoting the interests of consumers and to ensuring a high level of consumer protection by contribute to protecting the health, safety and economic interests of consumers, as well as to promoting their right to information, education and to organise themselves in order to safeguard their interests.

**The basic Management of health service and medical care and as such the sustainable development of the health sectors represent a direct responsibility of the Member State of the EU.** However, the EU complements the efforts of Member States by focusing its public health program on three priorities<sup>65</sup>:

- Improving health information and knowledge by establishing comprehensive health information system to provide policy makers, health professionals and the general public the key health data and information that they need.
- Responding rapidly to health threats by creating an effective rapid response capability to deal with threats to public health. The integration of the EU based on the principle of free movement increases the need for vigilance.

<sup>64</sup> “Consolidated Version of the Treaty Establishing the European Community” – available at [http://eur-lex.europa.eu/en/treaties/dat/12002E/htm/C\\_2002325EN.003301.html](http://eur-lex.europa.eu/en/treaties/dat/12002E/htm/C_2002325EN.003301.html)

<sup>65</sup> “Health Strategy of the European Union” – European Communities, Brussels, 2000.



- Addressing health determinants by tackling the underlying causes of ill health, through effective health promotion and disease prevention measures.

**Further more, in accordance with the EU's Sustainable Development Strategy, high level of health protection is one of the key principles of sustainable development.** Through this strategy the EU commits itself to promote to promoting “a dynamic economy with full employment and a high level of education, *health protection*, social and territorial cohesion and environmental protection in a peaceful and secure world, respecting cultural diversity”<sup>66</sup>. More specifically, EU's overall objective in the area of public health is to promote good public health on equal conditions and improve protection against health threats.

**The EU's efforts regarding consumer protection are articulated in the EU's Consumer Protection Strategies and Action Plans and Programmes derived from the strategy.** The 2007-2013 Consumer Policy Strategy<sup>67</sup> aims to empower consumers, enhancing their welfare and effectively protecting them by ensuring a high level of consumer protection through a simple legal framework, improved evidence, better consultation and better representation of consumers' interests and ensuring the effective application of the rules notably through enforcement cooperation, information, education and redress.

### 2.5.2. Relevant National Documents

**The Government of the Republic of Macedonia understands the importance of health issues and sustainable development.** While this is the first Sustainable Development Strategy of the Government of Macedonia and this concept is yet to be fully introduced in policy making, the overarching goal of the country to join the European Union clearly shows that the Government shares the EU's vision of sustainable development and the contribution of health to achieve this vision. In this regard, the implementation of the National Strategy for Integration of Republic of Macedonia in the European Union will contribute towards sustainable development.

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<sup>66</sup> “Renewed EU Sustainable Development Strategy” - Council of the European Union, Brussels, June 2006.

<sup>67</sup> “Empowering Consumers, Enhancing Their Welfare, Effectively Protecting Them” EU Consumer Policy Strategy 2007-2013 – Commission of the European Communities, Brussels, March 2007.



**The Government also made a commitment towards sustainable development by signing the Millennium Declaration in 2000 and adopting the Millennium Development Goals (MDGs).** The first report<sup>68</sup> aimed at assessing the progress towards achieving the MDGs by 2015 also made an attempt to provide linkages between the MDGs and EU integration which are both priorities for the country. The Report demonstrated that while a series of achievements were made in different fields, problems still persist and require urgent addressing.

### 3. Scope and Results of Work in the Analysis and Assessment Phase

#### 3.1. Review of Existing Documents (strategies-programmes, laws and other relevant documents)

##### a) Strategies / Programmes in the area of Health

**The country's vision for the role of the health system is articulated in the upcoming Health Strategy<sup>69</sup>.** The strategy builds on *Article 39 of the Constitution*, which guarantees the right to health protection to every citizen of the country and gives citizens the right and duty to maintain and upgrade his/her own health and the health of others. The basic principles of the strategy are:

- Equity, meaning that all citizens are entitled to financial and geographical access to a package of basic health services.
- The citizens, the Government, all health care institutions providing health services, public and private enterprises, as well as non-governmental organizations, are responsible for the health.
- Health insurance, creating mutuality and solidarity between sick and healthy, poor and rich, and young and old.

**The strategy aims to improve the health of the population and the health protection of the country's population.** It calls for greater preventive measures, improvements in the effectiveness and efficiency of the health system mostly by strengthening the primary health care, building up the human capital in the health

<sup>68</sup> "Report of the Republic of Macedonia on the Millennium Development Goals" - Government of Republic of Macedonia, June 2005.

<sup>69</sup> "Health Strategy of the Republic of Macedonia, 2020 – Safe, Efficient and Just Health System" – Ministry of Health, February 2007.



sector and ensuring quality provision of services and sound and sustainable financing of the health sector based on the solidarity (health insurance) principle. Implementation of the strategy should also ensure that eventually the national health system will become compatible to the EU system.

**Specific health aspects are being dealt in through separate strategic documents** (HIV protection, Dental Disease prevention among children, Promoting health living and work environment, Development of Integrated Health Information System etc.) however a persistent weakness of the Macedonian public sector has been its inability to implement adopted strategic documents.

#### **b) Other strategies linked to Health**

As noted earlier, health can not be viewed in isolation from the rest of the developments in the country. Health represents both an input to and an output of the developments in numerous sectors. What we try to do below is outline the most important synergies.

##### **Education**

The health sector is critically dependant on the education of a qualified health labor force that will be able to provide the services to the population. In that sense it is important that the education sector provides relevant and modern knowledge to future medical and non-medical staff and produces skills that are needed. Currently the system produces too many professionals at the aggregate level and too few of some specific specialties which will continue to exert pressures for employment of these cadre and also would not cover sufficiently all needs of the citizens. Finally, a revision of the curricula is needed to ensure compliance with the EU system.

##### **Employment**

Health sector financing is primarily secured through payroll contributions on employees. As such, in order to ensure the sustainability of the health sector it is critical to implement the National Employment Strategy and measures that would lead to formalization of the unobserved economy (for example, more flexible Labor code and its more efficient enforcement, active labor market policies). At the same time, the health sector should ensure that the contribution rate and other health insurance policies (for example providing free health insurance to registered



unemployed) do not have an adverse effect and actually encourage the informal economy. The significant number of people registering as unemployed only to gain access to health care - is a serious impediment to assessment of the labor market<sup>70</sup>.

### **Economy**

Similarly, sustainability of the health system can be secured by job creation and economic growth. Evidence suggests that most of job creation in transition economies is created by a viable and dynamic small and medium-size private sector. The Government should continue with its agenda to promote the development of the private sector. In return, a functioning health system is going to promote better and more productive labor force, a critical factor for the successful functioning of the enterprise sector. There are large synergies between economic development and consumer safety as well. In order to develop, the private sector will need to move up the value-added chain and produce higher quality goods and services thus improving consumer protection.

### **Environment**

Health is influenced by many external factors, one of which is the environment. Good health requires clean and harmonious environment. At the global level, environmental risks account for 25-35% of the disease burden. As a result, one of the targets of the NHS is to ensure that the population lives in a safe physical environment, within internationally accepted standards of exposure to contaminants hazardous to health. A National Environmental Health Action Plan was adopted in 1999, but its implementation should be more vigorously pursued. Addressing environmental issues requires extensive cooperation between the Central and Local level of Government as according to the Law on Local Self-Government the competency for environmental and nature protection is delegated to the municipalities, which at the time being have limited capacities to deal with these issues. Ensuring compliance with the *acquis* requires significant investment, but also brings significant benefits for public health. The basic elements of a legislative framework are in place, although much of the legislation is quite recent and implementation and enforcement are in some cases only in their initial stages. In addition, the *acquis* is yet to be fully transposed into national legislation in a number

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<sup>70</sup> “Analytical Report for the Opinion on the Application of the Republic of Macedonia for EU membership” – European Commission, 2005.



of environmental areas that affect public health (air quality, liquid fuel quality, waste management and quality, nature protection, industrial pollution etc.). The EU accession process is going to provide a good opportunity to address some of these issues.

### **Agriculture**

Health depends to a large extent on the quality of food being consumed. While control of most of food products is under the competency of the health sector, a large number of products are also covered by the veterinary and plant protection legislation and institutional frameworks. As a result, activities of the Food, Veterinary and Plant Protection Directorates (bodies respectively within the Ministries of Health and Agriculture) need to be well coordinated. In addition, Basic animal disease and animal health control systems exist but need to be further aligned with the EU legislative and institutional requirements. With regard to agro-food establishments, it is very likely that a large number of establishments will need substantial investments to upgrade their facilities and meet EU standards. It is crucial to ensure effective implementation of the parts of the National Strategy for European Integration that deal with the development of the agriculture sector. The Government adopted a programme to support companies in acquiring Hazard Analysis and Critical Control Point (HACCP) certification and product certification. At the same time, agriculture can not thrive without a vibrant rural sector, and good health coverage and access to health services is key to ensuring this. The uneven distribution of medical personnel and services has led to under-servicing of rural areas which may have a adverse effect over sustainable development of these areas.

### **c) Programs in the area of Consumer Protection**

#### 2007-2008 Program for Consumer Protection

- The Law on Consumer Protection obliges the Government to develop bi-annual programs that would guide its efforts for implementation of the Consumer Protection Law. It determines the consumer protection policies, measures and activities to implement the policies; measures to inform and educate consumers and resources for its implementation. Mechanisms to evaluate the effectiveness of the Program should be introduced.



#### **d) Laws**

##### 1. Law on Health Care

- This Law lays down the rights to health care of the citizens, the relations and rights to health insurance, the procedures for claiming health insurance and the system and organization of health care. It also defines the relations among various stakeholders in the health sector (patients, institutions, health employees etc.). The Law has been frequently amended as the reforms in the health sector have been implemented. In general, the Law is satisfactory, though some provisions may be restricting the patients' choice and the doctor's ability to perform their services.

##### 2. Law on Health Insurance

- This Law sets forth the rules for health insurance of the citizens, the relations and the rights to health insurance. The Law envisages both private and public sector participation in delivery of health services, defines the compulsory and provides possibilities for voluntary insurance, defines the benefits package, establishes the HIF as an independent financial entity etc. Stemming from this Law, specific secondary legislation covers the area of contracting between the HIF and service providers. Among the most important are the by-laws have for payment of capitation in primary care and co-payment on the part of patients and fee-for-service contractual arrangements with hospitals. The legal framework in this aspect is generally found to be satisfactory, though the secondary legislation needs to be refined to strengthen incentives for more efficient management.

##### 3. Law on Communicable Diseases Affecting the Country

- This Law stipulates the measures for prevention, early detection, containment of spread and fight against communicable diseases and infections; defines the rules and obligations of health institutions and legal and natural persons, and provides for supervision over implementation of the measures. Regulatory measures concerning a system to control *communicable diseases* are in place<sup>71</sup>. Epidemiological data are processed, analyzed and published regularly. The country has been developing a national early warning system since 2004. However, the current list of notifiable diseases is not in compliance with the EU list. The EU case definitions should be adopted, although some of them are already in use (HIV/AIDS).

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<sup>71</sup> “Analytical Report for the Opinion on the Application of the Republic of Macedonia for EU membership” – European Commission, 2005.





#### 4. Law on Drugs

- The Law regulates the conditions for production, marketing and open sale of drugs as well as the procedures for assurance of quality, safety and efficiency in these procedures. The previous Law on Medications, Remedial Products and Medical Devices was outdated and many required bylaws were never adopted. According to the NHS, the new draft Law on Drugs harmonized with the EU directives and legislation has been prepared which should help tackle irrational prescriptions by applying the formulary linked to clinical guidelines and monitoring using electronic prescription form.

#### 5. Law on Consumer Protection

- The law largely covers the EU directives on misleading and comparative advertising, contracts negotiated away from business premises, unfair terms in consumer contracts, timeshare, distance contracts, the indication of the prices of products as well as certain aspects of the sale of consumer goods and associated guarantees. While largely EU compliant, the coverage should be broadened.

#### 6. Law on Safety of Food and Products and Materials in Contact with Foods

- With the adoption of the new Law on Food Security, a Food Directorate was established within the Ministry of Health authorizing it to control premises and equipment used for food production, check the sanitary status of the employees, provide education on hygiene etc. The Law is largely compliant with the *acquis*, but some areas are still not covered and the secondary legislation has yet to be completed<sup>72</sup>.

#### 7. Law on Product Safety

- This law, adopted in 2006, regulates the safety of non-food products on the market and is largely compliant with EC Directive on General Product Safety<sup>73</sup>. It includes general provisions concerning technical requirements for products, conformity assessment procedures, CE marking as well as market surveillance.

### 4. SWOT Analysis

#### **SWOT Summary – Health Sector**

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<sup>72</sup> “2006 Progress Report” - Commission of the European Communities, Brussels, November, 2006.

<sup>73</sup> “2006 Progress Report” - Commission of the European Communities, Brussels, November, 2006.



The table below summarizes the key results of the SWOT (Strengths – Weaknesses – Opportunities – Threats) analysis for the health sector in Macedonia. They draw upon the discussion presented already and are further elaborated in the text below.

<p><b><u>Strengths</u></b></p> <ul style="list-style-type: none"> <li>- Almost universal coverage with health insurance</li> <li>- Adequate access to services</li> <li>- High-quality human resources</li> <li>- Basic institutional setup exists</li> <li>- Adequate financing</li> </ul>	<p><b><u>Weaknesses</u></b></p> <ul style="list-style-type: none"> <li>- Groups with poor access to health services and no health insurance</li> <li>- Fragmented and uncoordinated system</li> <li>- Mismatch between demand for and supply of services</li> <li>- Low productivity and efficiency</li> <li>- Legal framework in number of areas is either lacking or non-EU compliant</li> <li>- Poor institutional capacity</li> <li>- Health Insurance financing</li> </ul>
<p><b><u>Opportunities</u></b></p> <ul style="list-style-type: none"> <li>- Government commitment to reform</li> <li>- EU integration process</li> <li>- Awareness of population on need of reforms</li> </ul>	<p><b><u>Threats</u></b></p> <ul style="list-style-type: none"> <li>- Perceptions of excessive corruption and poor satisfaction with health services</li> <li>- Aging of the population</li> <li>- Greater regional and EU integration and larger movement of people and goods</li> <li>- Regional Instability</li> </ul>

### Strengths

***The legal framework guarantees the right to compulsory health insurance to every citizen of the country.*** As a result close to 95 percent of the population is covered by health insurance.

***Access to health services is generally adequate.*** Both, the health services provision network and the preventive health protection network provide good geographical coverage. As a result, 90 percent of the population can access a doctor within 30 minutes.

***The country has an abundant supply of quality human capital.*** Health care professionals are educated in secondary-level medical schools or advanced medical schools (the latter comprising 2 additional years of education), and at university level in the faculties of medicine, dentistry and pharmacy of the St Cyril and Methodius University in Skopje.



***The basic institutional framework for effective consumer and health protection is largely in place.*** The Government is in charge of policy-making and a number of various institutions are in charge of implementation of those policies. The legal framework allows for sufficient degree of representation of professional organization and the civil sector.

***Finances allocated to the Health sector are sufficient given the possibilities of the country.*** The country spends around 8.7 percent of GDP on health expenditures<sup>74</sup>, placing it in the upper part of the distribution of health spending<sup>75</sup> in Central European countries and countries at similar levels of income.

### **Weaknesses**

***Certain groups of the population are disadvantaged in terms of health insurance status and access to health services.*** This applies especially to the Roma population and the rural population. Around 1 percent of the population, mostly located in rural areas, travels over an hour to reach the doctor of choice and only 30 percent of the rural population has easy access to a dentist<sup>76</sup>.

***Despite the widespread network of different health care institutions, the health system does not function as an integrated and coordinated system<sup>77</sup>.*** There are several reasons for the lack of integration and co-ordination:

- the system is too fragmented and over-specialized.
- the chosen doctor usually does not provide comprehensive care and is not considered as the key player in the system.
- there are insufficient rules and incentives in place for proper gate keeping and referral to higher levels of the health care pyramid, as a result of what many patients are treated at inappropriate levels.

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<sup>74</sup> *Public Expenditure Review* - World Bank, upcoming.

<sup>75</sup> *2007 World Development Indicators* - World Bank

<sup>76</sup> “*National Poverty Reduction Strategy*” – Government of Republic of Macedonia, 2002.

<sup>77</sup> “*Health Strategy of the Republic of Macedonia, 2020 – Safe, Efficient and Just Health System*” – Ministry of Health, February 2007.



**There appears to be a mismatch between the demand for and supply of health services.** The recently completed Medical Map indicates considerable disparities between the provision and demand for services. In addition, staff and the number of beds at the level of secondary health care are not well distributed around the country. More than half of the hospital beds are in specialized or tertiary care, which is too high of a proportion. This situation is partly explained by different specialization, but equally, this is the result of historical allocations and inability of the sector to keep up with emerging needs and changing demographic patterns of the population. As a result, even though on aggregate level access seems satisfactory, certain groups experience problems accessing the system. Such a situation may potentially have large adverse effects for sustainable development as the population migrates towards urban better-served areas thus further stretching capacities in urban areas and forgoing the economic potential of rural areas. At the same time, the education sector keeps on producing health cadre with careful analysis of the needs of the population.

**Productivity and efficiency in health services provision is low.** While the country spends a substantial amount of resources on health services, the country receives relatively low volume of services. At around 3 visits per capita a year, the number of outpatient contacts is substantially below the regional and EU averages. Similarly, the inpatient admission rate in Macedonia is half the rate for the EU15 and lower compared to all countries in the region but Bosnia and Herzegovina<sup>78</sup>. The failure of the primary health care to perform its gate-keeping function and the reluctance to take painful reforms in the health sector has resulted in inefficient utilization of assets in the health sector. In 2004, the occupancy rate varied between 50% and 65% in the different secondary, specialized and tertiary hospitals (except psychiatric hospitals), which is rather low in international comparison. The average length of stay, at around 11 days, was rather long in international comparison. As a consequence, the Macedonian health system is generally regarded as being over-employed and with overall excess capacity.

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<sup>78</sup> *Public Expenditure Review* – World Bank, upcoming.



***The legal and strategic framework in a number of areas is incomplete.***

Sustained efforts are needed to further align with the *acquis* and establish a functioning system of consumer and health protection throughout the country<sup>79</sup>. A number of specific legislation regulating public health needs to be amended (cosmetics, chemicals, illicit drugs etc.). A consumer protection area that is largely uncovered is the area of services which is important given the monopolistic status of a number of public services and the announcements for their potential privatization.

***Institutional capacity in the Macedonian Consumer and Health Protection systems is weak.***

Policy formulation, evaluation of health reforms and public information and communication have been identified by the recently completed functional review as critical for helping the MOH operate in the reformed health care environment. Despite recent improvements, the HIF still lacks transparency and accountability, utilizes poor practices in financial management, procurement and purchasing of health services and is subject to weak oversight arrangements. Capacities of various institutions and laboratories remain inadequate while arrangements for cross-sector cooperation, which are critical for efficient health and consumer protection, are almost absent. Information technology capacities are largely unavailable or out-dated.

***Health insurance payroll contributions are contributing to the large labor tax wedge and the informal sector in the country.***

In principle, health care contributions are levied at a rate of 9.2 percent of the gross wage. However, in practice, this procedure is further complicated by using a minimum threshold for payment of contributions rather than the actual wage and, until recently, by using differentiated rates depending on the degree of “complexity” of the job. This had the effect of making the HI contribution regressive and a higher burden for low-wage earners. At the same time, this creates incentives for people to register as unemployed (even though they may not be looking for a job or may be informally employed) and receive free health insurance.

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<sup>79</sup> “Analytical Report for the Opinion on the Application of the Republic of Macedonia for EU membership” – European Commission, 2005.



## Opportunities

**Government commitment to reform is a key pre-requisite for improving the outcomes in the health sector.** Ensuring financial sustainability of the health sector will involve a number of measures that may be politically costly (cutting benefits, removing soft budget constraints etc.). That is way the commitment of the Government, expressed through the adoption of the Health Strategy and the recent reforms in the financial management of the health sector is encouraging.

**EU Accession process should help address some of the weaknesses of the consumer and health protection sectors.** The EU accession process can serve as a big incentive to adopt the necessary legislation. At the same time, funding available through the IPA framework can be used to build the capacity of local institutions.

**Years of declining quality of health services have generated awareness in the public that reforms are badly needed.** A recent survey<sup>80</sup> commissioned by the Ministry of Health found that around 86 percent of the citizens either agree or completely agree with the statement that the health sector needs extensive reforms in the next 12 months. Furthermore, close to 70 percent believe that the situation will be much better or better once the reforms are implemented.

## Threats

**Despite relatively good outcomes, satisfaction with services is dismal.** According to the EBRD-World Bank Living in Transition Survey<sup>81</sup>, 24 percent of the population believes that corruption in the health sector either occurs all the time or occurs usually and 33 percent are either completely or very unsatisfied with the services received. This places the country among the most poorly performing countries from the countries of Europe and Central Asia covered by this survey. Further more, a recent survey<sup>82</sup> commissioned by the Ministry of Health found that

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<sup>80</sup> “Grade and Opinions of Citizens on Health Care Reforms in Republic of Macedonia” – Ministry of Health, Project Coordination Unit and PRISTOP MK, January, 2007

<sup>81</sup> “Living in Transition Survey” - EBRD / World Bank, 2006.

<sup>82</sup> “Grade and Opinions of Citizens on Health Care Reforms in Republic of Macedonia” – Ministry of Health, Project Coordination Unit and PRISTOP MK, January, 2007



slightly less than 60 percent of the people visiting a doctor said that the quality of service was bad or poor.

***The aging of the population will further challenge the sustainability of health financing.*** The share of the young population (aged 0-14) has continuously declined over the last few decades even though at around 21 percent of the population is still higher than in developed EU countries. These trends are expected to continue in the next few decades as well. This will have two-fold implications for health financing. At one hand, it would increase health expenditures as the share of older people requiring more frequent and expensive health care increases and at the same time it will shrink the revenues base as the number of active contributors to the system falls.

***Greater regional and EU integration will increase the need for vigilance.*** Free movement of people, animals and goods increases the likelihood of communicable diseases (avian influenza, SARS etc.) spreading much faster and restricts the options for containment on a country-level. In that regards, the information system will need to be upgraded and capacities for surveillance and action increased. Ensuring cross-border cooperation will be crucial. At the same time, actions will underpin the development and implementation of policy in other key areas of the public health framework, such as securing the safety and quality of blood, organs and substances of human origin and strengthening the surveillance and control of communicable diseases.

***Regional instability is a major threat to the efforts to improve consumer and health protection.*** On one hand, it will distract government efforts from pursuing the reform agenda in these sectors. At the same time, it will strain the already scarce resources (financial, human and physical) of the government and may lead to worsening of a number of health indicators in the country.

## 5. Consolidated Findings

The Macedonian health system provides comprehensive health protection to most of its citizens. The coverage with compulsory health insurance and access to services



seems adequate at the national level. However, the Roma population<sup>83</sup> as well as the rural poor<sup>84</sup> represent a vulnerable group that is especially disadvantaged with regards to the status of health insurance and access to health services. The benefits package is generous in international comparisons and probably unaffordable. Still, inefficiencies in the sector prevent the population from benefiting from the full package resulting in excessive out-of-pocket payments.

The legal framework for the Health sector is comprehensive, though further progress is needed in order to align certain part of the sector legislation with the *acquis*. The legislation and institutional framework for Consumer protection is gradually evolving. Several strategic documents have been developed and important legislative changes have been made in recent years, however, it is too early to assess the implementation of these.

While health outcomes are satisfactory for the current level of development of the country, on some accounts they significantly lag those in old as well as in new EU member states. Despite relatively good outcomes, satisfaction with services is dismal.

Overall health spending is adequate, though substantial allocations to wage-bill and prevalence of informal payments crowd out the space for badly needed investments in the health sector. In addition, the system of financing health care contributes to the existence of shadow employment and the growth of the informal sector.<sup>85</sup> People who register as unemployed qualify for free health insurance thus discouraging formal employment.

Health service provision is very inefficient. Primary health care is not effective resulting in low number of outpatient contacts and high referral rates to secondary and tertiary health care. At the same time, inefficient hospital management results in low hospital bed utilization and long average hospital stays. There is general

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<sup>83</sup> “Analytical Report for the Opinion on the Application of the Republic of Macedonia for EU membership” – European Commission, 2005.

<sup>84</sup> “National Poverty Reduction Strategy” – Government of Republic of Macedonia, 2002

<sup>85</sup> “Blue Ribbon Report” – UNDP, 2005





recognition that there is over-employment in the health sector which crowds out the budget for badly needed financing. Private participation in health services, with proper oversight arrangements from the authorities, can increase efficiency and improve services delivery. The National Strategy for European Integration sets out possible ways of larger involvement of the private sector in provision of health services<sup>86</sup>.

While the geographical coverage is good, the capacity of the preventive health care system is weak and cross-sector cooperation is poor. Institutions are not sufficiently equipped and modernized to be able to perform their functions and financial resources are scarce. Further more, inter-sector cooperation is not well developed yet and modern EU-compatible legislation is missing in this field<sup>87</sup>.

The education sector is producing health cadre without careful analyses of the needs of the country. In 2004, in all years of studies, there were 1,467 students at the Medical Faculty, 1,297 students at the Dentistry Faculty, 550 students at the Pharmaceutical Faculty, as well as 1,600 nursing students in the Bitola Nursing College. This is far more than needed for replacement of staff leaving the system which exerts pressure for employment in the health sector. In 2004, officially there were 5,344 unemployed medical workers, most of which with secondary medical school education.

## 6. Consolidated Conclusions

***The Government has taken important steps to reform the health and consumer protection sector but a number of challenges remain.*** Effective implementation of the National Health Strategy and the Program for Consumer Protection will result in improved service delivered on sustainable basis. To this end the Ministry of Health will need to further strengthen its policy formulation, implementation and monitoring capacities, while the HIF will need to enhance its budget planning, monitoring and reporting instruments. Various other institutions will need to upgrade their human and

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<sup>86</sup> “National Strategy for integration of Republic of Macedonia in the European Union” – Government of Republic of Macedonia, July, 2004

<sup>87</sup> “Health Strategy of the Republic of Macedonia, 2020 – Safe, Efficient and Just Health System” – Ministry of Health, February 2007.



physical capital in order to accomplish the objectives of the country's strategic documents.

***The Government should take measures to improve and promote public health***

- Equitable access for all and geographical disparities of care supply are important issues to be addressed. Measures should be taken to ensure full health care coverage of the population, improved access in under-served areas and promote voluntary additional health insurance.
- In order to avoid fragmentation of the primary health care system, the Ministry of Health will aim at establishing multidisciplinary teams where the different doctors in one family will be in direct contact and cooperation.
- The authorities should ensure that every health care interaction includes prevention support. When patients are systematically provided with information and skills to reduce health risks, they are more likely to reduce substance use, to stop using tobacco products, to practice safe sex, to eat healthy foods, and to engage in physical activity. To promote prevention in health care, awareness raising is crucial to promote a change in thinking and to stimulate the commitment and action of patients and families, health care teams, communities, and policy-makers. This will reduce the burden of old-age individuals on the system and reduce incidence of preventable illnesses. Adopt and implement strategic documents related to the use of tobacco, alcohol, drugs etc.
- Efforts should be undertaken to upgrade the country's capacities to deal with threats from communicable diseases and ensure compliance with the EC Communication on Public Health Emergencies at EU Level.

***The Government should take measures to ensure the long-term sustainability of the health system.*** Sustainable financing of the health care should ensure that it is based on the principles of: equal access, cost-benefit analysis, solidarity, optimal quality of services and equalization of conditions in the primary health care.



- Review the Benefits Package using an appropriate EU country as comparator and within the context of a fiscal sustainability analysis and clinical practice guidelines.
- Develop and begin implementing a plan for reducing overcapacity in the health sector, especially in the hospital and specialist outpatient health services.
- Reorganize the health insurance system to remove the incentives for large number of non-jobseekers to register as unemployed. A potential direction for reform would be moving part of health sector financing (“basic health coverage”) to the general government budget<sup>88</sup> while also preserving the contribution based principle as envisaged in the NHS.
- Continue reforms that would increase the competition on the market for pharmaceuticals by streamlining drugs registration procedures and eliminating barriers to market entrance.
- Continue the implementation of global budgets in the contracting between the HIF and the health services providers. Improve the capacity of the HIF to monitor execution of budgets and supervision if services are indeed provided.
- Continue the implementation of the HIF governance reforms outlines in the HIF Action Plan.

***The Government should take measures to improve the efficiency of the Health sector.***

- Review HR policies in the health sector with the aim of establishing a meritocratic and professional health sector work force. Among other things, this would require tackling over-employment in certain components of the health sector, establishing clear and transparent recruitment and promotion procedures and ensuring more adequate compensation for health sector professionals.
- Efficiency of the system could be improved through the increased use of primary and outpatient care as opposed to hospital care. This requires strengthening of the role of the primary health care by improving the services provided by the “chosen doctor” and encouraging group practice. This will

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<sup>88</sup> “Blue Ribbon Report” – UNDP, 2005



considerably strengthen the gate keeping function of primary care and increase accessibility of health services.

- Government should implement a plan to tackle inefficiencies and over-capacity at the aggregate level. However, additional investments and capacity may be needed in order to improve access to health services in under-served areas.
- Recent reform efforts should introduce incentives for more efficient spending of public health resources. Primary health care and dental service have moved towards capitation financing. Most recently, budgeting processes in which providers are paid on basis of services provided have been introduced in the contracting between the HIF and the health services providers in secondary and tertiary health care.
- Use the recently completed Medical Map for decision-making process on rationalization of current over-capacity, future investments in the health sector and involvement of the private sector in health service delivery.
- Continue the reforms in the pharmaceuticals procurement in order to ensure sufficient supply with high-quality drugs at affordable prices.
- Rational prescribing practices by health care providers are to be encouraged through training of medical professionals and the development of evidence-based guidelines, and the sector's regulation and the system's supervision capacities must be significantly enhanced.

***The Government should complete the legislative and strategic frameworks for consumer and health protection.*** Certain areas covered by the *acquis* have not yet been transposed in national legislation. National strategies will be developed in number of health areas (privatization, service delivery, pharmaceuticals etc.). The ongoing reforms in the judiciary will improve consumer protection by providing cheap, fast and simple court procedures.<sup>89</sup>

***Additional resources are needed for capital investments that would improve the technology and capital stock used in the health sector.*** Modern technology in

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<sup>89</sup> “Program for Consumer Protection 2005-06” – Government of Republic of Macedonia, Skopje, April 2005.



the health sector can greatly improve accessibility and quality of health services. Given that the state is already allocating sufficient resources to the health sector, the authorities should adopt policies that will promote private sector investment in this sector.

***National legislation should be aligned with the environmental acquis and administrative capacity for its implementation should be increased.***

Implementation and enforcement could be accomplished over the medium term though effective compliance with EU legislation will require high level of investment and considerable administrative effort and could be achieved only in the long term. There is a need to streamline the management of responsibilities currently fragmented between different ministries and bodies. At local level particular care should be taken to ensure that local self-government units have the resources necessary to implement their responsibilities effectively.

***The government should transpose the EU acquis in the veterinary field and work on its effective implementation.*** Capacities of the Veterinary Directorate need to be improved as well as that of the country's laboratories.

***Information systems need further improvement.*** This is needed in order to align it to the EU acquis but also to enable better monitoring of outcomes related to sustainable development. Data availability is a big challenge in this sector. The data gathering and management systems are poor and underdeveloped (not using information technologies). Thus, the availability of data for the sector is limited and in some areas clearly unreliable. The Ministry of health policy needs to put a greater focus on implementation of the Strategy for Integrated Information System in the Macedonian Health Care.

***Implementation capacity for consumer protection needs to be strengthened.***

The market surveillance system needs to be enhanced in order to meet EU



requirements, access to justice should be improved and the development of an independent and representative consumer movement should be supported<sup>90</sup>.

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<sup>90</sup> “Analytical Report for the Opinion on the Application of the Republic of Macedonia for EU membership” – European Commission, 2005.



## 17. Social Inclusion, Demography and Migration

So far European social policy has been mainly subject to soft regulations<sup>1</sup>. The assessments of the current model of a "social Europe" turn out to be highly varied. Although there are demands to strengthen social components alongside the development of market freedoms by means of social policy provisions, the heterogeneity of welfare states is viewed as the major obstacle to a stronger EU social policy. The general dilemma concerning this issue is: on the one hand, there is a strong desire to strengthen the welfare state dimension of the EU; on the other hand, there is not found yet a way to solve institutional conflicts between different welfare states and production regimes.

Social and demography policy are the issues of enormous importance for the future sustainable development of the Republic of Macedonia. Social inclusion policy in Macedonia does not have a long tradition, although the persistence of many difficult social problems, such as great poverty, emphasized inequality, low living standard of the population. Currently, the Ministry of Labor and Social Policy, in the program for tackling the problems of the socially excluded (2004) focuses only on several target groups. Undoubted is the fact that this focus should be widened to include other vulnerable categories. However, in a country where there is high unemployment, low level of salaries, as well as non-regular payment of wages and salaries, it is very difficult to assess the extent of the socially excluded population.

**The current and the expected changes in the population development and the process of demographic aging undoubtedly stress the need of adequate social and demographic policies that would contribute for the sustainable development of the Republic of Macedonia. In this context the main strategic goals and objectives should be pointed out for the natural population increase as well as on the migratory movement of the population.**

Under the given unfavorable circumstances in the economic and social development as well as the demographic situation, the government should concentrate its efforts on a few policy fields in which most value added in terms of social inclusion and population development can be obtained. Promoting greater social inclusion in an aging society and identification of the essential priorities in respected domains should serve as guidelines for creating a more inclusive welfare state in Macedonia.

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<sup>1</sup> The basis of the more recent social policy of the EU can be found in the Amsterdam Treaty.



Considering the current situation, the main challenges for the sustainable development of the Republic of Macedonia in respect of the social inclusion and the population aging process are following:

- To increase the employment in formal sector and to increase the employability
- To decrease poverty i.e. make up of insufficient income
- To ensure the equal access to education and equal possibilities for education with certain quality standards
- To ensure health system based on the principles of solidarity, equity and proper efficiency
- To improve the current functioning and supply of social service and benefits
- To apply a complex and long-term population policy
- To apply consistent long-term migration policy

First and most important pillar of social inclusion in the Republic of Macedonia is maximizing the capacity of the labor market to provide new jobs i.e. **to increase the employment in formal sector**, because it addresses the origin of social exclusion. In a country where there is a persistently high unemployment rate and very low employment rate the role of the state in creation of new jobs is of paramount importance. Having in mind the scope and the main characteristics of the unemployed persons the state could speed up employment growth by setting up relatively labor-intensive public work schemes and facilitating part-time and other non-conventional types of employment.

Although the grey market in Macedonia is not officially estimated it is of considerable size. Silently accepted grey market serve as a catalyst for greater social tensions and increased inequalities among most vulnerable categories (persons without sufficient education, elderly, those on low wages, weak ethnic groups). An effective strategy towards formalization of the grey market can contribute for more benefits than costs for both the state as well as the individual. The supply of formal jobs could be increased by: enhancing employment flexibility (the concept of "flexicurity"); reducing taxes on work; financing social security differently and other instruments and measures.

In the circumstances of very unfavorable features of the labor force (particularly educational and professional structure) **employability** is extremely important issue. Public policy can facilitate formal, decently paying employment by: ensuring good education; adjusting school curricula to the demands of the labor market; setting up appropriate schemes of professional education; setting up appropriate schemes of life-long learning etc.

Besides high unemployment Macedonia is characterized and by great poverty (about 30% of the population is below the poverty threshold). Poverty is spread between unemployed as well as employed person (25% of the employed did not receive salary two or three months and for about 25% of them the salary amounts one hundred euros). In these circumstances





one of the central problems of social exclusion is the lack of cash to buy essential goods. So, in the context of social inclusion cannot be neglected this dimension.

There are three basic ways **to decrease poverty i.e. make up of insufficient income**: a) Legal introduction of a minimum wage b) Guaranteed minimum income for unemployed persons and other categories of the population (for those that can prove that their money income falls below the poverty threshold); c) Subsidized housing and food for the needy; d) Cash assistance in selected cases (for persons that do live in misery, near to starvation and really dependant on begging).

Population and labor force in the Republic of Macedonia is characterized by low level of the **education**. Having in mind that the education is a key instrument of social and economic development one can conclude that it is one of the main obstacles for the sustainable development and national prosperity of the country. In the same time education is the key to a person's chances on the labor market and for avoiding his social exclusion. All this imposes the need of socially inclusive education which will enable all children, young people and adults, regardless of their social and economic status, place of residence and ability, sex, ethnic and religious affiliation to have **equal access to education and equal possibilities for education with certain quality standards**.

In respect of the current situation in Macedonia the educational inclusion policy should be built upon the following priorities: a) Improving the physical access to schools providing education up to high school degree; b) Ensuring high quality of teaching and educational services (good teachers, good didactics, good curricula, improvement of the infrastructure capacities and conditions for school life); c) Ensuring compulsory education attainment (in enforcing the obligation to attend school positive persuasion is to be preferred, particularly offering more financial benefits to the poor); d) Increasing children closure in pre-school education (by providing pre-schooling throughout the country, including in the rural areas); e) University access for all who qualified (financial benefits and scholarships for the poor); f) Ensuring high standards in universities: a public and private one; g) Gratis education or tuition fees plus subsidies for the poor (state support-exempt the poor from the obligation to pay fees, scholarships for talented pupils/students; subsidies referring school meals and accommodation).

Current **health system** in the Republic of Macedonia is characterized as generous publicly financed system which is not affordable and creates significant inefficiencies. In the same time the quality of health care has also deteriorated. Having in mind that the availability and the quality of health care is inadequate for certain number of people as well as the so far and expected trends of the population aging process, the vulnerable groups in terms of the access and benefits from the health care system should be identified (long term care patients; elderly; population from rural areas, Roma population; uninsured and redundant workers).



Access to adequate health care for all citizens (rich and poor, urban and rural population) is a priority for any strategy of social inclusion. Concerning the problem of social exclusion in Macedonia should be ensured **health system based on the principles of solidarity, equity and proper efficiency**. This model should include: a) Securing adequate health care for all; b) Policy controlled private delivery in the Primary Health Care with exception of some preventive and emergency services; c) Rationalized and well managed public hospitals accessible to all citizens; d) Enhancing the role of the public health services and interventions; e) Reforms in the health insurance policy – accessible benefit package and income related insurance and socially determined co-payment policy.

**The improvement of the current functioning and supply of social service and benefits** is particularly important determinant of the sustainable development of the Republic of Macedonia in respect of the social inclusion. The present system of social protection in Macedonia offers services and benefits to individuals, families and groups of citizens when they are affected with particular social risk or social problems. So for the social services and benefits mainly serve as safety net and the attention was focused on its efficiency and good targeting (access to benefits pre-conditioned on variety of criteria). Undoubtedly, they should provide basic support which will improve the inclusion of vulnerable groups.

Having in mind this as well as the current ineffective coordination among agencies and organizations working in the social welfare field, for the improvement of the current functioning and supply of social service and benefits in Macedonia several priorities should be distinguished. They are as follows: a) Increased emphasis on needs-based assessment; b) Improvement of the capacities for delivering social services; c) Decentralization of the social services; d) Ex-ant systematic assessment before introduction of more rigid criteria regarding access to social services.

**There is strong correlation between the population development i.e. the process of population and labor force aging and the sustainable development. The current and the expected changes in the population development and the process of demographic aging in the Republic of Macedonia undoubtedly stress the need of adequate complex and long-term population policy that would contribute for the sustainable development. In the same time the sustainable development is an important precondition for reversal the unfavorable demographic trends in the country.**

Having in mind the range of the population aging in the Republic of Macedonia undoubtedly is the fact that it becomes a serious obstacle to the process of sustainable development. The consequences and implications of the changes in the population and labor force age are numerous, direct and indirect. They are manifested in the changes of the demographic development, the labor force supply and human capital formation, economic development, especially on the system of transfers (particularly the pension and health system) etc. In that



context, the demographic development must be one of the key elements of the sustainable development strategy of the Republic of Macedonia.

Having in mind current and expected demographic trends one can conclude that Republic of Macedonia needs **implicit population policy** which imply set of indirect measures and activities, which are conducted in particular policies (employment policy, fiscal policy, credit policy, policy of housing, policy of prices for goods and services for children, ect.). They should route the population development i.e. particular components of the total population movement (natality/fertility and migrations) in socially desirable direction.

The acceleration of the population and labor force aging process in the Republic of Macedonia, particularly during the transition period, is caused by the great changes in the natural and migratory movements of the population which were under strong influence of the socio-economic development on the country. In these circumstances the sustainable development is an important determinant for the unfavorable demographic situation in the country. It will contribute to the employment increase, the unemployment decrease, and the public and personal standard of living improvement, which will directly and indirectly influence the reproductive behavior of the population and restrain the large emigration.

The lack of migratory policy in the Republic of Macedonia has emphasized the negative effects of the internal and international migration. Considering the existing conditions of the biodynamic and aging of population, further abrupt migrations can have enormous implications on the population processes. For this reason it is necessary to adopt appropriate **migratory policy**, as a part of the total population policy of the country. Its measures and activities should be directed toward the decrease of emigration from smaller municipalities and rural areas and steel great immigration in Skopje as well as diminishing large permanent emigrations abroad, (especially the intellectual emigration) and utilization of the available large potentials of the migrants for the sake of sustainable development of the country.

The decrease of the internal migrations will depend on an appropriate development policy directed toward more equal regional development, especially toward the development of the rural areas and smaller municipalities. If it do not happened the migrations from rural to urban areas and between municipalities will continue with relatively great intensity. In that case deepening of the regional differences of population processes in the country and even greater changes in the spatial-demographic relations should be expected.

As for the emigration abroad adequate measures and instruments are necessary, by which increased efficiency even in the first phases of migration cycle would be provided - leaving and staying abroad, then the activities for the return of migrants and their reintegration into the economic and social life, as well as the measures for the increase of the influx of migrants' currency remittances and its productive utilization.

Special attention must be devoted to the enormous **intellectual emigration** and the realization of the potential migration. The creation of preconditions for the exit from the social



and economic crisis will contribute to the commencement of the return streams of the young highly educated cadres that left the country in the last decade and those that are educating themselves abroad. It will mean a new impulse for the sustainable development of the country having in mind the acquired knowledge and skills during their stay abroad.

The transformation of the potential migration into real one, except of the fulfillment of the mentioned presuppositions, will depend on the adjustment of the reforms in the education with the development model of the country. In that case, the creation of human resources that are not needed on the labor market will be precluded, and the danger of "brain export" will be avoided.

The migration policy in this segment of the migration contingent – the intellectual emigration, would be primarily directed toward stimulating the temporary employment and the stay abroad, i.e. the mobility of highly educated cadres promotion as a prevention of "brain drain". The future lack of migration policy concerning the highly educated emigration, with concrete measures and instruments, will mean continuation of non-controlled emigration streams with all the negative consequences and implications on the demographic and the socio-economic development of the country and human capital decrease, especially in the long term.



**Support to the Preparation of a  
National Strategy for Sustainable  
Development in the Republic of  
Macedonia**

A Sida-funded project in cooperation with the  
Ministry of Environment and Physical Planning,  
the Republic of Macedonia

**Additional Expertise Report  
Cross-Cutting Support Unit Environment**

**"Air quality in the regions of Macedonia as  
foundation for agriculture and rural development  
based on SD principles"**

**Mile Dimitrovski, Ph.D. Full Time Professor  
Faculty of Mechanical Engineering – Skopje**

October 2007

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## **1. INTRODUCTION**

Good air quality is a prerequisite for the health and well-being of humans and ecosystems. Polluted air will affect human health, ecosystems and materials in a variety of ways. The atmosphere can act as a means for transporting local pollution emissions to other locations, even long distances away and to other media (land and water). In this chapter, the mechanisms behind the build-up of atmospheric pollution at different scales are described, to explain the causal chain between anthropogenic pollutant emissions and the status of air quality in Europe. Present and future trends of air quality are discussed in relation to implemented and planned policy measures and technological developments. The consequences and impacts of changed air quality are described and assessed using common and consistent procedures at three spatial scales extending across national borders. There are, however, important issues which cut across these scales, where, for example, control policies optimal at one scale may not be optimal at another, and air pollution emission reductions targeted in one area may lead to pollution of other parts of the environment. It was for long believed that air pollutants, once released, were eventually diluted to negligibly low concentrations in the atmosphere. However, measurements taken during the last 20 to 30 years have shown this belief to be erroneous and incomplete. There are three main reasons for this: a) Not all of the troposphere is available to dilute released pollutants. Most pollutant emissions occur at or close to the Earth's surface in the lowest layer of the atmosphere, the so-called 'mixing layer'. Depending on the meteorological conditions, and especially when the mixing layer corresponds to a temperature inversion, pollutants can accumulate in locally restricted zones leading to high concentrations and 'smog'. Constructing stacks higher than temperature inversions was a short-sighted solution that brought some local relief, but shifted pollution problems to different areas and even to larger scales. b) Emitted pollutants undergo changes in the atmosphere: the many different anthropogenic and natural compounds disperse, mix, are transported and undergo chemical and physical reactions. Sooner or later, nearby or remote to the original release, ingredients of this pollution 'cocktail' are returned to the Earth's surface in one of a number of forms, where they can have adverse effects on ecosystems, humans and buildings. c) Compounds remain in the atmosphere for differing lengths of time. This duration, the residence time, is determined by the processes of deposition and chemical conversion. If atmospheric residence times are of the order of 30 days, vertical mixing may extend to the whole troposphere, and hemispheric transport will be important. Only if residence times are considerably longer, between 6 and 12 months, will exchange between the northern and southern hemispheres take place; after 12 months, exchange between the troposphere and the stratosphere becomes important. It is in this way that European emissions of so-called 'greenhouse gases' and of CFCs contribute to the global problems including the 'enhanced greenhouse effect' and stratospheric ozone depletion. The fate of airborne pollutants is determined mainly by the release height and the prevailing weather. Thus, the scale of distribution patterns and effects will range from local (up to a few tens of kilometers), through regional (up to a few hundred kilometers), to continental (up to a few thousand kilometers) and global. Concentrations of air pollutants will vary greatly with time (daily, weekly, and seasonally) and in space.

High concentrations of primary pollutants, including enhanced deposition, can occur within and around emission areas. Practically all large particles are deposited locally. Local weather is an important factor determining short-term pollution levels; in Southern Europe, systems of local air circulation (such as land & sea breezes) are particularly influential. Continental-size weather patterns (cyclones and anticyclones), usually lasting a few days, can suddenly increase pollution loads on the regional scale, resulting in 'pollution episodes'. The transfer of pollutants from the mixing layer to the upper troposphere and stratosphere increases residence times which may have far-reaching global impacts on the properties of the atmosphere. (CFCs emitted at the surface but which destroy the ozone layer at an altitude of 20 to 30 km are an important example of this phenomenon.) Local and national emissions of air pollutants may thus have implications at regional (transboundary) and global scales. The assessment of air pollution cannot therefore be limited to the local or the national level. Three levels of assessment are considered appropriate:

- the local level (time-scale less than one day) with the related exposure of population and materials;

- the regional level (between a day and a week) with the related atmospheric deposition input into terrestrial, marine and surface water systems in relation to critical loads;

- the European contribution to global air pollution (time-scale longer than a month).

## **2. AIR QUALITY INDICATORS (SD) IN EU LEGISLATION**

The air we breathe should be clean. From a human health perspective, the main outstanding air pollution problems are tropospheric ozone and particulate matter. Acidification and ozone remain the main threats to ecosystems. A relatively small number of pollutants (SO<sub>x</sub>, NO<sub>x</sub>, NH<sub>x</sub>, NMVOC) and fine particulates are the main causes of these problems. Significant development during the past few years has been observed in the shift to a multi-pollutant, multi-effect air pollution strategy. Such a policy recognizes that reducing a limited number of pollutants can have a positive effect on various air pollution problems. This approach has led to international legal instruments that impose nationally-differentiated targets for emission reductions of the four main pollutants. As a substantial part of the emissions result from the burning of fossil fuels, an effective measure is to reduce the use of fossil energy sources. The measures that will be required to reach the Kyoto Protocol targets for greenhouse gas emissions will therefore also result in reductions of air pollution.

## **3. INDICATOR DEFINITION**

This indicator tracks trends since 1990 in anthropogenic emissions of ozone precursors: nitrogen oxides, carbon monoxide, methane and non methane volatile organic compounds, each weighted by their tropospheric ozone-forming potential.



The indicator also provides information on emissions by sectors: energy industries; road and other transport; industry (processes and energy); other (energy); fugitive emissions; waste; agriculture and other (non energy). The indicator shows the fraction of the urban population that is potentially exposed to ambient air (1) concentrations of pollutants (2) in excess of the EU limit value set for the protection of human health. The urban population considered is the total number of people living in cities with at least one monitoring station. Exceedance of air quality limit values occurs when the concentration of air pollutants exceeds the limit values specified in the first Daughter Directive of the Air Quality Framework Directive for SO<sub>2</sub>, PM<sub>10</sub> (3), NO<sub>2</sub> and the target values for O<sub>3</sub> as specified in the third Daughter Directive. Where there are multiple limit values, the indicator uses the most stringent case: Sulphur dioxide (SO<sub>2</sub>): the daily limit value; Nitrogen dioxide (NO<sub>2</sub>): the annual limit value; Particulate matter (PM<sub>10</sub>): the annual limit value; Ozone (O<sub>3</sub>): the short term value.

#### **4. REQUIREMENTS FOR AIR QUALITY ASSESSMENT ENSUING FROM THE DIRECTIVES**

In September 1996 the EU adopted Framework Directive 96/62/EC that defines the key principles of and general requirements for air quality assessment and management in EU member states, and constitutes a legislative framework for subsequent (Daughter) Directives that lay down limit levels and specify in more detail the requirements concerning each of the pollutants declared in the FD. The fundamental objectives set in the FD are as follows:

- set the air quality objectives so as to avoid, prevent and reduce effects on human health and the environment as a whole;
- introduce unified procedures for air quality assessment based on common methods and criteria;
- obtain adequate information on ambient air quality and ensure that such information is available to the public;
- preserve ambient air quality wherever it is good, improve it in other cases. The detailed limits for each substance of interest are set out in a series of daughter Directives (Ref 99/30, SO<sub>2</sub>, NO<sub>2</sub> and NO<sub>x</sub>, Particulate matter and Pb, Ref 2000/69, Benzene and CO, Ref 2002/3 Ozone). Further directives are planned to cover a wider range of substances and the ground for these has been prepared by Directive 2004/107 which seeks information from Member States to cover potentially arsenic, cadmium, mercury, nickel and polycyclic aromatic hydrocarbons. EU Directives also set limit levels for ecosystem and vegetation protection (Table 1).

Table 1. Limit values for ecosystem and vegetation protection under Directive 99/30/EC

Compound	Protected component	Averaging time	Limit value
SO <sub>2</sub>	ecosystems	year winter season	20 µg/m <sup>3</sup>
NO <sub>x</sub> (NO+NO <sub>2</sub> )	vegetation	year	30 µg/m <sup>3</sup>

The FD requires member states to divide their territories into zones with air quality assessment and management, thereby providing administratively for the most suitable air quality assessment and management throughout the member state. Zones are therefore the primary units for air quality management, and the Directives specify requirements for air quality assessment in each of the zones. Agglomerations are then defined in the Directives as zones with a population of more than 250,000, or less than that but having such population density per km<sup>2</sup>, which justifies the necessity to assess and manage air quality in the area. The requirements of Directive 96/62/EC do not specify any detailed rules for zone delineation, and leave it up to the member states in what way they will divide their territories into zones, thereby respecting the differences in administrative systems of the various countries. According to the generally accepted interpretation in member states, zone delineation is to be primarily based on the administrative division of the country to allow the zones, as administrative units, to meet the requirements of the Directives for air quality assessment, reporting, and air quality management, for example through action plans. So when setting up zones the “Guidance on Assessment under the EU Air Quality Directives” firmly advises that the purposes of the Directive are best served by assisting zones with administrative areas. Once these Zones are established the Member State is to perform ongoing assessments of air quality, the exact nature of which may depend on the levels of pollution within the zones.

## 5. ZONES CLASSIFICATION IN TERMS OF AIR QUALITY

The requirements laid down in the Directives for air quality assessment methods in each of the zones depend on how deep pollution levels in the zones fall below the limit values. For each pollutant the Daughter Directive lays down the upper assessment threshold – UAT and the lower assessment threshold – LAT. Assessment thresholds are lower than limit values LV and are defined as percentages of the limit value. The required method of assessment in a zone depends on whether the UAT level will be exceeded in the respective zone in preceding years. When a certain pollutant’s UAT will be exceeded, very strict requirements are placed on it; when LAT but not UAT will be exceeded, less stringent requirements for assessment are laid down. When levels below LAT are measured everywhere least stringent requirements are applied.

Table 2. EU directives requirements for air quality assessment

<i>Maximum pollution level in agglomeration or zone</i>	<i>Requirements for assessment</i>
<b>Regime 1: Pollution level &gt; UAT</b>	Measurements are mandatory; Measured data may be completed with information from other sources, including air quality modeling.
<b>Regime 2: Pollution level &lt; UAT but &gt; LAT</b>	Measurements are mandatory but their number is lower, or less robust methods may be used provided data is completed with reliable information from other sources.
<b>Regime 3: Pollution level &lt; LAT</b> a. In agglomerations only for pollutants to which an alert threshold applies <sup>1</sup> . b. Outside agglomerations for all pollutants and in all zone types, for pollutants to which no alert threshold applies.	One measuring site per agglomeration is required, in combination with modeling by objective estimates and indicative measurements <sup>2</sup> Modeling, objective estimates and indicative measurements are sufficient.

The UAT and LAT levels are specified in Directives 99/30/EC and 2000/69/EC for each pollutant and their assessment in terms of the protection of the environment's components are listed on Tables 2, 3 and 4.

### Assessment Thresholds

Table 3. Sulphur Dioxide

	Health protection	Ecosystem protection
Upper assessment threshold	60% of 24-hour limit value (75 µg/m <sup>3</sup> , not to be exceeded more than 3 times in any calendar year)	60% of winter limit value (12 µg/m <sup>3</sup> )
Lower assessment threshold	40% of 24-hour limit value (50 µg/m <sup>3</sup> , not to be exceeded more than 3 times in any calendar year)	40% of winter limit value (8 µg/m <sup>3</sup> )

<sup>1</sup> In the first Daughter Directive, applicable only to SO<sub>2</sub> and NO<sub>2</sub>. <sup>2</sup> Indicative measurements are such that use simple methods or are taken for a limited period of time. They are less accurate than continuous high-quality measurements but can be used for finding air quality as reference measurements wherever pollution levels are relatively low and as complementary techniques in other areas.

Table 4. Oxides of Nitrogen

	Hourly limit value for the protection of human health (NO <sub>2</sub> )	Annual limit value for the protection of human health (NO <sub>2</sub> )	Annual limit value for the protection of vegetation (NO <sub>x</sub> )
Upper assessment threshold	70% of limit value (140 µg/m <sup>3</sup> , not to be exceeded more than 18 times in any calendar year)	80% of limit value (32 µg/m <sup>3</sup> )	80% of limit value (24 µg/m <sup>3</sup> )
Lower assessment threshold	50% of limit value (100 µg/m <sup>3</sup> , not to be exceeded more than 18 times in any calendar year)	65% of limit value (26 µg/m <sup>3</sup> )	80% of limit value (19.5 µg/m <sup>3</sup> )

Table 5. Particulate Matter The upper and lower assessment thresholds for PM<sub>10</sub> are based on the indicative limit values for 1 January 2010.

	24-hour average	Annual average
Upper assessment threshold	60% limit value (30 µg/m <sup>3</sup> , not to be exceeded more than 7 times in any calendar year)	70% of limit value (14 µg/m <sup>3</sup> )
Lower assessment threshold	40% of limit value (20 µg/m <sup>3</sup> , not to be exceeded more than 7 times in any calendar year)	50% of limit value (10 µg/m <sup>3</sup> )

To create a suitable system of zones in a country **the following procedure is recommended:**

- perform preliminary air quality assessment throughout the country, taking into account all relevant parameters (annual average, exceedances of daily and hourly limit values),
- identify areas with the same air quality characteristics (exceedance of concentrations, emission sources, climate, topography), create air quality maps,
- project air quality maps into the map of the country's administrative division. The borders of administrative units may serve for delineating zones or combining administrative areas with similar air quality characteristics.

The following **general principles** should be **respected:**

- for each locality in the country it must be absolutely clear into which zone it falls not only in terms of administration but also in terms of easy identification for the public (specification of zones as administrative units – towns, provinces, regions, etc.),
- zone borders should be fixed in time, except for changes in the arrangement, which should only be introduced in many years (except for formal modifications),

- to delineate zones territorial statistics should be taken into account (population density), however, its specific value should not be used in the formal definition (it changes over time, is not defined for each individual locality). The following (partly conflicting) **aspects** should be considered in zone delineation:
  - as mentioned above, it is suitable to have zone borders coincide with the country's administrative areas to support management,
  - neighboring administrative areas with similar air quality can be merged into a single zone with advantage,
  - areas that are not adjacent, such as two medium-sized towns near to each other, may be merged into a single zone (agglomeration),
  - however, it is not recommended to merge an agglomeration having a population of more than 250,000 with other areas which are spatially separated from the agglomeration,
  - since the requirements on agglomerations and zones differ in some aspects (for pollutants to which alert thresholds apply, such as SO<sub>2</sub> and NO<sub>2</sub>, measurements are mandatory in agglomerations but not in zones), the member state must decide whether a zone is an agglomeration or not. To decide whether the number of inhabitants is in excess of 250,000 it is recommended to consider built-up areas that are not separated by distances of several kilometers,
  - it is recommended not to include in agglomerations open areas of significant extent (1,000 km<sup>2</sup>),
  - a larger settlement (around 1 million inhabitants) is recommended to be deemed as one agglomeration and not to be divided into several smaller agglomerations,
  - delineating different zones for each of the pollutants may simplify air quality assessment; however, it may complicate remedial measures at pollution sources and the pan-European perspective. If it is necessary to delineate zones for a pollutant differently than other zones, it is recommended to do this by dividing or combining zones delineated for other pollutants to preserve common zone borders,
  - if areas falling under several regional or local authorities are combined into a single zone without any single umbrella authority, these authorities shall share responsibility for sending reports and preparing action plans. It is important to ensure that the decision to combine such areas does not cause problems with co-ordination.

## 6. MAPPING AREA DISTRIBUTION OF AIR POLLUTION LEVELS

FD 96/62/EC defines several methods and their combinations to determine the spatial distribution of pollutant levels in zones in which air quality monitoring and assessment is to be carried out and for determining any possible exceedance of the limit values specified. The Directive specifies that in areas over the UAT, measurement is decisive for determining pollution levels. Pollution levels must be determined for the whole zone rather than covering the mere surroundings of the station. The problem of air quality assessment in zones – particularly identifying and locating areas within the zone in which limit values may be exceeded, based on station measurements – therefore becomes a problem of estimating (throughout the zone) the distribution of air quality; it consists in how to generalize “point” measurements, given the particular density of stations and an acceptable error of the estimate, to the entire zone under review. The spatial coverage of measurements can be increased by

validation measurements. However, the ambient air quality directive does not stipulate measurements any longer as the only tool for determining levels in a zone, and envisages – depending on pollution levels – the use of modeling techniques and expert estimates and their combinations. An advantage of modeling is that in comparison with point measurements it better reflects the coverage of the area under review; nevertheless, models are generally regarded as less accurate than measurements. It is important to bear in mind in this context that distinguishing between measurement and other assessment methods (interpretation, spatial interpolation of measurements, modeling) is not as clear-cut as is often thought. Measurement alone (i.e. measurement without any generalization) provides incomplete information while the other extreme, modeling alone (i.e. model application without verification) provides information lacking credibility. Every usable assessment method must therefore combine both approaches.

## **7. ASSESSMENT METHODOLOGY**

Article 2(4) of 1996/62/EC Ref 2 defines 'assessment' as any method used to measure, calculate, predict or estimate the level of a pollutant in the ambient air. The Guidance on Preliminary Assessment, Ref 7, suggests that three components be used as part of the assessment process;

- preliminary measurements,
- modeling, and
- air emission inventories.

Ref 6 notes that different assessment techniques may be used alone or in combination for different parts of the country. All these components are used in the present assessment in varying ways. Ref. 7 notes that high resolution is often not needed in assessments and for a residential neighborhood in the direct vicinity of an industrial area the assessment could be based on resolution, for example, of 250x250 m<sup>2</sup>. Annex VI of 1999/30/EC Ref 13 says that monitoring stations measuring the environment of ecosystems and vegetation should be representative of at least 1000 km<sup>2</sup>. Ref. 6 recommends that the results be primarily produced as maps referring to limit or target values for the pollutants under consideration using a normal map as background, perhaps using grid grey scales to show the percentage of the limit value. This advice is reflected by using colored scales to indicate the pollution level assessed in each square as follows:

Annual Average above Limit Values: Black  
Between Limit Values and UAT: Red  
Between UAT and LAT: Yellow  
Below LAT: Green  
These were overlaid onto a map showing municipalities, roads and administrative areas. Ref. 6 notes that "objective estimation techniques" includes linear interpolation based on the insight that the concentration pattern is sufficiently smooth.

Ref. 6 suggests considering assessing levels in one zone by using air quality information gathered in other zones to avoid an unnecessary assessment burden.

## 8. RESULTS

### 8.1. Monitoring systems and methodologies applied in Macedonia

Assessment is done with all the data available from the automatic monitoring systems in the MoEPP and HMA measurement programs.

- a) Automatic Air Monitoring System (MEPP) Table  
6. Methodologies used for air quality monitoring

Parameter	Methodology
SO <sub>2</sub>	Ultraviolet Fluorescence Method (UV)
CO	Non-Disperse Infrared Analyzer Method (NDIR)
NO <sub>x</sub>	Chemi-luminescence Method (CLD)
O <sub>3</sub>	Ultraviolet Absorption Method (UV)
SPM	Beta-ray method

Table 7. Methodologies used for measuring meteorological parameters

Parameter	Methodology
Wind speed and direction	Ultrasonic Type Anemometer
Temperature and humidity	Platinum Resistance Thermometer and Hydro-thermograph
Solar radiation	Solar radiation sensor

### b) Monitoring stations of the HMA

Table 8. Methodologies used for air quality monitoring

Parameter	Methodology
SO <sub>2</sub>	Tetrahaloro mercurate/ West-Gacke method
Black smoke	Standard British Reflectometric Method
NO <sub>2</sub>	OGAWA-USA Method
O <sub>3</sub>	Jodometric Method

Table 9. Meteorological parameters and instruments used by HMA

Parameter	Methodology
Wind speed and direction	Anemograph according to Fuess
Temperature	Thermometer, Thermograph
Relative Humidity	Hygrograph
Atmospheric pressure	Barometer
Sunshine duration	Heliograph

**8.2. Sources of Pollution I - Cadastre** - the biggest individual sources of pollution are REK Bitola (located at Pelagonija Valley), FENI Industry (located at the most famous vinery area), SILMAK (Polog Valley), OKTA (Skopje Valley) (Table 10):

Table 10. Emissions from point sources

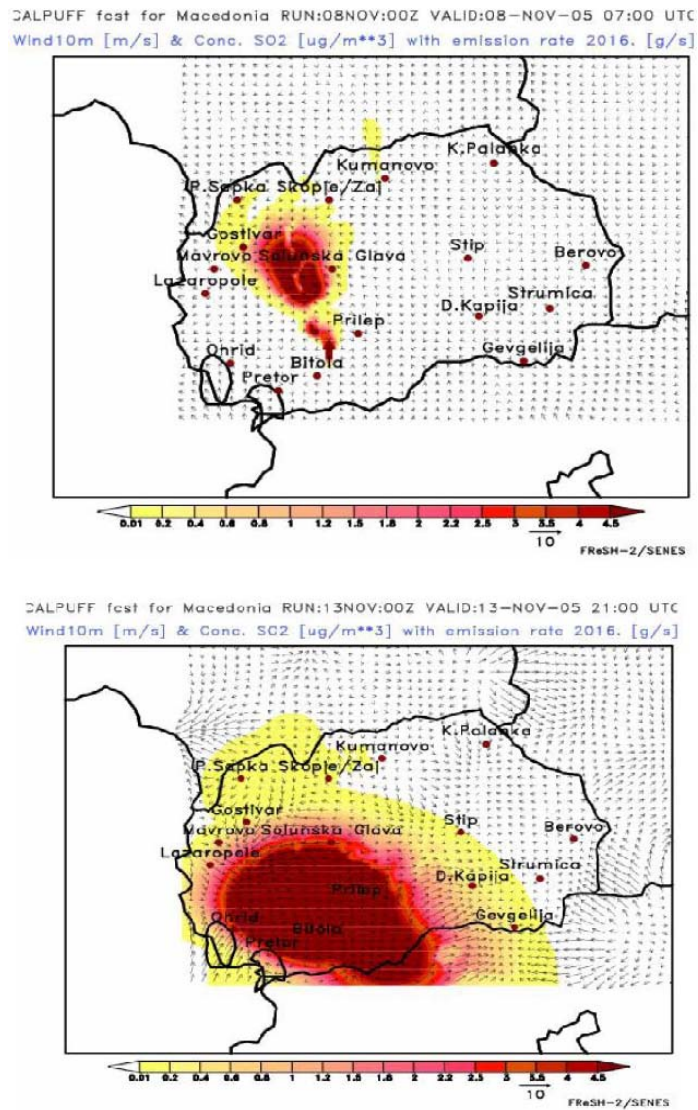
Name		Power MW	Number of Stacks	height meter	diameter meter	SO <sub>2</sub>	max annual average	NO <sub>x</sub>	max annual average	SPM	max annual average
						g/s	µg/m <sup>3</sup>	g/s	µg/m <sup>3</sup>	g/s	µg/m <sup>3</sup>
REK	Energy	1890	1	250	8	1597	37	283	7	92	2
BITOLA								0		0	
			2	250	8	918	21	131	3	46	1
<b>Total</b>						<b>2515</b>	<b>58</b>	<b>414</b>	<b>10</b>	<b>138</b>	<b>3</b>
TEC-Oslomej	Energy	380	1	180	6	519	25	28	1	231	11
SILMAK Jegunovce	Metallurgy	Above 50	1	30	3	1	1	19	33	76	130
			2	30	3	2	3	17	30	68	116
			3	30	3	2	4	24	40	82	140
			4	37	2	1	1	6	10	42	71
			5	37	2	1	1	7	11	31	54
			6	50	3	2	1	13	7	97	51
			7	50	3	1	2	38	65	107	181
			8	41	2	1	1	12	20	32	54
			9	41	2	1	1	6	10	36	61
			10	41	2	1	2	13	22	32	55
			11	45	2	0	0	10	17	41	69
			12	45	2	0	0	9	15	31	52
			13	45	2	0	0	8	14	28	47
<b>Total</b>						<b>12</b>	<b>18</b>	<b>181</b>	<b>292</b>	<b>702</b>	<b>1079</b>
OKTA Skopje	Oil Refinery	Above 50	1	15	4	48	1548	7	221		
			2	80	3	14	3	3	1		
<b>Total</b>						<b>62</b>	<b>1552</b>	<b>10</b>	<b>222</b>		

In 2004 the oil refinery OKTA discharged 174 kg/h SO<sub>2</sub> from a 150 m stack. Simple calculations suggest that the SO<sub>2</sub> annual average concentration would be 2.32 µg/m<sup>3</sup> or less. This would not be significant in terms of the directive. NO<sub>x</sub> from OKTA would give rise to a maximum ground level concentration of about 0.48 µg/m<sup>3</sup> or less. Given that Directive 99/30 specifies limits of 20 µg/m<sup>3</sup> to protect ecological systems, this would be



The remaining pollution is probably associated with transport, i.e. cars, buses and lorries. The observed reduction in hourly exceedences over recent years may well reflect the reduction in sulphur in fuel both in local heating system and in transport. It may also reflect a reduction on industrial capacity in Skopje. Only REK BITOLA and TEC-Oslomej Thermal Power Stations would likely affect SO<sub>2</sub> levels in air significantly when judged against the directive. Simple calculation (Ref. 9) shows that annual average values would probably be about 30 µg/m<sup>3</sup> or less. This seems to correspond with the slight elevation in SO<sub>2</sub> levels noted in measurements in Bitola when compared to other towns. Similar simple calculation shows that TEC Oslomej, near Kichevo, would give rise to an annual average of about 25µg/m<sup>3</sup> or less from a 180 m stack.

Figure 1. Emission of SO<sub>2</sub> according to CALPUFF model and corresponding puffs.



## II - Influence of traffic

Table 11. Emission of CO<sub>2</sub> from transport in Macedonia

Road	traffic road	Length	A	CO <sub>2</sub>	Total
		km		g/pass km	
M-1	Border with Jugoslavija - Kumanovo	11,4	2659	353647	3165
M-1	Kumanovo - Miladinovci	17,9	6206	825398	7569
M-1	Miladinovci -Petrovec	5,9	2380	316540	3261
M-1	Petrovec -Veles	29,1	1209 4	1608502	1374 3
M-1	Veles - Gradsko	21,3	3924	521892	4459
M-1	Gradsko - Negotino	16	1229	163457	1862
M-1	Negotino - Demir Kapija	16,5	1533	203889	2190
M-1	Demir Kapija - Udovo	22,3	2003	266399	2671
M-1	Udovo - Gevgelija	24,8	2332	310156	2916
M-1	Gevgelija - border with Greece	5,2	2863	380779	3368
M-2	Konjare - Stracin	30,7	1587	211071	2003
M-2	Stracin - Kriva Palanka	33,5	2134	283822	2398
M-2	Kriva Palanka - Border with Bulgaria	13,5	1358	180614	1579
M-3	Skopje - Blace	19	3428	455924	3986
M-4	Skopje - Zelino	26,3	8788	1168804	9449
M-4	Zelino - Tetovo	6,5	8833	1174789	9498
M-4	Tetovo - Gostivar	24,1	1047 2	1392776	1114 1
M-4	Gostivar - turn to Mavrovo	12,3	3921	521493	4966
M-4	turn to Mavrovo - Kichevo	33,5	2872	381976	3419
M-4	Kicevo - Botun	38,6	1375	182875	3656
M-4	Botun - Podmolje	14,8	3042	404586	3437
M-5	Ohrid - Resen	38	2162	287546	3089
M-5	Resen - bitola	28	2064	274512	2612
M-5	Bitola - border with Greece	12	1394	185402	1743
M-4	Podmolje - Struga	7,1	3530	469490	4279
M-4	Struga - border with Albania	13	775	103075	1007

Legend: A – Traveling vehicles and vehicles for transport of light goods

### 8.3. Statistical regions in Macedonia

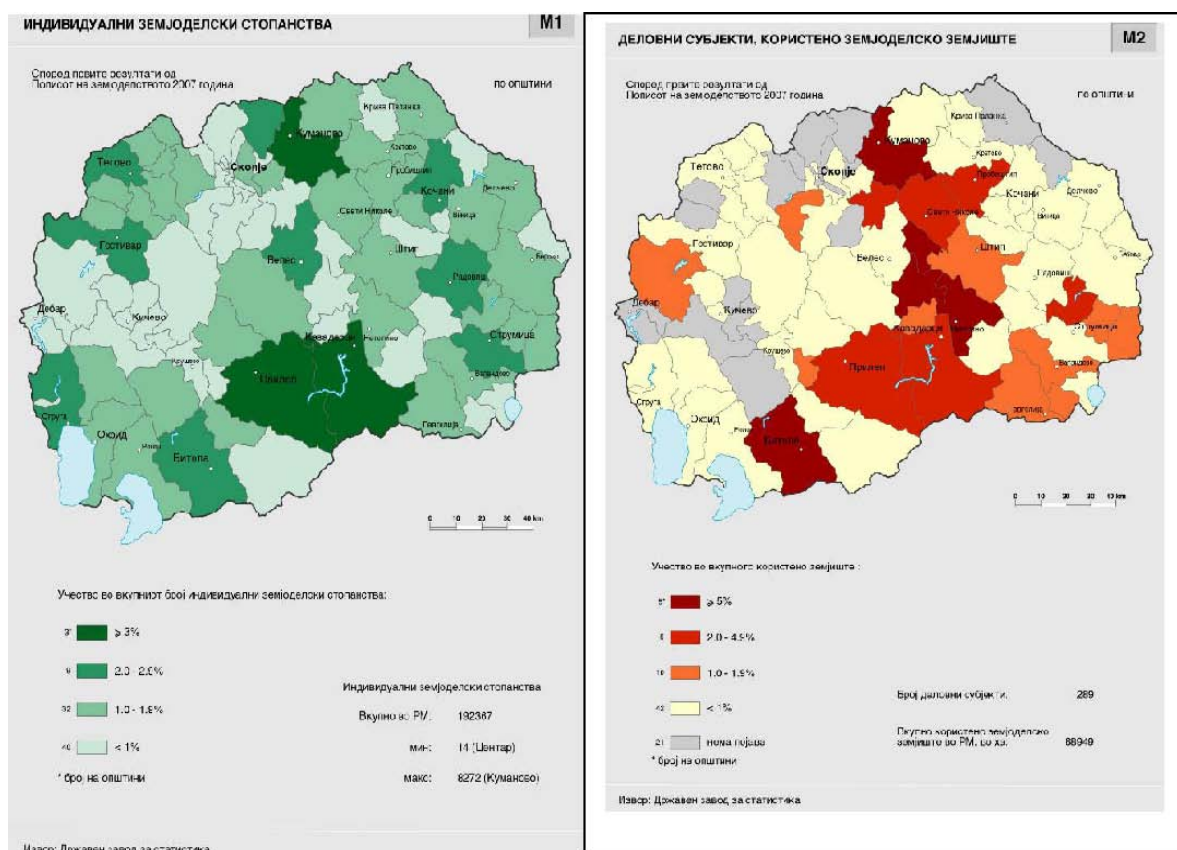
According to EU recommendations and guides, in this report Republic of Macedonia statistical regions were used (Fig.2) as basis for delineation of ambient air quality regarding its impact on vegetation and ecosystems in general. This approach was chosen to support the SD agriculture (rural) development in Macedonia but also to facilitate the development and application of River Basement Management plans.

Figure 2. Statistical regions in Macedonia used as basis for presentation of air quality



Legend: 1-Pelagonija region; 2-Vardar region; 3-North-east region; 4-South-west region; 5-Skopje region; 6-South-east region; 7-Polog region, and 8-East region.

Figure 3. Individual agricultural economies within the same technical-economical units and management of agro products in Macedonia





## 8.4. Exceedance of air quality limit values in regions of Macedonia

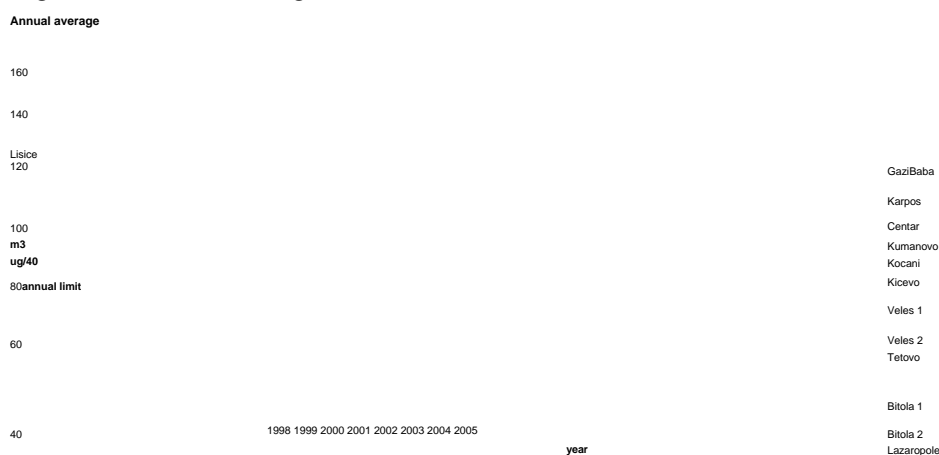
### 8.4.1. Particulate Matter (PM<sub>10</sub>)

PM<sub>10</sub> in the atmosphere can result from direct emissions (primary PM<sub>10</sub>) or emissions of particulate precursors (nitrogen oxides, sulphur dioxide, ammonia and organic compounds) which are partly transformed into particles by chemical reactions in the atmosphere (secondary PM).

In the period 1997-2004, 23-45% of the urban population was potentially exposed to ambient air concentrations of particulate matter (PM<sub>10</sub>) in excess of the EU limit value set for the protection of human health (50  $\mu\text{g}/\text{m}^3$  daily mean not be exceeded more than 35 days a

calendar year). There was no discernible trend over the period.

Figure 4. Annual average PM<sub>10</sub> values in Macedonia.



According to Fig.4, annual average PM<sub>10</sub> values exceeded the EU annual limit values in all stations except Lazaropole, an EMEP station located at 1100 m a.s.l. in the west region.

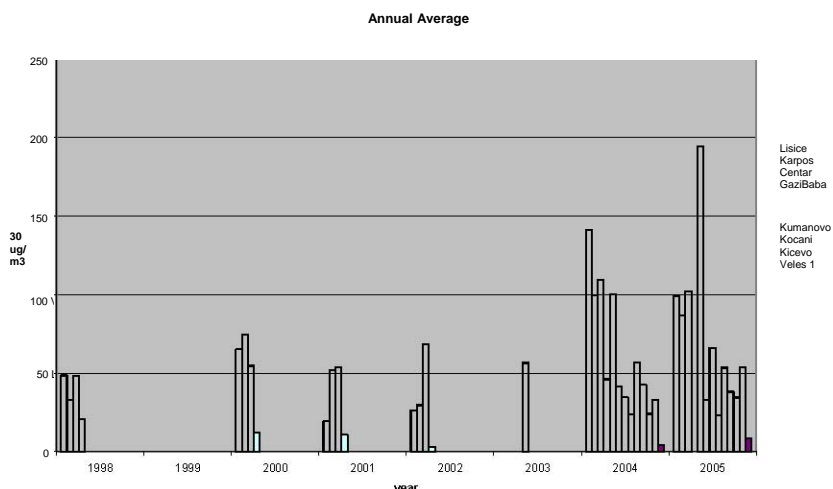
### 8.4.2. Nitrogen oxides (NO<sub>x</sub>)

The main source of nitrogen oxides emissions to the air is the use of fuels; road transport, power plants and industrial boilers account for more than 95% of European emissions.

In the period 1996-2004, 22-45% of the urban population was potentially exposed to ambient air nitrogen dioxide (NO<sub>2</sub>) concentrations above the EU limit value set for the protection of human health (40  $\mu\text{g}/\text{m}^3$  annual mean) in Europe. There was a slight declining trend observed over the period.



Figure 5. Annual average values for NO<sub>x</sub> (annual limit value 30 µg/m<sup>3</sup> set for protection of vegetation) in Macedonia



Annual limit of NO<sub>x</sub> set for the protection of vegetation in Macedonia is not exceeded only at measurement stations in Veles1 (Vardar region) and Lazaropole .

#### 8.4.3. Ozone (O<sub>3</sub>)

Ozone is a form of molecular oxygen that consists of three oxygen atoms linked together. Ozone in the upper atmosphere (the "ozone layer") occurs naturally and protects life on earth by filtering out ultraviolet radiation from the sun. Ozone at ground level is a noxious pollutant. It is the major component of smog and presents this country's most intractable urban air quality problem.

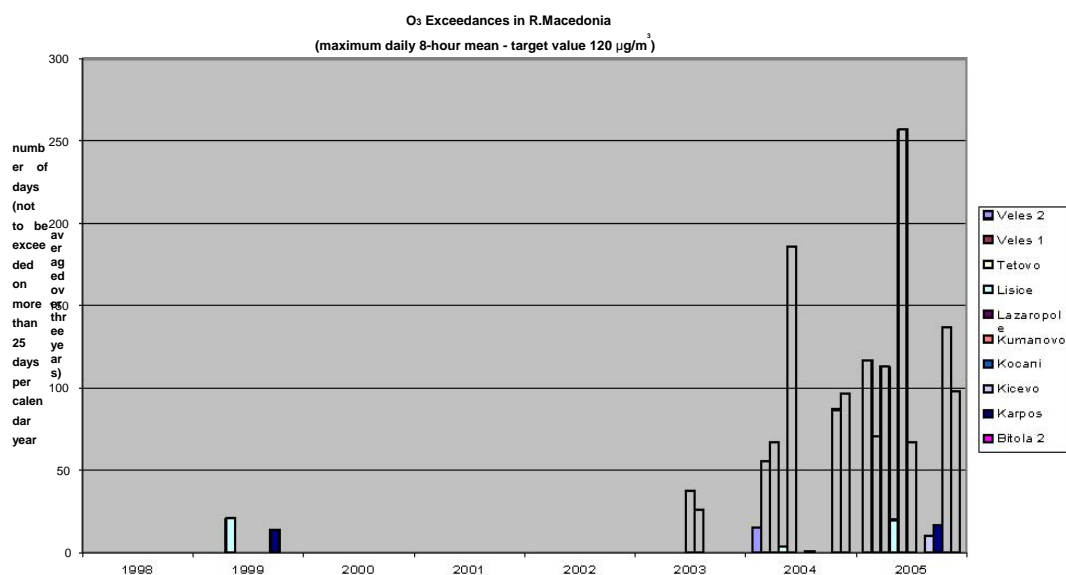
Ozone is a severe irritant. It is responsible for the choking, coughing, and stinging eyes associated with smog. Ozone damages lung tissue, aggravates respiratory disease, and makes people more susceptible to respiratory infections. Children are especially vulnerable to ozone's harmful effects, as are adults with existing disease. Even otherwise healthy individuals may experience impaired health from breathing ozone-polluted air. Elevated ozone levels also inhibit plant growth and can cause widespread damage to crops and forests.

The concentration of ozone in the troposphere is very much lower than in the stratosphere. This is just as well, because ozone is toxic to plants (as little as 80 ppb can reduce growth) and humans. The natural background concentration is in the range 20 to 60 ppb. However, there is some evidence that in the nineteenth century concentrations were only 10 ppb. Though a very small part of the tropospheric ozone is brought down from the stratosphere, most is produced near ground level. This ozone is formed by action of UV-A ( $\lambda < 400$  nm) on nitrogen dioxide. Because ozone is also destroyed by nitric oxide the build-up of ozone is dependent on a large number of linked reactions. The important features are that ozone production is favored by the presence of nitrogen oxides from combustion processes, e.g. petrol engines, industrial furnaces, forest fire, together with hydrocarbons and sunlight. The

hydrocarbons may be introduced into the atmosphere from un-burnt fuel or may be there naturally (e.g. agricultural emissions of methane or emissions of terpenes and isoprene from trees and other plants). High tropospheric ozone concentrations are being linked to increasing levels of asthma and bronchial problems amongst urban populations. Similarly, the decline in forest growth that was initially blamed on “acid rain” is now recognized as being partially due to the detrimental effects of ozone. Human activities that reduce stratospheric ozone concentrations and thus increase UV-B radiation levels are helping to increase ground-level ozone concentrations. The more UV-B that reaches the lower levels of the troposphere, the more likely that harmful ozone will be produced in that region of the atmosphere where it can do maximum damage to crops and humans.

In the period 1996-2004, 13-60% of the urban population in Europe was exposed to ambient ozone concentrations exceeding the EU target value set for the protection of human health ( $120 \mu\text{g O}_3/\text{m}^3$  daily maximum 8-hourly average, not to be exceeded more than 25 times a calendar year). The 60% of the urban population exposed to ambient ozone concentrations over the EU target value was recorded in 2003, which was the record year. There was no discernible trend over the period.

Figure 6. 8-th hours exceedance values for ozone ( $\text{O}_3$ ) in Macedonia



8-hour exceedance values for ozone in 2004 and 2005 were recorded only in Lazaropole (?) and Veles2 stations.

#### 8.4.4. Sulphur dioxide ( $\text{SO}_2$ )

One of the main components of acid rain is sulphur dioxide ( $\text{SO}_2$ ), another by-product of fossil fuel combustion. The effects of  $\text{SO}_2$  on crops are influenced by other biological and environmental factors such as plant type, age, sunlight levels, temperature, humidity and the presence of other pollutants (ozone and nitrogen oxides). Thus, even though sulphur dioxide

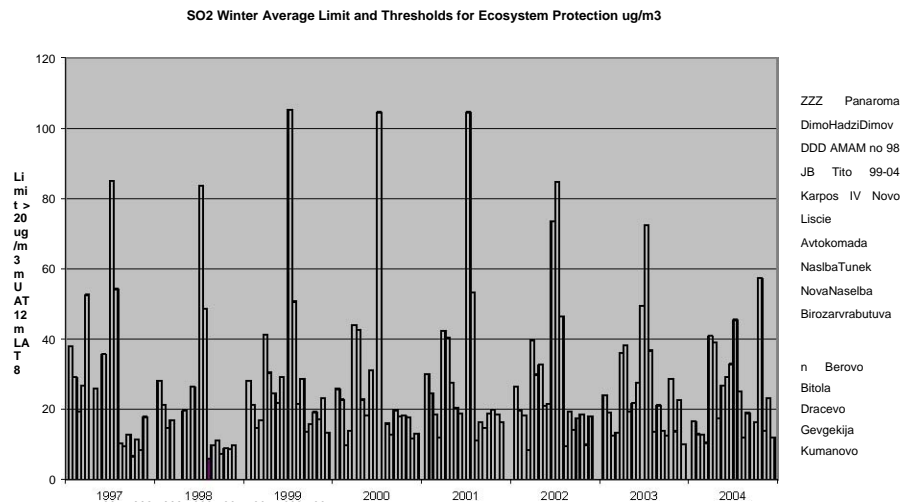
levels may be extremely high, the levels may not affect vegetation because of the surrounding environmental conditions. It is also possible that the plants and soils may temporarily store pollutants. By storing the pollutants they are preventing the pollutants from reacting with other substances in the plants or soil.

Sulphur in coal, oil and mineral ores is the main source of sulphur dioxide in the atmosphere. Up to 1960s, coal and oil combustion in large and small sources was the typical situation in many European cities, resulting in very high sulphur dioxide and PM concentrations. Since then, the combustion of sulphur-containing fuels have largely been removed from urban and other populated areas, first in Western Europe and now also increasingly in most central and Eastern European countries. Large point sources (power plants and industries), remain the predominate source of sulphur emissions. These sources, usually with high stacks, are most often located away from population centers.

In the period 1996-2004, the fraction of the urban population in EEA-32 member countries that is potentially exposed to ambient air concentrations of sulphur dioxide in excess of the EU limit value set for the protection of human health ( $125 \mu\text{g SO}_2/\text{m}^3$  daily mean not to be exceeded more than three days a year), decreased to less than 1%, and as such the EU limit value set is close to being met.

Several factors have contributed to the decrease in sulphur dioxide concentrations. The first (1985) and the second (1994) sulphur protocol under the UNECE LRTAP Convention, together with EC limit values set in the Air Quality Directive have resulted in major European emission reductions and correspondingly decreasing ambient concentrations.

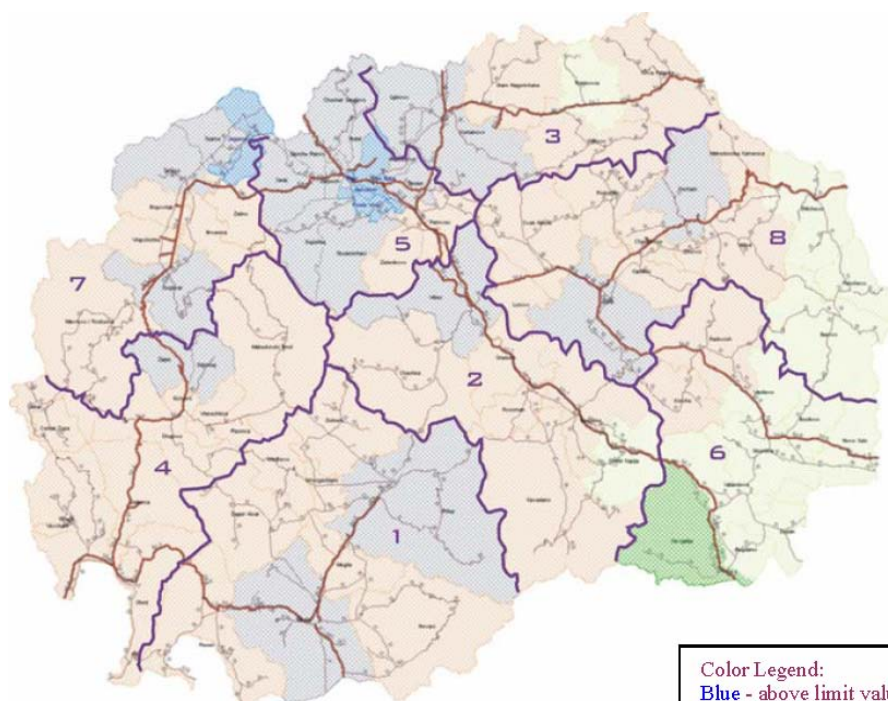
Figure 7. Average winter values for SO<sub>2</sub> regarding the protection of ecosystems in Macedonia



Average winter values for SO<sub>2</sub> was exceeded in Skopje, Veles, Kumanovo, Stip and occasionally in Bitola cities.

### 8.5. CALCULATED AND STATISTICAL MAPS OF MAXIMAL ADMISSIBLE LEVELS IN THE STATISTICAL REGIONS IN MACEDONIA

Figure 8. PM<sub>10</sub> in the regions of Macedonia in 2004



Color Legend:  
**Blue** - above limit value and margins of tolerance  
**Black** - annual average above limit value;  
**Red** - between limit value and UAT;

Figure 9. PM<sub>10</sub> in the regions of Macedonia in 2005

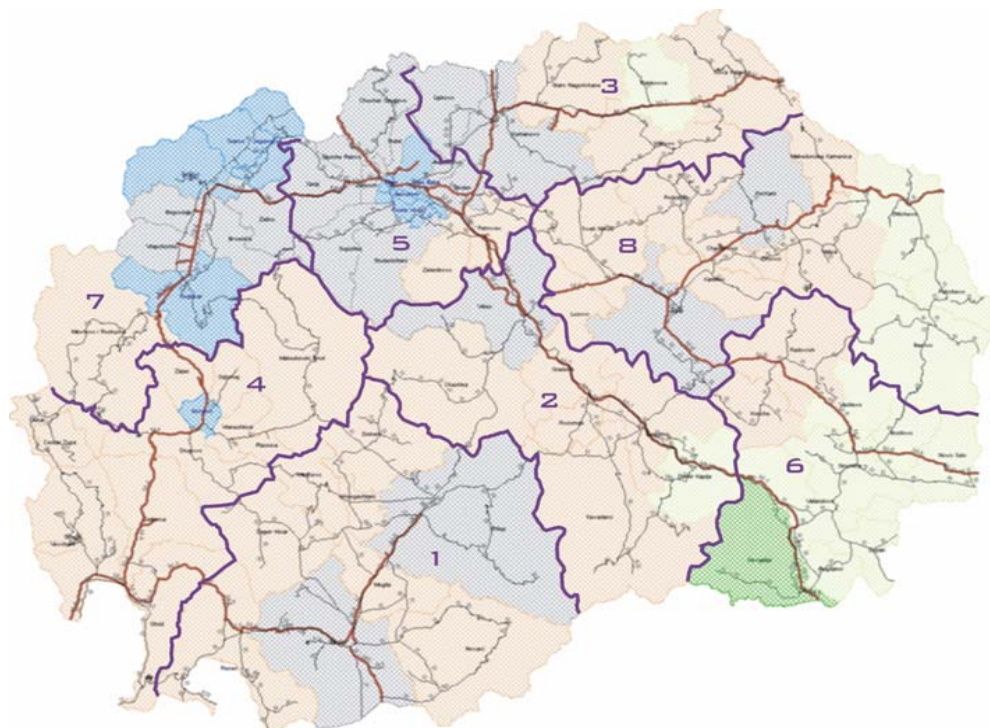




Figure 10. NOx in the regions of Macedonia in 2004

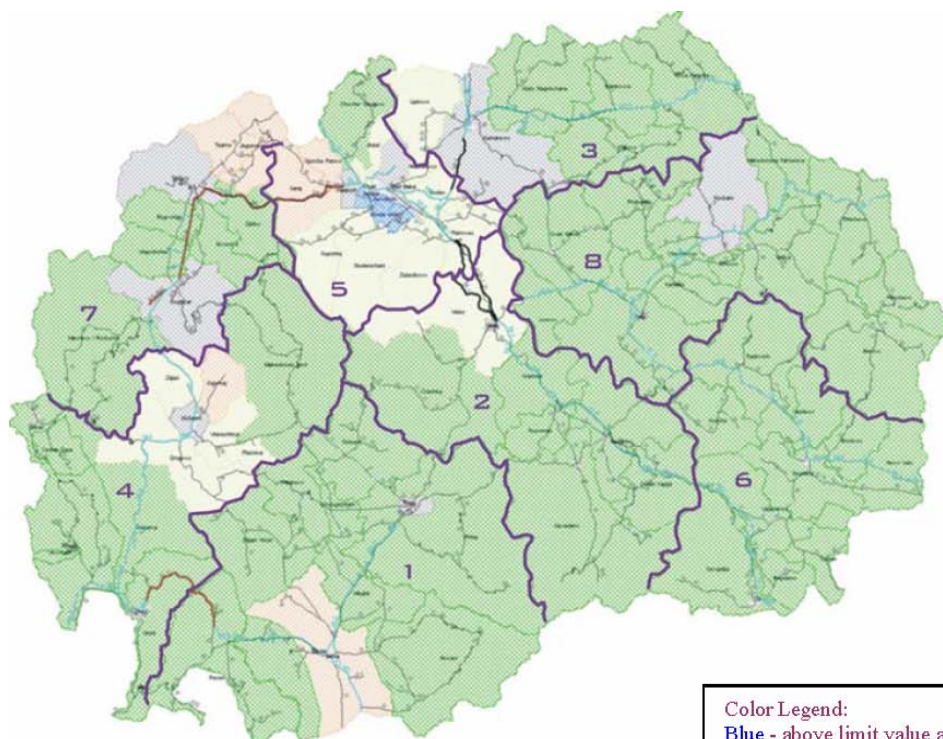


Figure 11. NOx in the regions of Macedonia in 2005

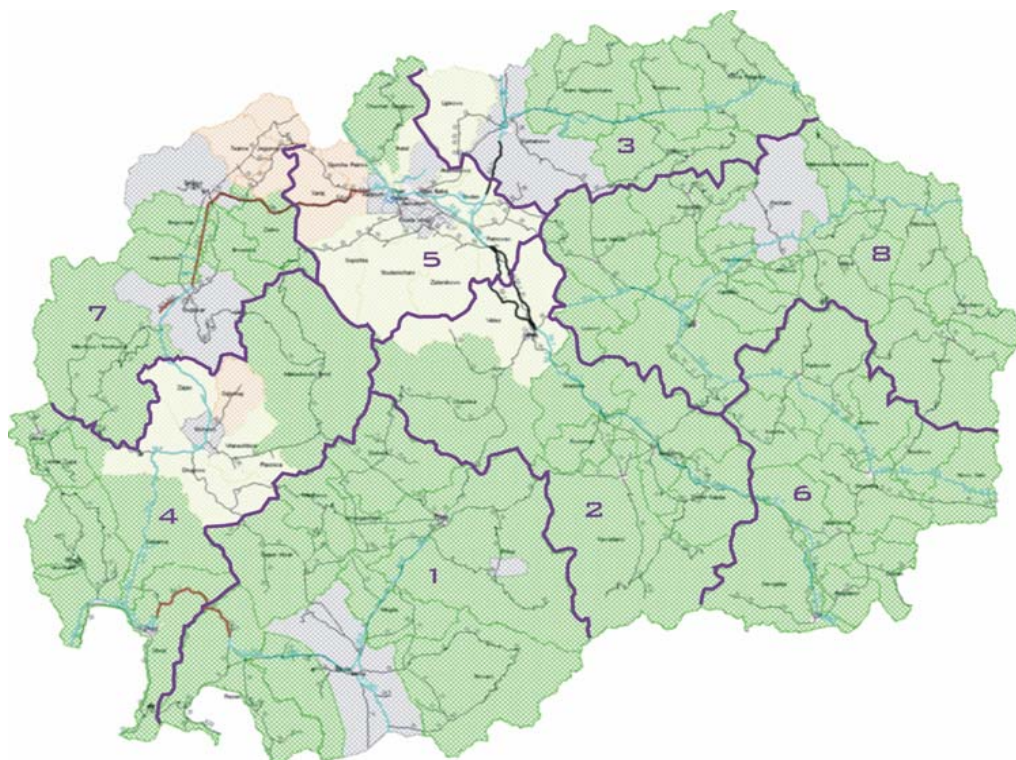


Figure 12. Ozone in the regions of Macedonia in 2005

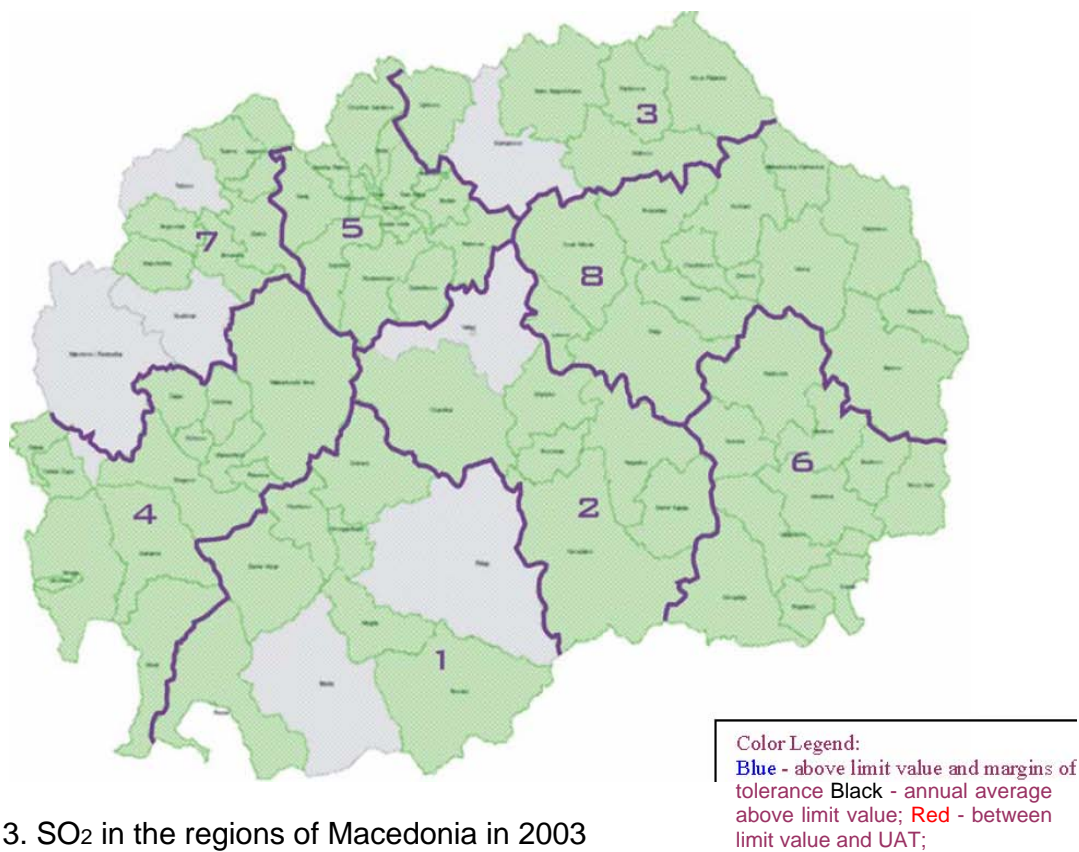


Figure 13. SO<sub>2</sub> in the regions of Macedonia in 2003

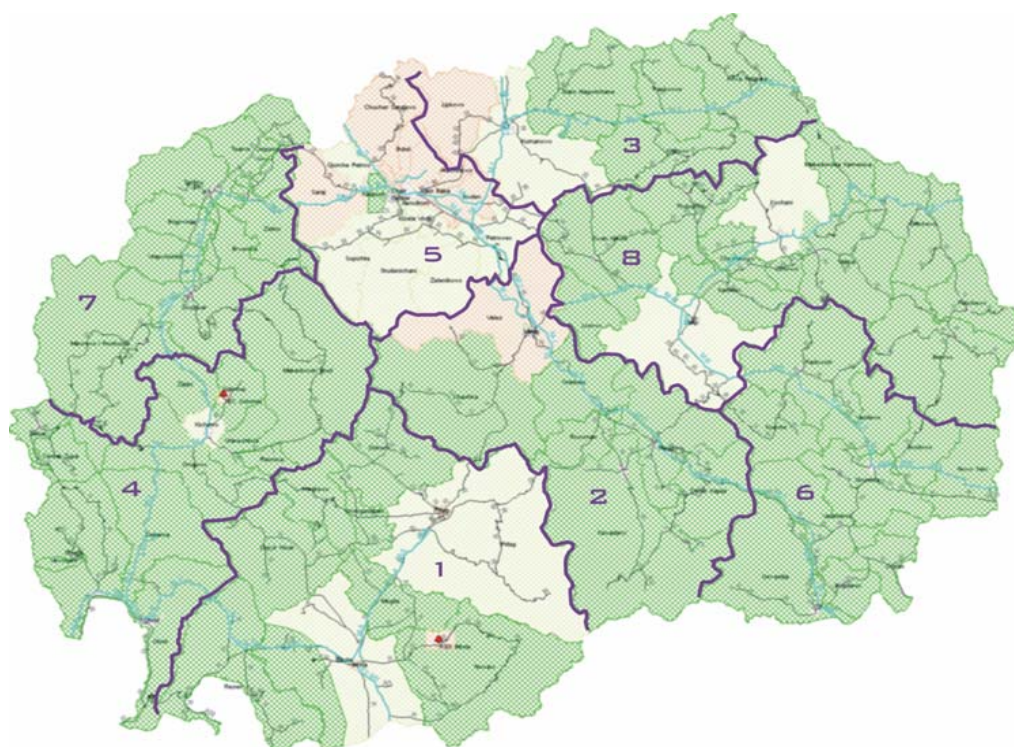
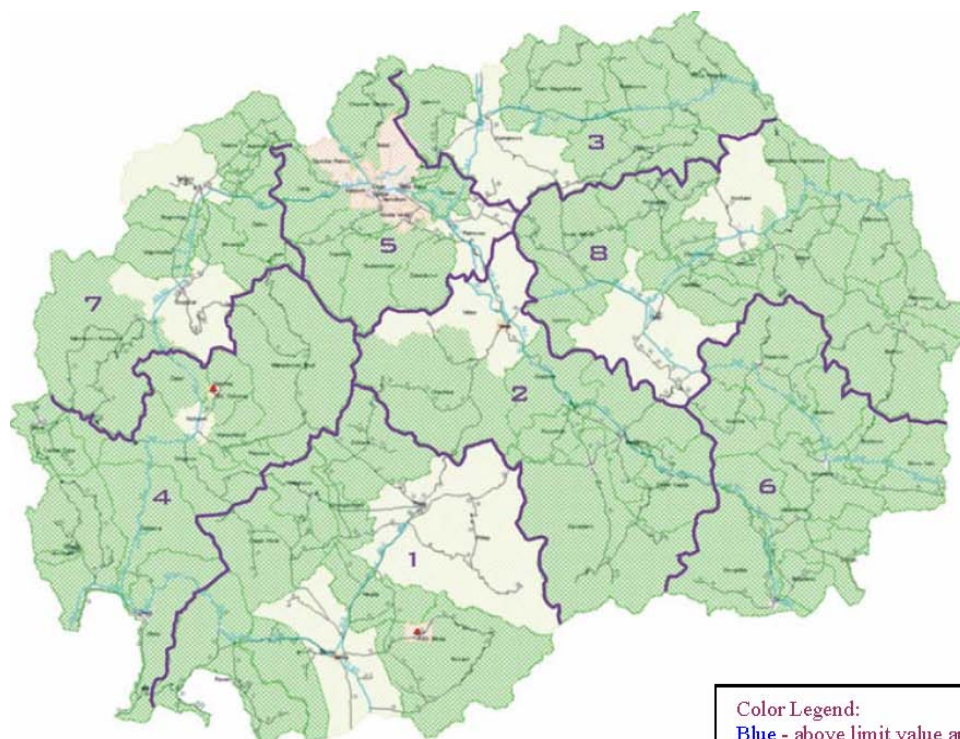
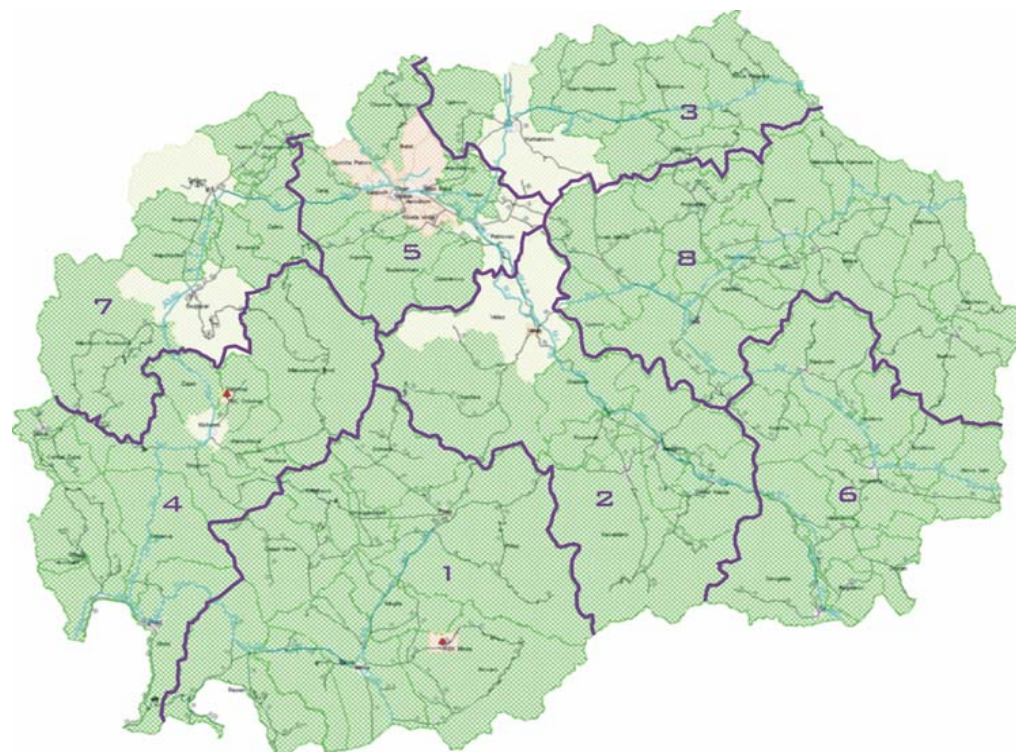


Figure 14. SO<sub>2</sub> in the regions of Macedonia in 2004



Color Legend:  
Blue - above limit value and margins of tolerance  
Black - annual average above limit value;  
Red - between limit value and UAT;

Figure 15. SO<sub>2</sub> in the regions of Macedonia in 2005



Maps on Fig. 8, 9, 10, 11, 12, 13, 14 and 15 represent a summary of all assessments for each of the compounds, created by integrating the layers of the respective air quality classes for the relevant year.

The maps (Fig. 8 and 9) indicate that annual average concentrations of PM<sub>10</sub> exceeded LV levels throughout the country, and even the margin of tolerance in some areas. Annual average PM<sub>10</sub> values exceeded the EU and Macedonian annual limit values in all stations except Lazaropole (South-west region), an EMEP station located at 1100 m a.s.l. in the west region.

Figs. 10, 11, 13, 14 and 15 show the distribution of limit level exceedances for annual average concentrations of NO<sub>x</sub> and average winter concentrations of SO<sub>2</sub> for ecosystem and vegetation protection.

Overview of exceedances of UAT levels, define the area of mandatory measurements for the purposes of ecosystem and vegetation protection in respect of National Parks and nature reserves.

Fig. 10 and 11 show that annual limit of NO<sub>x</sub> set for the protection of vegetation in Macedonia is not exceeded only at measurement stations in Veles 1 (Vardar region) and Lazaropole (South-west region).

Fig. 12 indicate maximum daily 8-hour exceedances values for ozone in 2004 (Veles, Tetovo, Bitola stations) and 2005 were recorded in Lazaropole, Tetovo, Bitola, Kumanovo, Kocani and Veles stations, it means in South-west region, Polog region, Pelagonija region, North-east region, East region and Vardar region.

Fig. 13, 14 and 15 show that average winter values for SO<sub>2</sub> was exceeded in Skopje (Skopje region), Veles (Vardar region), Kumanovo (North-east region), Stip (East region) and occasionally in Bitola cities (Pelagonija region).

#### **8.4. EVALUATION OF THE STATE OF THE AIR POLLUTION IN THE REGIONS**

**Pelagonia region (Region 1).** Large portion of this region is agricultural land (corn, wheat, tobacco, sugar beet, apple plants...), Figure 3. National Parks "Pelister" and "Galicica" belong to this region. The most important polluter in the region is REK Bitola Bitola (the largest coal mine and power station in the Republic of Macedonia) located 12km north-east of the city, one of the five stated 'hot spots' in Macedonia. Pollution analysis reveals that there is exceeding of annual average limit values for plant protection and vegetation regarding NO<sub>x</sub> and partly SO<sub>2</sub>. There is also exceedance of maximal 8 hour daily concentrations of O<sub>3</sub>, and it will be good to implement the measurements of precursors. More information will be needed to determine the concentrations of precursors in order to decide what action may be successful in reducing the concentrations. The PM<sub>10</sub> limits are also exceeded quite significantly but it is not clear that

this is solely or even mainly the result of the activities of the power station. Other sources, like wood burning, could well be a significant factor here. The power station will be subject to IPPC and the operator in his application will be required to set the effect of the operation of this power station on the environment. This must include an assessment of the effects of SO<sub>2</sub>, NO<sub>2</sub> and particulate matter release. The present assessment shows that releases from the station might cause the upper assessment thresholds for SO<sub>2</sub> to be exceeded though not beyond the limit value.

**Vardar region (Region 2).** The most famous vinery region, fruit plants (peach) and vegetables plants, Figure 3. In this region, more specifically in city of Veles, the biggest polluter in Macedonia is located

- the Lead Smelter Factory, which is not in operation since 2004, than "FENI" industry for the ferro-nickel extraction near Kavadraci and the Thermo Electrical Plant near Negotino. The analyses of SO<sub>2</sub> concentrations from the monitoring stations in city of Veles reveal that the limit values for ecosystems protection are exceeded, and also the target values for O<sub>3</sub>, thus pointing to the need for implementation of precursors measurements. However, PM<sub>10</sub> levels are likely to exceeded the limit values substantially. Detected NO<sub>x</sub> concentrations are below the limit values for vegetation protection. As the city of Veles and its surroundings are under direct influence of the smelter's pollution emission for a prolong time period, the monitoring of pollutants in the soil is still very much needed. The operator of the "FENI" works in Kavadarci will be required to make an application under the terms of the IPPC Directive, and this must include an assessment of the effect of the installation on the environment.

**North-east region (Region 3).** The majority of this region is mountainous. Agricultural land is mostly located in the Kumanovo municipality. The participation of the total used land is in Macedonia less than 5% (Figure 3). SO<sub>2</sub> levels are exceeding the limit values set in the directive and NO<sub>x</sub> levels, set for vegetation protection, were also higher than at other similar location, and exceeded limit values. There are also records for the exceedance of the O<sub>3</sub> target values and PM<sub>10</sub>. Although more mountainous, there is a need for additional research on the influence of air quality on agricultural surfaces.

**South-west region (Region 4).** This region covers only 1-2% of the total agricultural land in Macedonia; National Park "Galicica" is also partly in this region. Approximately 8 km from the city of Kicevo the Thermo Electrical Plant "Oslomej" is located. NO<sub>x</sub> limit values are exceeded in Kicevo, but elsewhere in the region they may be met. PM<sub>10</sub> limit values are breached at several location in the zone and even in Lazaropole (EMEP station located in 1100 m a.s.l.) they exceed the UAT. Ozone target values are exceeded, very substantially at Lazaropole. In Ohrid, it might be helpful to monitor PM<sub>10</sub> to support the exceptional environmental status of the area.

**Skopje Region (Region 5).** This is the most populated region with app. 580000 inhabitants. The majority of the agricultural land is divided into small individual surfaces. On the North-East side the "OKTA" oil refinery is located. SO<sub>2</sub> levels have dropped substantially over the years, but the limit values for the protection of ecosystems were breached in 2005. NO<sub>x</sub> annual limit values for protection of vegetation are still exceeded. PM<sub>10</sub> values still greatly exceed the limit values and require attention. Traffic will clearly be implicated in some of these findings, but there are also a number of large stationary sources in the area whose effect could be felt in and around Skopje. OKTA Refinery is subject of IPPC directive. This air quality state requires additional research for the impact on agricultural surfaces that, although being divided in numerous small individual areas, still represents the primary source of vegetable products for the markets in the capitol Skopje.

**South Region (Region 6).** This region is the principal agricultural production area in Macedonia, mostly located in the vicinity of Gevgelija, Strumica and Valandovo cities. Early spring vegetable production dominates, followed by oil tree yards and other Mediterranean cultures around Lake Dojran. NO<sub>x</sub> levels are below limit values for vegetation protection. SO<sub>2</sub> levels are below limit value for protection of ecosystems. O<sub>3</sub> levels are below target values. PM<sub>10</sub> levels are high but do not appear to breach the limit values. Apart of specific agricultural expertise, there is no formal need for additional measurement of air pollution.

**Polog Region (Region 7).** This is dominantly mountain region; the Polog Valley occupying the small area. National Park "Mavrovo" also belongs here. SO<sub>2</sub> values have fallen as elsewhere and met limit values in 2005. NO<sub>x</sub> limits set to protect vegetation were not reached. Yet, ozone levels exceeded the target values, and it will be good to implement the measurements of precursors. PM<sub>10</sub> limit values are not reached over a wide area. Calculations of the likely effect of releases from "SILMAK" also show that there is likely to be extensive pollution due to NO<sub>2</sub> and PM<sub>10</sub> emissions in and around Jegunovce. Indeed, it is quite likely that the effects of some of these releases spread over much of the country. Because of this, it will be necessary to implement impact assessment of effects of atmospheric release on the agriculture land.

**East region (Region 8).** This is high mountain-flat surface (plate) region. It is most famous for rice (Kocani) and tobacco (Radovis) production. SO<sub>2</sub> levels meet the annual limits values set for protection of ecosystems. NO<sub>x</sub> values might exceed the annual limit for protection of vegetation in Kocani and Stip. PM<sub>10</sub> values are likely to exceed the UAT across the region and may breach limit values in Kocani and Stip. Ozone levels are not exceeding the target values.

## 11. CONCLUSIONS AND RECOMMENDATIONS

Annual average PM<sub>10</sub> values exceeded the EU and Macedonian annual limit values in all stations except Lazaropole (South-west region), an EMEP station located at 1100 m a.s.l. in the west region.

Annual limit of NO<sub>x</sub> set for the protection of vegetation in Macedonia is not exceeded only at measurement stations in Veles (Vardar region) and Lazaropole (South-west region).

Maximum daily 8-hour exceedances values for ozone in 2004 (Veles, Tetovo, Bitola stations) and 2005 were recorded in Lazaropole, Tetovo, Bitola, Kumanovo, Kocani and Veles stations, it means in South-west region, Polog region, Pelagonija region, North-east region, East region and Vardars region.

Average winter values for SO<sub>2</sub> were exceeded in Skopje (Skopje region), Veles (Vardar region), Kumanovo (North-east region), Stip (East region) and occasionally in Bitola (Pelagonija region).

In general the monitoring system seems to have enough measurement points to satisfy the directive though the distribution does not quite match the suggested zones. Installing new stations would increase the amount of information available in the future and also maintain the continuity of data from present positions. There are widespread problems with concentration of ozone exceeding the target values. It will be good to implement the measurements of precursors, such as ethane, ethylene and other volatile organic compounds, as set out in Annex VI to Directive 2002/3EU, and NO<sub>x</sub>. Some of these will be reduced under IPPC and the VOC Directives, but it would be wise to get more information first so that the concentrations of these materials in air can be tracked with time. Without this it will be not easy to manage the concentration of ozone in air. There may be issues because ozone may be “exported” or “imported” to and from neighboring states and Macedonia will have to cooperate with them to secure an acceptable outcome. For the purpose of agriculture and rural development in line with the SD principles (like organic farming and rural eco-tourism for example) there is a urgent need for specific measurements of the particular emissions and depositions of certain parameters, especially in Pelagonija, Skopje, Polog and Vardar regions.

Pollution emissions arising from industrial sources will be reduced by the implementation of the IPPC Directive and perhaps by the Large Combustion Plant Directive which might in the future refer to releases of particulate matter.

Traffic gives rise to pollution. Improvements in vehicle standards within the EU might reduce some of this, with emissions from vehicles built after 2001 reduced by 30% when compared to earlier models. However, much depends on how quickly the fleet of vehicles is replaced and how well it is maintained.

## **12. REFERENCES**

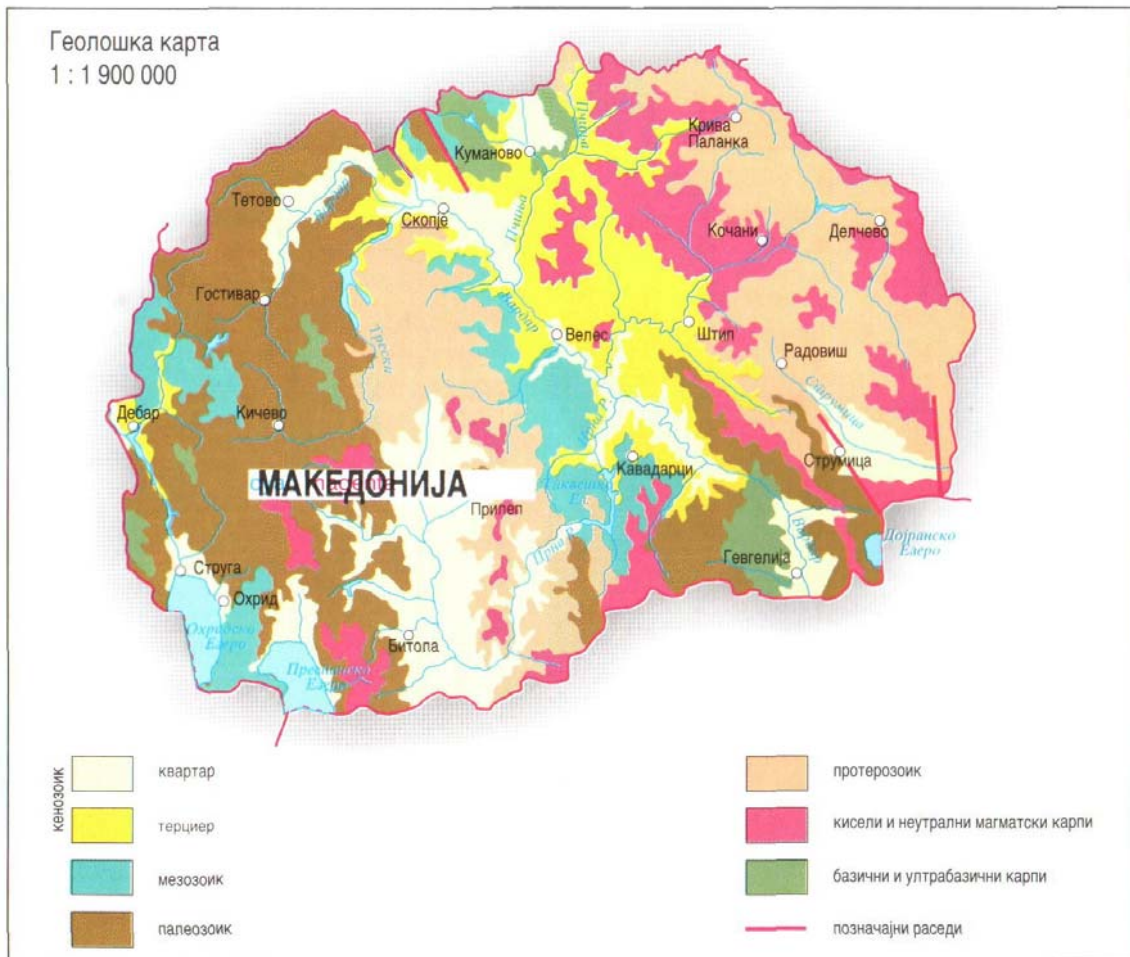
- 1 Council Directive 96/62/EC of 27 September 1996 on ambient air quality assessment and management Official Journal L 296, 21/11/1996 P. 0055 - 0063
- 2 COUNCIL DIRECTIVE 1999/30/EC of 22 April 1999 relating to limit values for sulphur dioxide, nitrogen dioxide and oxides of nitrogen, particulate matter and lead in ambient air
- 3 DIRECTIVE 2000/69/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 16 November 2000 relating to limit values for benzene and carbon monoxide in ambient air
- 4 DIRECTIVE 2002/3/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 12 February 2002 relating to ozone in ambient air
- 5 EC Guidance on Assessment under the EU Air Quality Directives Air Quality Steering Group
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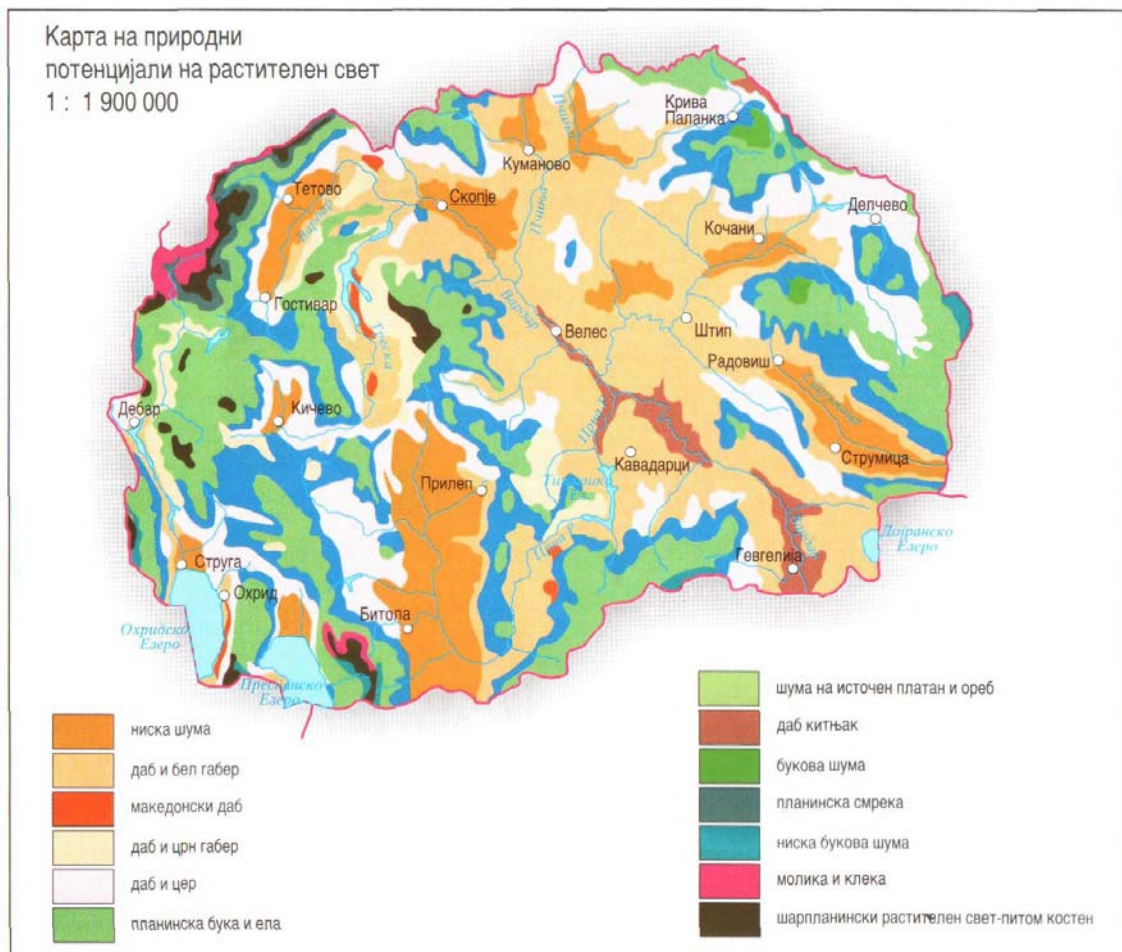


**Annex I.** Maps extracted from the latest (April 2004) Spatial Plan of Republic of Macedonia related to agriculture and rural development.

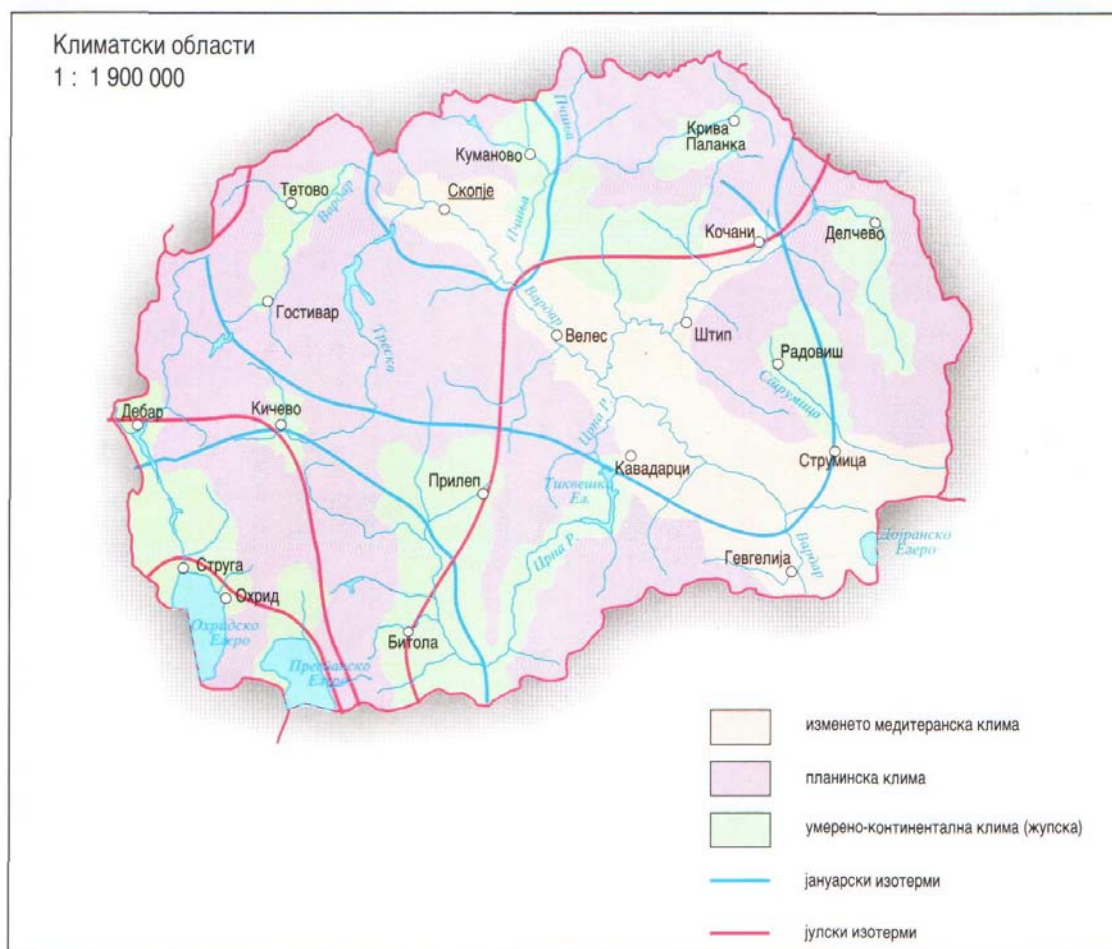
Map I. Geology



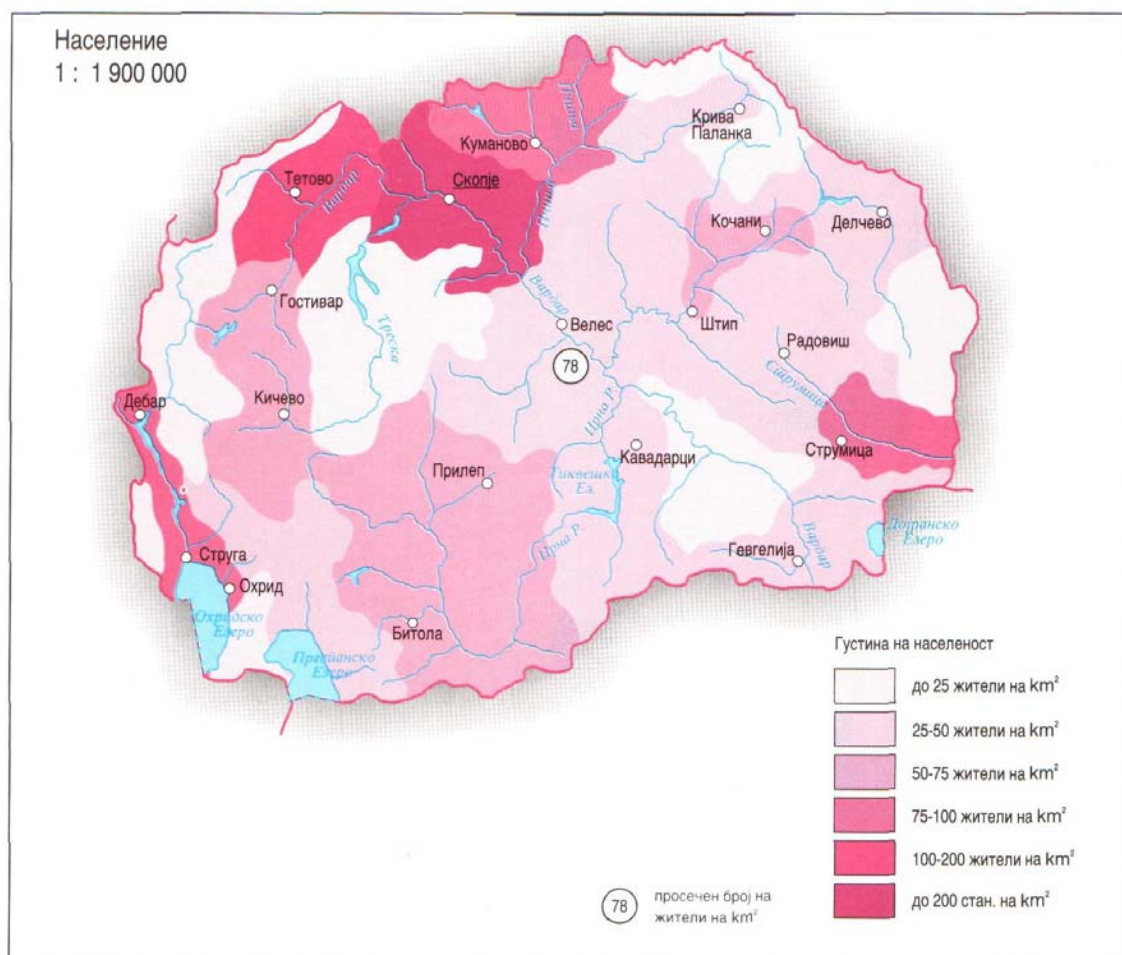
## Map II. Vegetation



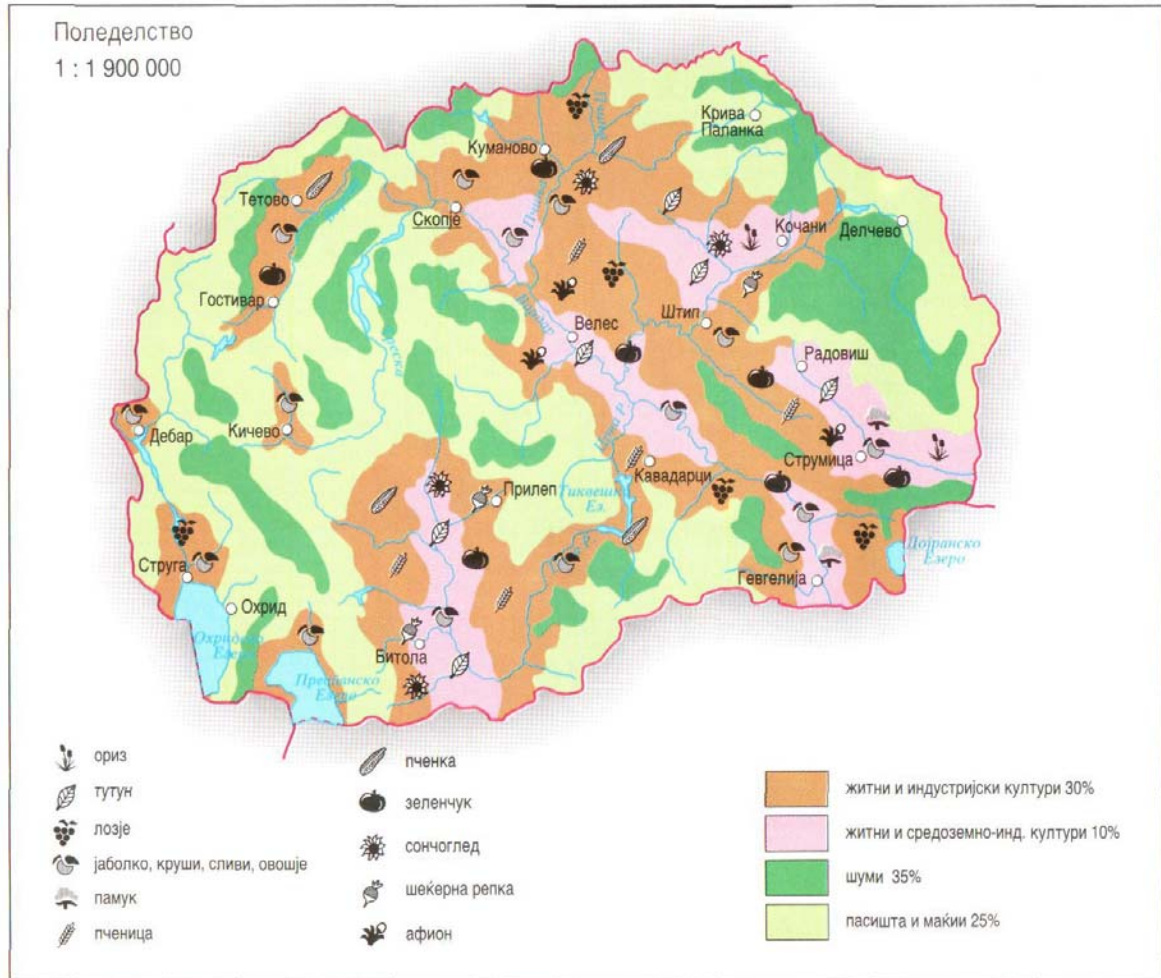
Map III. Climatic regions



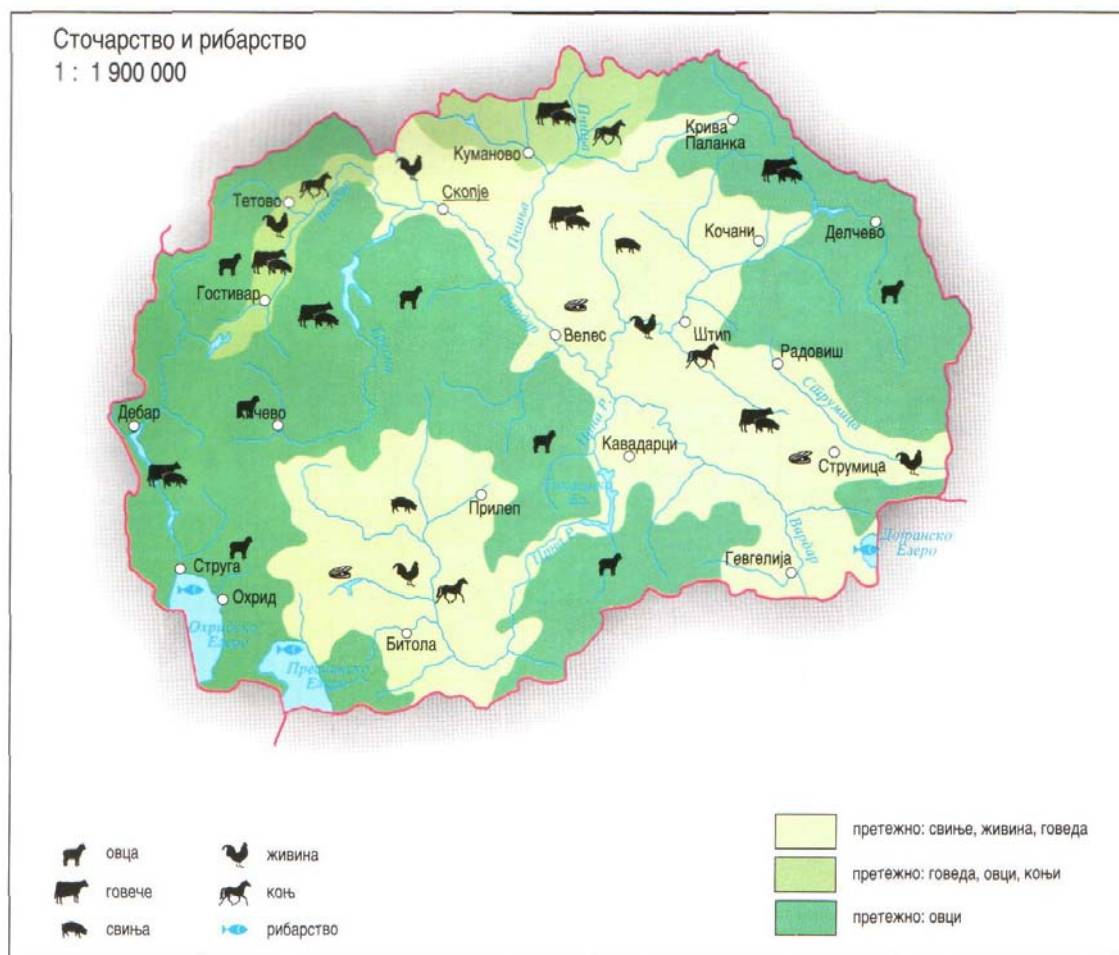
### Map IV. Population



Map V. Agriculture



Map VI. Animal farming and fisheries







## **Assessment of the need and possible scope of a rural cadastral system for the Republic of Macedonia with a road map for development of a rural cadastral system**

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## 1. Geographic, political, and administrative background

Macedonia is located in the southwestern part of the Balkan Peninsula with geographic coordinates between 40°50' and 42°20'E, 20°27'30" and 23°05'N. The total length of the border is 849km, of which 191km make up the western part of the border, 262km the southern, 165km the eastern, and 231km the northern part of the border. Even though it is a landlocked country, Macedonia is at the crossroads between two of the biggest pan-European transport corridors (number 8 and 10) which connect central Europe to the Adriatic, Aegean, and Black Sea.

The total area of the country is 25,713 km<sup>2</sup>, situated on a mountainous territory covered with deep basins and valleys. The hills and mountains cover 80% of the territory, flatlands account for 19% and lakes for 2% of the whole territory. The hydrological network is well developed (four river basins, out of which three are important in their flow). The Vardar River accounts for 80% of the water territory, Crn Drim 13%, Strumica River 7%, and lakes (Ohrid, Prespa, and Dojran which are shared with the neighboring countries). There are approximately 110 big and small artificial lakes in the Republic of Macedonia (20 are of size bigger than a million cubed meters); out of which 8 are used for irrigation, water supply, and production of hydro-electrical power.



The soil coverage of the Republic of Macedonia is very heterogeneous (there are more than 30 soil types established) which is a consequence of the diversity of the natural conditions for soil development (terrain, climate, vegetation, geological formation, anthropogenic effects).

As a consequence of the geographic location and the terrain, Macedonia is at the crossroads of continental and Mediterranean climate effects, which account for the great diversity of the climate conditions. There are eight climate-vegetation-soil areas with rich heterogeneous climate, vegetation, and soil conditions. The land that is used for agricultural production is located in the sub-Mediterranean area 50 to 900 meters above sea level. Summers and autumns are hot and dry, and winters are accompanied by snow with very short lasting low temperatures. There is greater abundance of rain in the period from October to December, and less abundance of rain from the months of March to May. Spring and autumn rain generally is torrential rain which causes landslides, water erosion, and local floods. The vegetative period often experiences dryness, which points out to the fact that water is a limiting factor for intensive agricultural production. The late spring frost and the autumn hoar-frost are a frequent occurrence.



About half of the territory of the country belongs to agricultural land (1.26 million hectares, 560.000 hectares or 44% is arable land, 704.000 hectares or 56% are pastures). The highlands and the forest-covered mountains make up 37% of the land.

## 1.1 Land resources, land management

In the year 2004, the area of the Macedonian agricultural land was approximately 1.26 million hectares, or around 49% of the total land area, while forests covered an area of 947, 653 hectares or 37% of the land.

The agricultural land covers 700,000 hectares of pastures (or 55,6%) located mainly in hilly and high-mountainous terrains and 560,000 hectares of arable land (or 44.2%) which is concentrated in the valleys. From the total cultivated land 461,000 hectares (82%) was arable land and gardens, 58,000 hectares of meadows (10%), 26,000 hectares of viticulture (5%), and 15,000 hectares of orchards (3%). According to estimates, each year around one third of the total arable land is deserted (uncultivated).

Cultivated land per inhabitant is 0.625 hectares which is higher than the EU average (0.35 ha). The cultivated land shows a decreasing tendency of 633,000 ha in 1999 to 560,000 ha in 2004, mainly as a result of abandoning the land (migration of the population from village to the city) and the city/industrial development which is occurring on account of agricultural land.

***However, we have to mention that, in the following period, as an initiative in the strategy for agricultural development as well as the greater accentuated interests of the government in increasing investments in agriculture, we can realistically expect that the momentary trend of decreasing cultivable land will change into an increasing trend and a greater accentuated need for obtaining new cultivatable areas. In this direction one permanent need will arise accompanied with the dynamic of increasing the cultivable land funds, and on the other hand the interest in high yield will force producers in adapted use of areas with profitable and competitive cultures. Following these realistic initiatives and wagers which inevitably will come, the country will have to create mechanisms and platforms through the integrated systems for administering agricultural land and/or the rural spatial segment for permanent following and establishing a realistic situation which will support the processes of a realistic and adequate analysis in each moment of each spatial segment.***



## 1.2 Analysis of the rural sector

The available data which are needed for the socio-economic characterization of the rural areas of Macedonia are limited, and thus the picture is incomplete. There is no clear definition for the rural areas as well as no classification based upon the density of the population in the Republic of Macedonia. In the year 2002, UNDP, the State Statistical Office, and the Ministry for Local Self-Government, conducted a socio-economic mapping of the differences between municipalities in Macedonia and designated six zones, based upon the concentration of the population on the territory of the land: zones with weak concentration (up to 50 people per square meter), zones with medium concentration (51-100 people per square meter), overpopulated zones (101-150 people per square meter), significantly overpopulated zones (151-500 people per square meter), very significantly overpopulated zones (501-1000 people per square meter), and extremely overpopulated zones (over 1000 people per square meter). In the year 2002, almost half (61) from the municipalities fell under the zone group of weak population concentration, 26 municipalities had medium population concentration, 7 were overpopulated, 19 were significantly overpopulated, 4 were very significantly overpopulated, and 6 municipalities inhabited over 1000 people per square meter.

## 1.3 The role of agriculture in the economy

Agriculture (hunting, forestry, and fishing) is the third largest sector after services and industry. The efficient use of the agricultural land in Macedonia is **hindered by the fragmentation and the division** of land parcels, which is a product of previous limitations of the usable area and its ownership, inheritance customs, as well as the tradition of informal relations of the land market. The general census of 1994 registered around 178.000 private farms with an average size of 2.5 to 2.8 hectares, fragmented in parcels of 0.3 to 0.5 hectares. About 40% of the private farms are smaller, with households having farms less than 2 hectares large (also divided in parcels) which produce mainly for their own needs and sell whatever is left over as a means of strengthening the family budget by adding another form of income to the family. The weak land market, which failed to contribute to the consolidation of the farm, as well as the slow economic growth and lack of social security, continues to feed the process of fragmentation and diversification of production on small parcels with the aim of neutralizing the



fluctuations of the market and satisfying the demands for food. Even though there was a significant drop in 2001 and 2002, between 1990 and 2004 the value of the agricultural production rose 6% (in big part because of the sub-sector crop production which makes about 70% of the agriculture GDP). During the same period, production from the agricultural sector increased by 30% while production in the entrepreneurial sector fell by 50%. The success of small individual farms is due to the transfer of effective land ownership rights which are oriented towards profit and implemented business strategies, mainly focused on diversification of the production to decrease the risks. Nevertheless, long-term, the existence of small and very fragmented farms, even with production levels of medium intensity, does not allow for more intense modernization and mechanization which results in lesser competitiveness. From the year 2000, the gross agricultural product increased with a net growth of 3.8%. The growth of the agricultural GDP went over the gross agricultural product, with a 29% increase between the years 2001 and 2004, which points out to the increased agricultural productivity during this time period. In the last few years (2002-2004), the index of production of agricultural enterprises has also increased slightly, as a result of privatization, organizational strengthening and start-up of market-oriented production strategies. Part of the dynamic and participation of the agricultural product in the economy of the state are shown in the next table.

***Strengthening of the competitiveness of the Macedonian agro-business is essential to its continued existence. This has to be backed up with reforms in public institutions and implementation of target policies for support and measures for rural development such as implementation of modern information systems for administering the agricultural land.***

***Products for the time period 2002-2006 (in million euros)***

		Total (industry and agriculture)	trade, and Trade with agricultural products	Part of agriculture in the total trade of the country
2002	<b><i>Export</i></b>	1,178.3	228.0	19.3%
	<b><i>Import</i></b>	2,106.0	319.3	15.2%
	<b><i>Balance</i></b>	-927.6	-91.3	9.8%
2003	<b><i>Export</i></b>	1,207.1	214.4	17.8%
	<b><i>Import</i></b>	2,038.2	298.4	14.6%
	<b><i>Balance</i></b>	-831.1	-84.0	10.1%
2004	<b><i>Export</i></b>	1,345.9	213.6	15.9%



	<b>Import</b>	2,354.0	338.3	14.4%
	<b>Balance</b>	-1,008.1	-124.8	12.4%
<b>2005</b>	<b>Export</b>	1,643.5	278.6	17.0%
	<b>Import</b>	2,601.0	348.1	13.4%
	<b>Balance</b>	-957.5	-69.5	7.3%
<b>2006</b>	<b>Export</b>	1,906.2	318.0	16.7%
	<b>Import</b>	2,987.7	367.4	12.3%
	<b>Balance</b>	-1,081.5	-49.4	4.6%

## 2. National legislature connected with this project

Three laws from the Macedonian legislature are intended in the broad sense for “rural areas”.

**The law for territorial organization of the local self-government** passed in the year 2004 defines all the cities and villages in the following way:

- Cities are populated areas that have over 3,000 inhabitants with a developed area of activities, and over 51% from the work force is employed in activities other than agriculture.
- Villages are defined as mono-functional populated areas, where one activity is dominant, whilst the land has agricultural physiognomy and function.

**The law for local self-government** passed in the year 2002, regulates, besides other areas, the following realms (competences) of the municipalities:

- Spatial planning – in urban and rural areas.
- Protection of the environment (from pollution, noise, and ionized radiation).
- Local economic development
- Communal services
- Culture
- Recreation
- Social protection and child protection



- Education
- Health protection

In relation to the insufficiently developed areas, ***the law for stimulating development in underdeveloped areas*** from 1994 lays down the criteria for distinguishing three types of specific regions and rural centers:

- High – mountainous regions are inhabited areas located 800 meters above sea level with mountainous configuration of the terrain or in exceptional cases inhabited areas 600 meters above sea level, as long as they have typical mountainous characteristics.
- Frontier or border regions are inhabited areas in regions which are found 5 km away from state borders, including inhabited areas farther away than 5 km from the borders, however the closest inhabited areas to the borders.
- Completely undeveloped inhabited places have low level of economic activity, are found more than 10km away from the city center, without road connections and basic infrastructure, intensive migration and small population density.
- Rural centers are bigger inhabited places located in the center of economically undeveloped regions where there are conditions for diversification of economic activities which make them “centers” for development in their proper region.

In the frame of the current solution, about 69% of the national territory is covered and about 17% of the total population. ***Nevertheless, the criteria for distinguishing the insufficiently developed economic areas are uncertain, because some Macedonian villages with high migration rates, insufficient communal services and economic infrastructure, do not yet have the status of extremely underdeveloped villages and vice versa.***

## 2.1 Policies for rural development

Rural Development, as defined in the EU policy, is a new term to the Ministry of Forestry and Water economy, as well as to the Government of the Republic of Macedonia in general. Until now, a few institutions have coordinated in an uncoordinated manner a line or programs for public support that can be broadly categorized under the term “rural development”. The Ministry of Forestry and Water economy leads two small annual programs for agricultural investments and revitalization of villages (in average around 1.5 million euros per year, but they have decreased, starting in the year 2004, to on average of 0.3 million euros





a year). Institutions from other sectors led similar programs (for small and medium-sized enterprises – program by the Ministry of Economy, and other). The insufficiently developed areas are covered by the Bureau for Insufficiently Developed Areas (in the Ministry of Local Self-Government). Nevertheless, these uncoordinated schemes function separately, and not as integrated programs. In January of 2004, in the Ministry of Forestry and Water economy, a Sector for Financial Support and Rural Development was formed, which covers the Department for Financial Support in Agriculture, and the Department for Rural Development, whose task is to plan, design, and follow the policies and measures of rural development. The main goal is to set up systems of support for facilitating the measures of rural development, under the measures of the EU and to develop administrative systems which will have the capacity to respond to the pre-accession IPARD funds of the EU.

### 3. Problems with administering the agricultural land and the cadastre

At the moment there is no available system in the country which could completely cover the functions of the proper administering of agricultural land. For a long period of time until now the agricultural land is treated through the Land Cadastre, and since 1986 in the cadastre of real estate. If we keep in mind that these systems have set up their own priorities in the registration of ownership and other real rights, then it is a fact that complete support of the functions in administering the agricultural land are left out of these systems or more correctly at the moment are not supported. The matter in fact is concerning higher spectrum of functions and domains which necessitate the fulfillment of other type of data and relations structure which is located in the frame of real estate with treating agricultural land.

The concept of cadastre of real estate as a system is oriented towards registration of real estate rights and in that direction the system has affirmed processes and positions whose priority mean providing sufficient quantity of knowledge about real estate with the intent of realizing service policies and needs based upon the basic intent to implement these systems. In this context, the level and domain of the data is established through **geometrical**, whose goal is spatial planning and providing of spatial dimensions for border segments of the real estate, and **description data** for real estate, whose goal is to provide legal-legitimate data for the laws of real estate through which all the legal privileges will be fulfilled connected with registration, protection, change, distribution of ownership data and other necessary functions with the established legal legitimacy and continuity.



It is the project's interest to draw a parallel between all these systems and the streamline data which until a few year ago covered part of the functions tied to agricultural land. It is about the establishment and treatment of creditworthiness, cadastre cultures and classes of each real estate. Under the definition of creditworthiness and real estate cultures are components which are distinguished with adequate methodologies whose end results have quantitative treatment of the real estate, which comes out as a result of the needs and intentions of the functioning of the real estate cadastre. From a point of view of servicing the needs of this type of information and the conducted analysis of the same throughout the real estate cadastre, we get the impression that this type of system with its own reorganization loses the readiness and the concept of sustainability and completion of the available knowledge of these components. The justification for these changes can be found in optimizing the functions which directly support the idea of the existence of the cadastral system. This means, that at this moment, the real estate cadastre does not have instruments and mechanisms for sustaining these functions, which from an aspect of administering the agricultural land have a highly influential character.

Taking into consideration that the priorities in administering the agricultural land are not only connected with ownership but also with a higher degree of developed functions whose processing necessitates/initiates the existence of added data structure and the knowledge of their surroundings. We are talking about functions which directly initiate and obligate setting up of mechanisms for obtaining knowledge which will wholly contribute to an efficient and univocal management of the agricultural land.

The absence from these constructions and mechanism in the moment does not contribute to a unified treatment of the agricultural land of the whole territory of the country as well as absence from unified standards for defining and measurement of the single forms upon which administration is based. Precisely because of these and other similar shortcomings management of this important resource and capital is rather difficult. The problems can be viewed from different aspects and can be divided freely under:

- The complexity of activities concerning agricultural land and
- The problems as a consequence of the absence of typified and optimally quantified data construction.

The first group of problems can be recognized by fulfilling the following complex activities:

- ✓ Granting and managing concessions
- ✓ Policies in land development



- ✓ Planning and using of the land
- ✓ Establishing land value
- ✓ Establishing capacity and land availability from a planning and investment aspect
- ✓ Integral monitoring and managing of land resources
- ✓ Establishing subventions upon different grounds
- ✓ Monitoring and managing investments and other forms of input in rural surroundings
- ✓ Assessing land availability and agricultural funds according value and usage
- ✓ Establishing and distinguishing agricultural from building land
- ✓ Competitiveness and merit of agricultural land in effecting and processing capital

The second group of problems can be seen from two different aspects. The first aspect is connected to the inexistence of mechanism for establishing a competitive and all encompassing data structure, and the second aspect is connected to servicing and establishing decisions based upon the first aspect. Both aspects are tied to establishing, providing, and transferring of knowledge for:

- ❖ Ownership, only in contact form with the real estate cadastre
- ❖ Real estate value
- ❖ Usage
  - Culture
    - Type
    - Quantity
- ❖ Quality of the land
  - Creditworthiness rank
  - Cadastre rank
- ❖ Specifications in administration
  - Concession
  - Lease
  - Usage subvention, compensation
  - Type of cultivation
  - Type of seeds used in agricultural culture
  - Type of irrigation
  - Ecological impacts and protection
  - Quantity and type of used pesticide material and other protective materials
- ❖ Distinguished service specifications and dynamics for database users and needs from the agricultural land
- ❖ Connection of agricultural land to urban land



### **3.1. Basis for activities from the Law on Agriculture and Rural Development:**

Recently adopted law on Agriculture and Rural Development clearly defines the path for establishing the agriculture information system, registry and data base with agricultural statistics and development of Agricultural Market Information System. Here are the contents of the articles from the law connected with the proposals for establishing the agricultural land cadastre:

## **XI. AGRICULTURAL INFORMATION SYSTEM**

### **Act 67**

#### **Goals**

For the purpose of defining and establishing an efficient agricultural policy and a policy for rural development, as well as providing a database for the needs of the Ministry and the subjects, the Ministry realizes an Agricultural Information System (AIS).

AIS includes:

- collecting and primary data processing,
- establishing database and keeping registers,
- establishing and managing information systems for monitoring the agricultural products market and the produce-economical results of agricultural businesses,
- managing accounting of family agricultural businesses, and
- information technology for support of AIS components,
- The minister decides on which way the system should be set up and rules and regulations for access and exchange of data.

### **Act 68**

#### **Financing of AIS**

Establishing and leading AIS is financed by the budget of the Republic of Macedonia.

### **Act 69**

#### **National Committee**

The government shall form a National Committee for AIS for the purpose of coordinating its activities. The National Committee by position 1 of this act is formed by representatives from the responsible authorities from the field of economics, agriculture, informatics, food safety, statistics, real-estate cadastre, representatives from the



scientific-education institutions and representatives from the associations in the field of agriculture.

## **1. Registry and database**

### **Act 70 Registry and Database**

The Ministry establishes and keeps records organized in registries and databases for:

- agricultural businesses,
- producers and cultivators of integral agricultural primary and processed products,
- record of importers and exporters of specified agricultural primary and processed products,
- long-term cultivations,
- areas with limited possibilities for agricultural activity,
- real use of agricultural land and
- type and quality of the soil.

The shape, the content, and the way of keeping the registers and databases from position 1 of this act, are stipulated by the minister. The ministry also keeps other registers and databases implied by law. The registers and databases kept in the Ministry have to be compatible because of their cross-cutting nature and the exchange of data. In registers and databases from position 1 of this act, at least the following data are gathered:

- Appellation, meaning name and surname,
- Place of residence, street address,
- type of object,
- tax number,
- personal registration number,
- registration number of the object,
- code of organizational shape,
- code and name of prevalent activity, and
- account number (only for subjects who are seeking the right to use assets).

### **Act 71 Sole registry for agricultural businesses**

The ministry keeps a unified registry of agricultural businesses. In the registry from position 1 of this act, all the agricultural businesses are registered which:



- 1) seek to enable their right to use assets from the provisions intact with this act, or other measures for agricultural policies and the policy for rural development and
- 2) are registered and defined by certain provisions from the agricultural sector.

The reason for keeping the registry from position 1 of this act and its link to other registers is the sole identification number of agricultural businesses (SINAB). SINAB is defined when one registers in the agricultural businesses in the registry from position 1 of this act. The use of SINAB is mandatory in all registers, defined by other standards, which are connected with the registry from position 1 of this act. The registry from position 1 of this act is kept in numeric and graphic form and the following data make up its content:

- SINAB,
- address, or location of the agricultural business,
- from act 70, position 5, of this law, the carrier of the agricultural business, and in case of a family owned business, data for the family members as well,
- the activity of the agricultural business,
- for the factual use of the agricultural land, pasture, forests, and forest land,
- the whereabouts of where animals are bred, and
- the number of animals on the farm.

The carrier of the agricultural business is responsible to report every change of the above to the Ministry in 15 days since the change has been made.

The minister designates the form, content, and way of keeping the register from position 1 of this act.

## **Act 72**

### **Gathering and use of data**

For keeping and maintaining the registers the Ministry obtains and uses data which in the framework of the existing registries and inventories are led by:

- state organs,
- public institutions,
- agencies,
- concessionaires,
- the self-government units, and
- other authorized institutions.

For keeping and maintaining the registers normally data are used from:

- the population registry (name and surname, personal registration number of each citizen, residence location),
- registry of tax payers (tax number),
- inventories,
- the land cadastre,
- the real estate cadastre,
- the Central Registry of the Republic of Macedonia,
- database of custom information on import and export of agricultural primary and



- processed goods,
- the animal husbandry sector,
  - the veterinary medicine sector,
  - the forestry sector,
  - the water management sector,
  - the fishery sector,
  - the environment sector,
  - the spatial planning sector, and
  - the climate conditions sector.

For keeping and maintaining the registers and inventories, the ministry uses basic topographical plans, topographical maps, concise maps, and digital ortho-photo outlines. The data, maps, and digital ortho-photo outlines from positions 1 and 2 of this act by the minister's request are made available by the institutions in written or electronic form, if it is available.

The way in which the registers will be connected with other registers and inventories and the way in which data will be obtained from other registers and inventories are decided by the minister.

### **Act 73**

#### **Submitting data**

The data from the registers in accordance with this law are public, except the data which are of personal character and data which are considered to be confidential. The data from position 1 of this act are submitted in accordance with the guidelines for personal information protection and the guidelines for classified information. The data from position 1 of this act can be used solely for the purpose for which they were submitted in the first place, and cannot be amended or submitted to other persons.

## **2. Agricultural statistics**

### **Act 74**

#### **Agricultural Statistics**

In cooperation with the State statistical Office of the Republic of Macedonia, the Minister directly participates in collecting and applying statistical data in agriculture and rural development in the following areas:

- structure of agricultural production, including agricultural inventory,
- business activities in agricultural business and agro-monetary statistics, especially economic accounts for agriculture.

The ministry can conduct its own statistical inventory for its own needs.



### 3. Agricultural market information system

#### Act 75

#### Agricultural Market Information System

For guiding the policies for managing the markets of agricultural products the Ministry establishes a market information system.

The Ministry collects, processes, and publishes data for quantities and prices of separate agricultural products of the representative markets. The Minister designates the representative markets and the kind, size, deadline, and subjects which will submit data. The funds for keeping the agricultural market information system are provided by the budget of the Republic of Macedonia.

### 4. System for data accounting of agricultural businesses

#### Act 76

#### System for data accounting of agricultural businesses

The Ministry creates a system for data accounting for agricultural businesses for monitoring the profitability and for providing structural and financial data, which are determined by law.

### 3.2. Modern trends in administering of agricultural land

Modern trends in administering real-estate and/or more precisely having in mind the practical aspects in these domains, agricultural land is treated from the point of view of **capital, stock broking with real-estate and other similar processes**. Following these modern concepts the developed countries have for a long time now implemented the **value** of these spatial objects as a new dimension in real-estate registering systems. These concepts are in essence profitable and beneficial for each country. Also, from the very beginning they encourage activities for providing and accepting one set of algorithms and mechanism for value evaluation based on unified and detailed principles, conditions and criteria. It's about concepts whose results can be recognized through

- ☑ Single way of determining the value of each real-estate,
- ☑ Application of stable algorithms for evaluation,
- ☑ Enabling single criteria for evaluation of the whole territory of the country,





- ☑ Measuring real-estate with a component of value through which the quantitative character of each real-estate will be realized,
- ☑ Subventions having this real-estate dimension will be univocally assessed,
- ☑ Unity in taking inventory,
- ☑ Measurement through which the privileges and responsibilities of users gain a more realistic treatment and the same are based upon simplified management procedures.

Enabling standards for massive valuation of real-estate, as well as the proposed concept of developing and integrated system for administering agricultural land, will form new dimensions and the realistic status of real-estate will be established as independent spatial objects. This status will provide competitive adjustments and a realistic treatment of real-estate in the rural environment of the country.

### **3.3. The current availability of data in institutions and re-defining the conduct based upon the principles of integrated spatial systems**

The access and formation of database for spatial events in the country have always meant a set of activities that have been realized through the understanding and need of the institution responsible for the spatial event as its own concept in the technical application. To talk about a spatial event means to take an initiative in its full demystification locating all the access points in the area of internal and external structure of conduct and influences of its constructive doers. Each closed treatment and/or to be more precise a treatment of events which exclusively are positioned for needs of a closed concept of technological work in the framework and for the need of the said institution, do not leave the necessary room for wider exchange, ambience, or a higher degree of integration, elemental and complex exchange of conditions and database with other institutions and their similar accesses and institutional organization. In principle, the analysis show that the country's structure of database in each institution is recognizable as exclusively intended for support of the necessities of its own functioning. It's about concepts where the availability and exchange with the environment follow the traditional conduct with pleasing the minimal set of recognizable/common elements through which legally imposed needs are satisfied and enabled.

Precisely because of these motives, forming a unified system of agricultural land would mean complete observation of the spatial events, institutional authority for



segmented administering, establishing standards and criteria that would enable the establishment of unified politics and regimen of the treatment of spatial events which are positioned in the framework of agricultural land and the activities as a result of it. We have to emphasize, that the fundamental spatial object in which knowledge will be concentrated and all life cycles will be evaluated in this system will become the **cadastre parcel**, which in the legal framework of the country has developed its own status.

If we cut across the condition of the country with spatial database oriented towards spatial events which are developed and exist in the framework of the cadastre parcel we get the impression that there are a lot of institutions in which the cadastre parcel is a basic spatial object for realizing the elementary and complex working functions. It's about positioning the cadastre parcel in:

- ☑ Real-estate cadastre  
*The parcel is positioned as a spatial object in which ownership and other real rights are registered and administered.*
- ☑ Ministry of Agriculture  
*The parcel represents a spatial object in which agricultural activities are realized, categorization and soil culture, administering concessions and other.*
- ☑ Ministry of urbanism  
*The parcel in its functioning segments is categorized as an object in urban and rural environments through which ownership and other real rights contribute key components in forming a building parcel, and they support the processes of privatization of state owned building land, etc.*
- *Local Self-Government*  
*At the local level of administration, the cadastre parcel is a basic spatial object through which the following authorities are conducted: communal activities, urban planning, traffic regulation and infrastructure, local taxes, etc.*

It has been noticed that in all these institutions, treatment of the cadastre parcel has different goals and orientations. Conceptually speaking each of the institutions position the spatial object as a basic component for support of technological needs and continuity, upon which a data construction of the geometrical and descriptive qualities of the object are differentiated. The analysis also shows that each institution, besides having unequal treatments of the



parcels, there is a great deal of incompatibility in organizing and administering the objects and/or their individual data forms. Its about organization based upon the principles of analogous treatment of data construction, paper documents and close access and distribution of contextual aspects in the framework of the said institution , as well as in wider administrative levels. In that direction it is noticeable that different and sometimes inadequate methodologies have been used, by the institutions, for acquisition of the parcel's database. **These conditions in the country are evident and the same make up the elementary causes which do not allow for exchange and integration of databases without defects.**

Following the more intensive uses, the essence of wider and stricter norms as well as other stipulations connected to decision making for spatial occurrences in real-estate, directly imposes the intent for establishing and integral systematic access to database which are segmented by each institution. Accepting this, as a standard procedure when it comes to a serious treatment of spatial or other type of analyses, and all with the intent of establishing and assuring a sufficient fund of knowledge and quantum of data assurance, it is clear that the layering and lack of cooperation of the data and institutional divisions leave room for incomplete functioning and/or if we can ascertain in a stricter sense very common are the forms of improvisation in decision-making.

With the intent of avoiding these inconsistencies and/or more correctly defects which complicate working, overwhelmed with a vast number of procedures in realizing the elementary awareness and privileges which by law belong to each individual who uses the services of these institutions, it is necessary to set up a realistic concept for their overcoming. The following should be undertaken:

- Make an analysis of the conditions in each institution with the intent of intersecting spatial data, following the constructive geometrical and appropriate status of the cadastre parcel.
- Define standards of data conversion enabling a unified concept for each data construction with the intent of providing
  - ∇ Availability of the data construction in the institutional assembly.
  - ∇ Availability of the data construction for unaccounted treatment by outside institutions.
  - ∇ Establishing sole parameters for each real-estate of the whole territory of the country through which administering will be facilitated especially when following the continuity of events taking place in real-estate with their timely determination.
  - ∇ Provide consistency for each elementary constructive form of these basic spatial objects.



- Define standards and establish an integrated concept of access and distribution of data following the concept of establishing a single infrastructure for data distribution.

It's a fact that many of these activities are dealt with in other projects of the country. This only acknowledges the intent that in the country there are ongoing activities which have the goal of improving the atmosphere and efficiency in working. However, from another point of view, activities and projects are necessary which will enable synchronization/adjustment between the initiatives from each individual project. This is necessary because each of the individual projects would not set the standards for an integrated treatment and performance in whole and when it comes to the conditions in the framework of the cadastre parcel. The assumption through which we can locate the desires and the needs of the institutions for accessibility amongst them and overcoming the constant barriers in everyday exchanges with the intent of gathering the much needed knowledge to complete their own technological needs. Precisely in this direction the undertaken activities will keep the goal of maintaining the domains and authorities of the institutions in the public administration, and will develop a concept for re-defining the constant data structures which would enable an integrated component in every institution that has the cadastre parcel as a basic spatial object.

Following these intentions, a realistic concept will be developed for forming an integrated system for agricultural land, and all activities in the rural environments, which in essence will completely support the legal framework for developing an agricultural information system as chapter **XI** from the Law on Agriculture and Rural Development (3.1).

#### **4. Rural cadastral system - development Road map**

The strategic orientations of the country for EU accession, connected to agricultural land and rural development are outlined in the document "**National Strategy for Agricultural and Rural Development for the period 2007-2013.**" In the framework of this document, the strategic goals as a background for agricultural and rural development and formulating the agricultural policies are defined with the intent of.



Strengthening the capability of the Macedonian agriculture to be competitive with the integrated regional markets of the European Union and Southeastern Europe through measures of increasing the efficiency of agricultural production, processing and marketing, and to build adequate, effective public and private institutions; to improve the farm incomes; to ascertain that customers have access to safe, healthy food; to optimize land use, forests, and water as a source of shortage, of sustainability of the environment; and to develop rural municipalities capable of survival through sustainable rural development.

The components selection and implementation is based on two main pillars:

- National strategy for agriculture rural land development, as the main development and administrative implementation framework;
- Identified problems in administering the agricultural land on national and local level.

These components need to include activities in the direction of establishment of preconditions and sustainable development directions for efficient and all encompassing support for agriculture land administering.

These necessitates lead to a clear affirmation of functions that incorporates a full operational circle, based on a completely defined database structures and balanced resources to support information flow and access. This includes affirmation of a concept that needs to be completely implemented as *Information System for Agricultural Land - **Agricultural Land Cadastre***.

This system needs to support and fulfill the following objectives:

- Support of central and local administration for strategy development, establishing a new regulative and agriculture planning;
- Creating a new land managing concepts;
- Support and development of new institutional capacities;
- Increasing the land use potentials and analyses based on the different scenarios;
- Planning and support of investment programs;
- Integration of the agricultural land cadastre and other systems
  - Real estate cadastre
  - Climate – meteorological
  - Ecological
  - Monitoring and crisis management
- Monitoring and assessment of agro-technical measures by regional and other organizational spatial units;
- Monitoring and assessment of agro-technical measures by cultures;



- Development and assessment of alternatives to expansion of urban zones
- Assessment of availability of information based on the type of agricultural land use and discovering the obstacles in agricultural development;
- Assessing the value of technology in the direction of strengthening farming and the possibility of its usage in other segments of agriculture;
- Effective development and implementation of policies for balanced regional development in the Country.

#### 4.1 Development framework

The positioned intent of the project, establishing *Agricultural Land Cadastre*, recognized through the affirmation of the set goals of the project, represents a project framework in which the constructive form of the system itself is going to be re-aligned. In that sense the project will align the establishment of the system in two phases. With the first phase, sufficient basic information will be provided for establishment of the system, maintaining the principle of monitoring the functions, the domain of administrating and the balance of resources as a technical-technological administrative support. With the second phase of the project implementation of the system will be provided.

Based on this concept, the established system will overcome the affirmed present and initiated problems for a difficult, inefficient, and lack of unified support and realization of the functions whose gravitation is database and/or information of land resources.

The first phase of the project will determine the knowledge for the type and structure of data forms, quality of each data form, functions, service categories, and their users. For enabling this project will define and provide:

- Analysis of functions
- Defining of relation functions-user for global and special needs
- Defining the relation function-data
- Defining the quality of data
- Defining standards for form, quality and acquisition of database
- Defining methodologies for acquisition of database
- Dynamics and type of services
- Policies for servicing of external and internal users
- Policies for integration of the system at higher levels
- Institutional organization
- Policies for infrastructure of distribution and integration of higher levels and integration of external systems



- Policies for implementation and maintaining the system

With the second phase of the project, complete measurement and design of the system will be enabled. This phase in a global sense will enable balance of the needs, design of the resources, design of the system and defining the dynamics of forming and implementation of the system. Based on these needs, this phase in the beginning will enable:

- Defining and choice of base
- Adjustment and conversion of data, gathered from unlimited sources and methodologies for acquisition, under the database standards
- Defining, measurement, and choice in hardware and software platforms for support of organization, registration and management of data
- Defining, measurement and choice of hardware and software platforms for support of the distribution infrastructure and integration of allocated users
- Defining administrative levels of access and distribution of database for an internal and external level
- Defining and measurement of resources and platforms for the distribution infrastructure of databases from/to the system

## 4.2 System Sustainability

The gains will be available for assessment after the implementation of the system. The criteria of the assessment will be located in a comparative analysis of the functions before and after the implementation of the system from an aspect of a *univocal, effective, complete, repetitive, sustainable, competitive, and economic gains and effects for each realization of the functions.*

With the intent of the system to fulfill its own positions and to provide a legal continuity of all realized functions towards the environment, it is necessary to determine and monitor the conditions for its sustainable development:

- Permanence of processes for strengthening of human and institutional capacities
- Motivation of personnel



- Creating the ambient for sustainable development of the system through permanent improvement and expansion of services
- Promotion and establishing of user domain
- Permanence in following technological development of system components
- Continuity in improvements of technological platforms and system resources

Nevertheless we have to emphasize that sustainable development of the system following the political and economic situation on a long-term and/or short-term time period will be overwhelmed with a list of factors which generate risks for realizing the development of the system. In that context we must mention that even though the political risks in Macedonia are significantly high, the key risk is tied to the changes of the managerial teams after each political change in the country. The naming of the managerial team at the institutional level is highly politicized and each election or change of political structure brings about changes in managerial teams in each Government institution.

In this context, the change of team members in educational circuits is also very often. It is a matter of destroying the continuity of the listeners from one to the next continued educational cycle. These changes are also a consequence of the always “stable criterion” for member election based upon the political affiliation of each candidate.

Having in mind the sustainable development of the system, with complete respect towards the democratic changes, it is clear that in the next period nothing will change in changing the managerial team, however one of the most important priorities in maintaining the sustainability of the system is keeping the team capacities, and the continuity of the education which would enable a constant and sufficiently needed level of human resources.

In the **annex I** is a Report that present the status and condition of administered concessions for the state owned agricultural land in one, randomly selected, small cadastre municipality (CM) Zubovce.

The report is focused to all segments of the process of concession administration, from the presentation of the current status in the selected CM, to the real life problems that the concession administration faces in the process of concession approval and management of the concessions.





Based on the conclusions derived from the performed research, the report provides certain suggestions and recommendations.

## **5.References:**

- State Statistical Office of the Republic of Macedonia, New Release No. 8.1.8.02, Skopje, 31.01.2008
- National strategy for agricultural and rural development for the period of 2007-2013, Skopje, June 2007
- Law for the agricultural land
- Agricultural census 2007
- Law on the real estate cadastre
- Law on concessions
- Law on Agriculture and Rural Development



## Annex I

### **Report on the status and condition of administered concessions of the state owned agricultural land in randomly selected, cadastre municipality (CM)- Zubovce.**

#### ***Introduction***

The purpose of this report is to present the status and condition of administered concessions of the state owned agricultural land in one, randomly selected, cadastre municipality (CM).

The report is focused in all segments of the process of concession administration, from the presentation of the current status in the selected CM, to the real life problems that the concession administration faces in the process of concession approval and management of the concessions.

Based on the conclusions derived from the performed research, this report in the final part provides certain suggestions and recommendations.

The following documentation was utilized in preparation of this report:

- National strategy for agricultural and rural development for the period of 2007-2013, Skopje, June 2007
- Law for the agricultural land
- Agricultural census 2007
- Law on the real estate cadastre
- Law on concessions

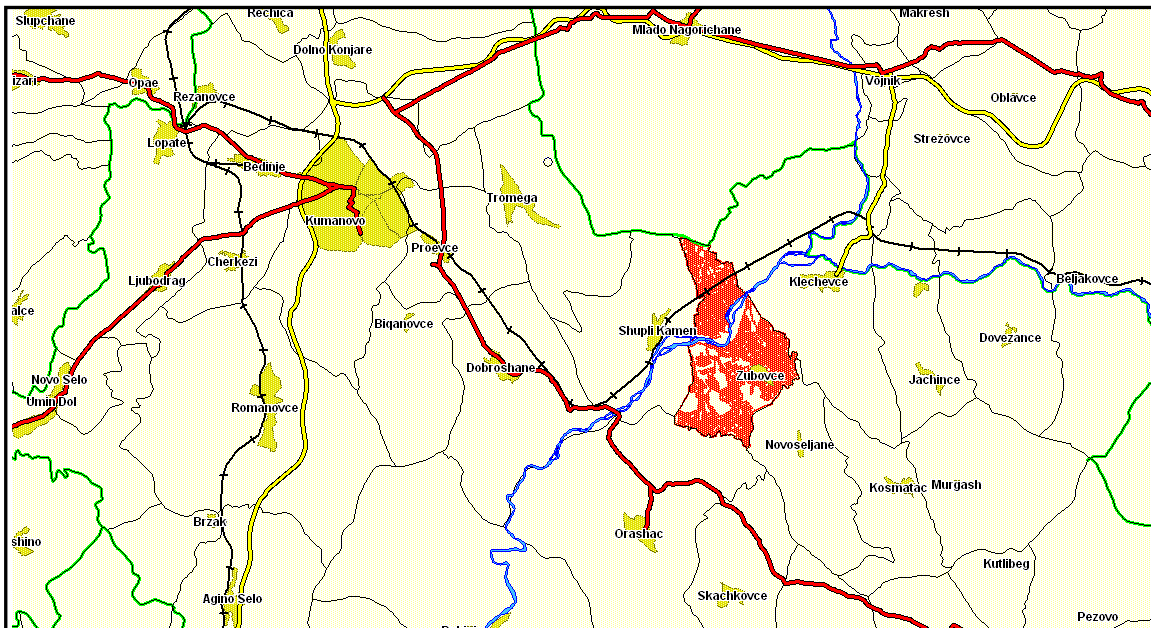
This report is based on the following information:



- Data for the real estate in the CM of Zubovce, obtained from the real estate cadastre, regional office in Kumanovo
- Data from the regional office of the Ministry of agriculture, forestry and water management in Kumanovo
- Direct on the field observation

### **Cadastre municipality Zubovce**

Cadastre municipality Zubovce is within the administrative borders of the Municipality Klecevce. Zubovce is populated area with 57 inhabitants, in accordance with the census from 2002, and the whole population is with Macedonian ethnicity, consists of 33 families/households and 70 homes / houses. In accordance with the census from 1994, Zubovce had a population of 98 inhabitants, all with Macedonian ethnicity, 49 man and 49 women, 50 households and 76 homes / houses. In accordance with the statistical data, even though it has a small number of population, the population decreased for 58%, which demonstrates the tendency of depopulation of the rural areas in the state. The total area of the cadastre municipality is 7,971,748 m<sup>2</sup>, where 4,134,227 m<sup>2</sup> (51.86%) of the total area is state owned land and 3,837,521 m<sup>2</sup> is privately owned land, or 48.14% of the total area.





### ***Concessions and their relation to the real estate registry system***

In accordance with the Law on concessions, the Government of the Republic of Macedonia can approve state owned agricultural land to be operated under concession to a domestic and foreign legal and physical entity. The concession can be approved for the following exploitation:

- Production for livestock fodder and development of the livestock production for a period of 20 to 30 years.
- Crop production for a period of 20 to 30 years
- Green-house production for a period of 30 to 40 years
- Permanent crop for a period of 30 to 40 years
- Land for growing of wild animals and aquaculture production for a period of 10 to 30 years, unless otherwise regulated with another law.

The concession of the agricultural land is approved on the basis of implemented public request for proposals, based on the information for the real estate property (state owned agricultural land), the initial amount of concession fee, and the requirements for a Program for the exploitation of the agricultural land. The technical and administrative activities for releasing of the agricultural land for concessional use, is performed by the Ministry of Agriculture, forestry and water management. In accordance with the decision for releasing of the agricultural land for concession, the Minister of Agriculture, forestry and water management signs the Concession Agreement in written form with the company that has submitted the best offer, on behalf of the Government of Republic of Macedonia.

What data is used as a base within the process of concession administration? One of the key preconditions for start with the process of administration of land of concession or lease, is the data of spatial distribution of the agricultural land, its soil quality and its type of use. This is the area where, in the process of concession administration, most of the problems and misunderstandings occur.

In accordance with the institutional position of the state real-estate registry, the required data are obtained from the Real-estate cadastre from the State department for geodetic works. The data obtained from this system, not only satisfies the requirements with content data in the process of concession, they are also the sole data possessing the legality.



Where are the defects of this system, often criticized for its lack of data of the current situation and conditions of the real-estate, especially in the case of agricultural land in state ownership?

Neglect and the insufficient knowledge of the legal jurisdiction which is base for the process of land registration can create problems. For instance, obligation and jurisdiction for registration of the legal and ownership status of the real estate, initiated outside the system, has no obligation to follow the principle of current condition by either form or quantity of data.

Having in mind the stated above, it is obvious that the process of concession can not be performed based on only that data and it is real to expect, especially from the potential concession holders, to additionally hire legal experts and private geodetical companies to record the real current status of the agricultural land for which they have applied for and/or was approved for confessional use to them.

### ***The land structure in cadastre municipality Zubovce***

The state-owned agriculture land in Zubovce has suitable structure for concession, based on the soil quality, type of use and the high level of the land parcels grouping. Ownership registration of this land is based on the Law on Real Estate Cadastre where the land of interest, state-owned agriculture land, is grouped in the following ownership lists: 42, 113, 130, 198, 334, 355 и 356. These data are provided from the regional office of the State Department for Geodetic Works in Kumanovo.

The land structure, for each of the ownership lists, based on the type of use and land category is given in the tables bellow:

Ownership list No. 42

Table I:

Type of use ID	Type of use description	Area (Ha)	Area (ari)	Area (m <sup>2</sup> )
110	Fields	1	80	31
140	Vineyards		14	50
160	Meadow	188	75	03
170	Forest	3	71	44
315	Bare land		64	96
464	Cemetery		33	27
500	Land under buildings		1	31
<b>Total area:</b>		<b>195</b>	<b>40</b>	<b>82</b>



Table II:

Type of use	Category 1	Category 2	Category 3	Category 4	Category 5	Category 6	Category 7	Category 8	Bare land	Area (m <sup>2</sup> )
110			3059	3679	2494	2982	5817			18031
140				1450						1450
160	3431	36031	43559	184688	1460662	57248		101883		1887502
170	2019	14000			21125					37144
315									6496	6496
464									3327	3327
500									131	131
	<b>5450</b>	<b>50031</b>	<b>46618</b>	<b>189817</b>	<b>1484281</b>	<b>60230</b>	<b>5817</b>	<b>101883</b>	<b>9954</b>	<b>1954081</b>

### Ownership list No. 113

Table I

Type of use ID	Type of use description	Area (Ha)	Area (ari)	Area (m <sup>2</sup> )
110	Fields	2	48	14
160	Meadow	2	32	98
	<b>Total area:</b>	<b>4</b>	<b>81</b>	<b>12</b>

Table II

Type of use	Category 1	Category 2	Category 3	Category 4	Category 5	Category 6	Category 7	Category 8	Bare land	Area (m <sup>2</sup> )
110					10745	14069				24814
160			2715	15063	5520					23298
			<b>2715</b>	<b>15063</b>	<b>16265</b>	<b>14069</b>				<b>48112</b>

### Ownership list No. 130

Table I

Type of use ID	Type of use description	Area (Ha)	Area (ari)	Area (m <sup>2</sup> )
110	Fields	9	69	76
160	Pastures		47	45
	<b>Total area:</b>	<b>10</b>	<b>17</b>	<b>21</b>

Table II

Type of use	Category 1	Category 2	Category 3	Category 4	Category 5	Category 6	Category 7	Category 8	Bare land	Area (m <sup>2</sup> )
110			3830	25465	27665	40016				96976



160				4265	480					4745
			<b>3830</b>	<b>29730</b>	<b>28145</b>	<b>40016</b>				<b>101721</b>

### Ownership list No. 198

Table I

Type of use ID	Type of use description	Area (Ha)	Area (ari)	Area (m <sup>2</sup> )
110	Fields	111	78	69
140	Vineyards	2	82	45
150	Meadow		62	91
160	Pastures	15	59	82
170	Forest		25	00
<b>Total area:</b>		<b>131</b>	<b>08</b>	<b>87</b>

Table II

Type of use	Category 1	Category 2	Category 3	Category 4	Category 5	Category 6	Category 7	Category 8	Bare land	Area (m <sup>2</sup> )
110			14469	150981	588517	329911	33991			1117869
140			1132	25614	1499					28245
150			2731	3560						6291
160	521	474	45438	73635	34978	936				155982
170			1606	894						2500
	521	474	65376	254684	624994	330847	3391			1310887

### Ownership list No. 334

Table I

Type of use ID	Type of use description	Area (Ha)	Area (ari)	Area (m <sup>2</sup> )
110	Fields		80	90
<b>Total area:</b>			<b>80</b>	<b>90</b>

Table II

Type of use	Category 1	Category 2	Category 3	Category 4	Category 5	Category 6	Category 7	Category 8	Bare land	Area (m <sup>2</sup> )
110			4000	4090						8090
			<b>4000</b>	<b>4090</b>						<b>8090</b>



### Ownership list No. 356

Table I

Type of use ID	Type of use description	Area (Ha)	Area (ari)	Area (m <sup>2</sup> )
110	Fields		12	15
160	Pastures		13	76
<b>Total area:</b>			<b>25</b>	<b>91</b>

Table II

Type of use	Category 1	Category 2	Category 3	Category 4	Category 5	Category 6	Category 7	Category 8	Bare land	Area (m <sup>2</sup> )
110					1376					1376





160				1215						1215
				<b>1215</b>	<b>1376</b>					<b>2591</b>

### Ownership list No. 355

Table I

Type of use ID	Type of use description	Area (Ha)	Area (ari)	Area (m <sup>2</sup> )
110	Fields	2	04	07
<b>Total area:</b>		<b>2</b>	<b>04</b>	<b>07</b>

Table II

Type of use	Category 1	Category 2	Category 3	Category 4	Category 5	Category 6	Category 7	Category 8	Bare land	Area (m <sup>2</sup> )
110					7200	13207				20407
					<b>7200</b>	<b>13207</b>				<b>20407</b>

Total area available for the concession process, based on the type of use and land category, for the CO Zubovce is presented in the table below:

Type of use ID	Type of use description	Area (m <sup>2</sup> )
110	Fields	1,287,463
140	Vineyards	29,695
150	Meadow	6,291
160	Pastures	2,072,742
170	Forest	39,644
<b>Total area:</b>		<b>3,435,935</b>

It is evident that, from the total area of state owned land (4,134,227 m<sup>2</sup>) in Zubovce, the area of attractive agriculture land available for concession is 3,435,935 m<sup>2</sup>. The difference of 698,292 m<sup>2</sup> belongs to rivers and roads, which is not attractive for the concession process. This relationship is presented in the Figures 1 and 2, below.

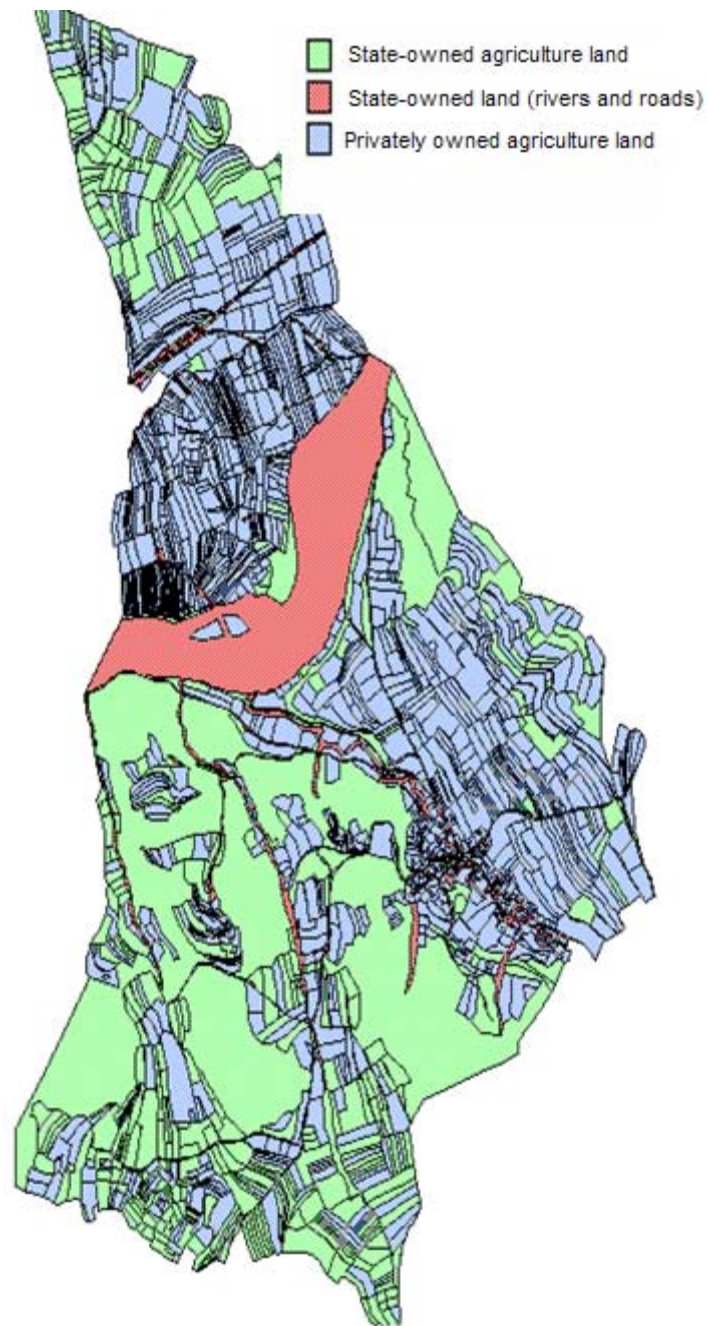
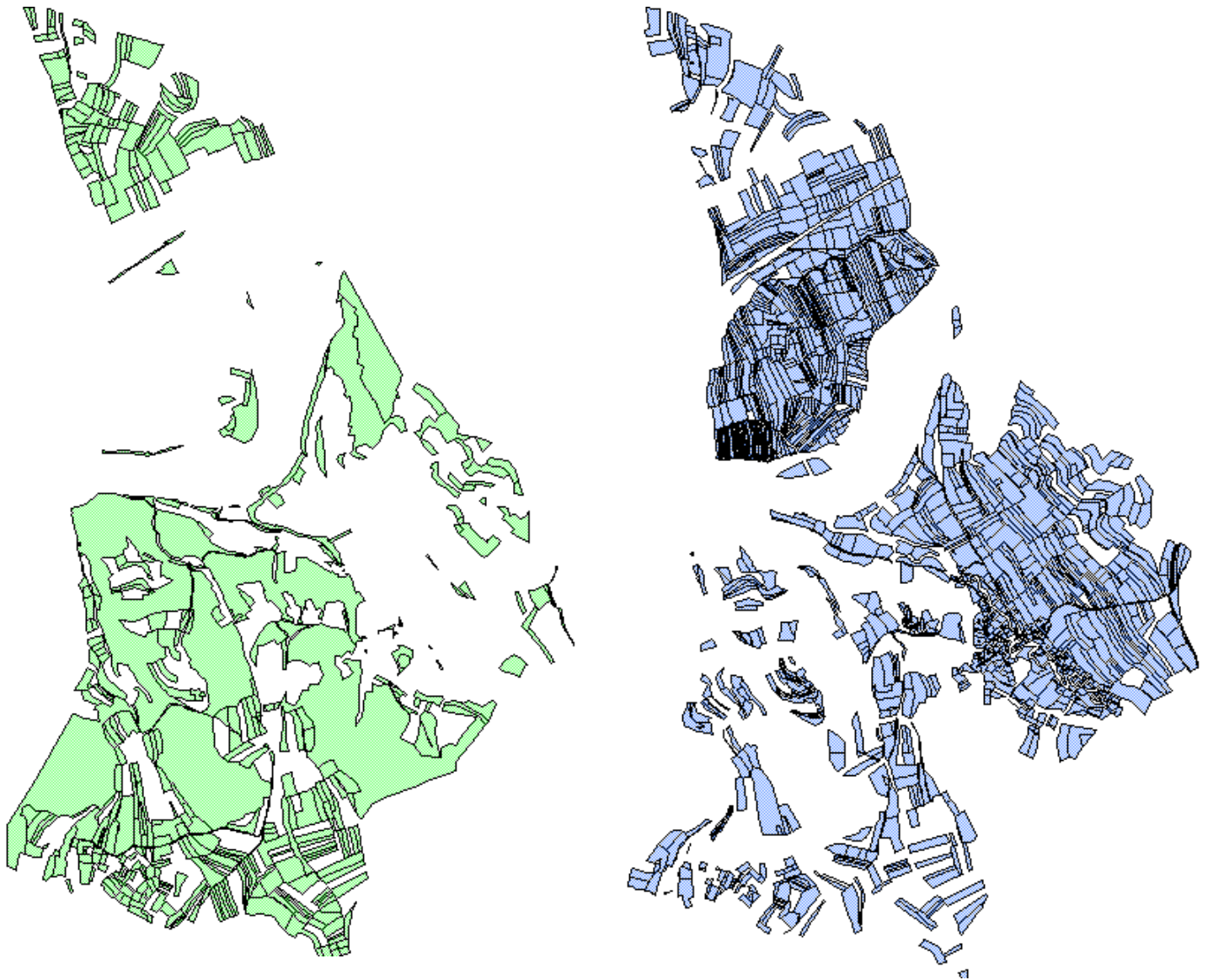


Figure 1



State owned land available for concession

Privately owned agriculture land

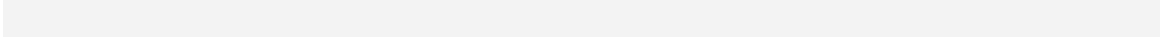
Figure 2



Support to the Preparation of a National Strategy for Sustainable Development in  
The Republic of Macedonia

**Draft Final National Strategy for Sustainable Development February 2008**

Part II: Strategic background and analysis





### **Status of issued concession**

In accordance with the performed analyses of the documentation and the registry system of concessions at the regional unit of the Ministry of Agriculture, Forestry and Water Management in Kumanovo, two subsequent concession procedures for the state owned agricultural land in Zubovce can be observed.

### **First line of concessions**

The concession was with following parameters:

- 61 land parcels have been administered covering a total area of 172,726 m<sup>2</sup>
- The land parcels comprises of fields (type of use code: 110), pastures (type of use code: 160), vineyards (type of use code: 170) and forest (type of use code: 140)

The total area per type of use and land class is represented in the table bellow, while the land mapping is presented at Figure 3.

Type of use ID	Type of use description	Area (Ha)	Area (ari)	Area (m <sup>2</sup> )
110	Field	14	29	25
140	Vineyards		7	12
160	Pastures	2	89	19
170	Forest		1	70
<b>Total area:</b>		<b>17</b>	<b>27</b>	<b>26</b>

Type of use	Category 1	Category 2	Category 3	Category 4	Category 5	Category 6	Category 7	Category 8	Area (m <sup>2</sup> )
110				6897	77963	35206	22859		<b>142925</b>
140				712					<b>712</b>
160				23589	5330				<b>28919</b>
170				170					<b>170</b>
				<b>31368</b>	<b>624994</b>	<b>35206</b>	<b>22859</b>		<b>172726</b>

There is no detailed information regarding this line of concession at the regional office of the Ministry of agriculture, forestry and water management. There is evidence about paid/not paid annual concession fees, without clear clarification and confirmation about concessionaire practice on the field, as well as the level of utilization of all parcels and related objects.

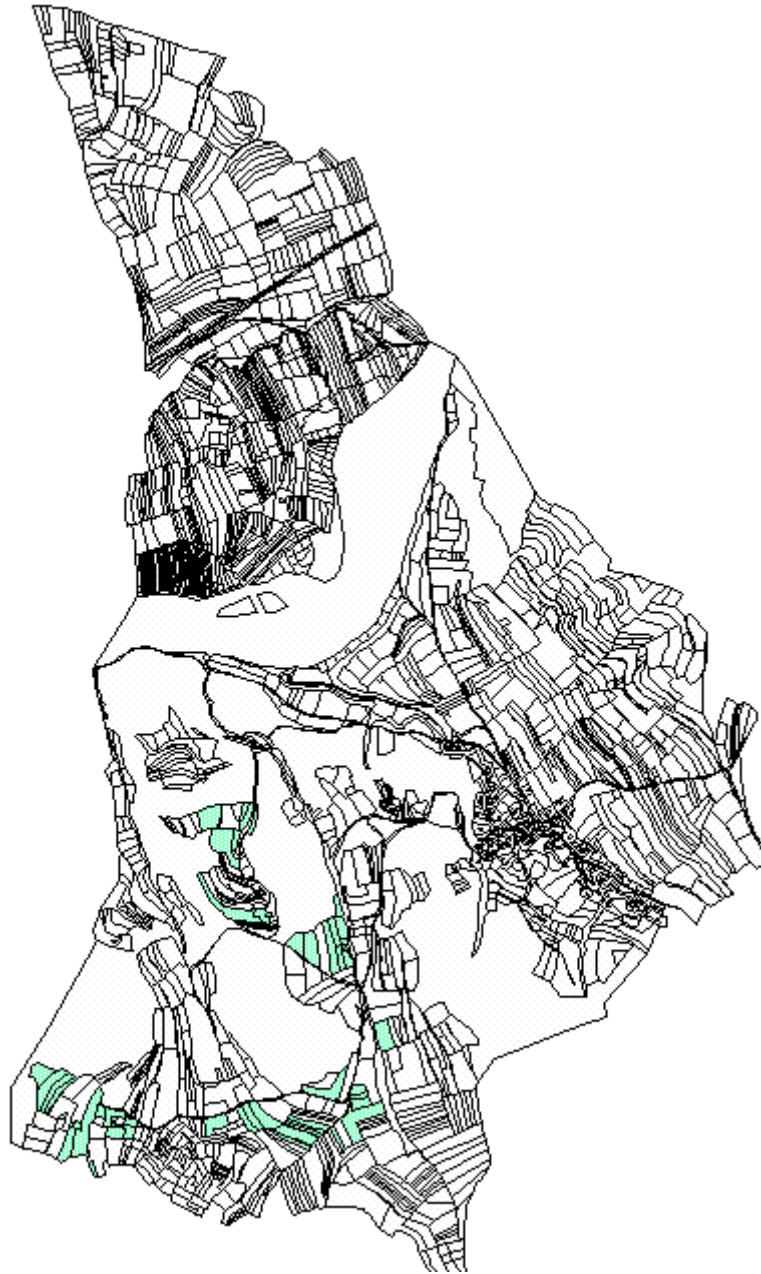


Figure 3: First line of concessions



## Second line of concessions

The concession was with the following parameters:

- 100 land parcels have been administered with a total area of 338,386 m<sup>2</sup>
- The land parcels comprised of fields (type of use code: 110), pastures (type of use code: 160), meadows (type of use code: 150) and vineyards (type of use code: 140)

The total area per type of use and land class is represented in the table bellow, while the land mapping is presented at Figure 4.

Type of use ID	Type of use description	Area (Ha)	Area (ari)	Area (m <sup>2</sup> )
110	Fields	30	50	70
140	Vineyards		19	83
160	Pastures	2	95	33
150	Meadows		18	00
<b>Total area:</b>		<b>33</b>	<b>83</b>	<b>86</b>

Type of use	Category 1	Category 2	Category 3	Category 4	Category 5	Category 6	Category 7	Category 8	Area (m <sup>2</sup> )
110			11781	41653	139772	109806	2058		305070
140				1983					1983
160			19149	8244	2140				29533
150				1800					1800
			<b>30930</b>	<b>53680</b>	<b>141912</b>	<b>109806</b>	<b>2058</b>		<b>338386</b>

This concession was approved to one legal entity – Agrokonzum. The concessionaire, after signing the Concession Agreement is in the phase to determine the current condition on the field. For this purpose the concessionaire has hired private geodetical company to prepare geodetic project for the land which was approved under concession. There are no other field activates.

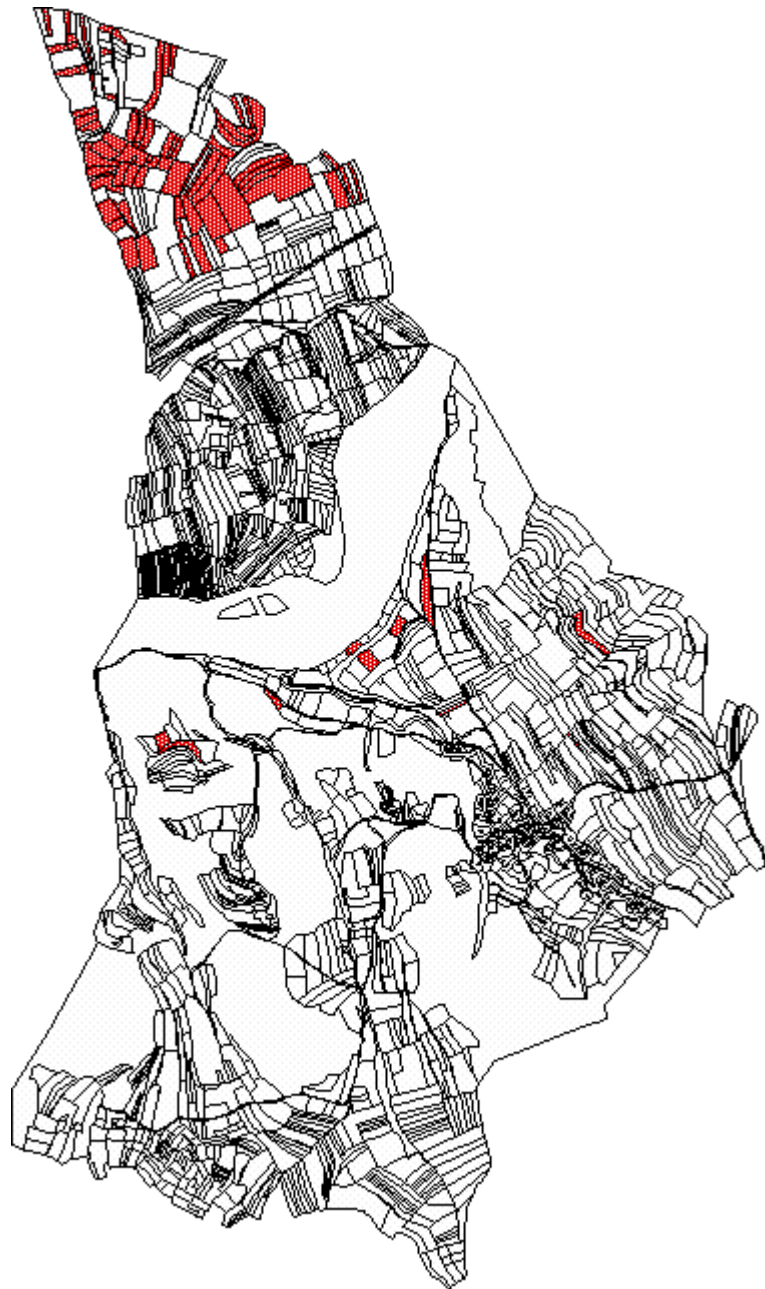


Figure 4: Second line of concessions





### ***Analyses of the actual field situation with the administered concessions contained***

Even though there is no evidence within the responsible institutions, there are number of problems that both line of concessions faced in the process of implementation of the concession on the field. These problems are typical for all agricultural land in the Country, but are more common on the state owned land. The background situations for these problems can be grouped into four categories:

1. Arondation is a process for exchange of land among two parties, where in this case are the state and other physical and/or legal entities, performed for various interests and reasons. The mutual obligations are regulated with agreements that do not end at the real-estate cadastre, which on the other side provides data for concession issuance.

2. Land usurpation

Land usurpation is an exploitation of land that belongs to somebody else, in this case the land is state owned, which in many instances in this country is concluded by the state (i.e. the agricultural combines, which use those lands) where with different motives, the state made no corrective activities.

3. Conflicts among the legal regulative which occur in appropriate time intervals. In this category a lot of legal regulative belong such as:
  - Law on the agrar reform and colonization
  - Law on nationalization
  - Arondation steps
  - Law on expropriation
  - Law on spatial and urban planning
  - Construction law
  - Law on constructional sites
  - Law of denationalization
  - Law on privatization of the private constructional site in state ownership



All those regulative resulted into certain legal activities, which in time were amended, supplemented, terminated or have generated different legal activities.

#### 4. Uncompleted administrative procedure

This group comprises of activities with the land that are regulated with legal acts and procedures, but have not resulted with recording of the changes within the real estate cadastre, due to various reasons.

These situations will be presented by the analyses of the land parcel's geometrical forms and type of use provided by the real estate cadastre and the same areas as seen on the field. Not all cases need to be real problems in the process of concession administration, but without clear verification before the concession starts there are possibilities for problems occurrence.

Aerial orthophotos from the State Department of Geodesy (images from 2004 year) will be used for the presentation of the field situation.

##### Case 1

Part of the data from the first line of concessions is presented on the Figure 5. It is evident that real estate cadastre data used for the concession administration is not updated with the current state of the land. It is visible on the Figure that land parcels 1693, 1697, 1698, 1699, 1703 and 1717, which are subject of concession, are not updated with the new roads which take out part of its areas. It should be noted that the concessionaire is paying the fee based on the cadastre data, which is more that he is practicing on the field.

The possible scenarios for this case are:

1. The reads are built by municipality administration. This is the most probable scenario since the road is about 3.5 meters wide and spreads on the whole CM. But, here is the 4<sup>th</sup> situation, where these changes are not updated in the real estate cadastre.



- The roads are built by the land owners in order to establish access to its own parcels. Even in this case, there is 4<sup>th</sup> situation, where these changes should be updated in the real estate cadastre for each parcel separately.

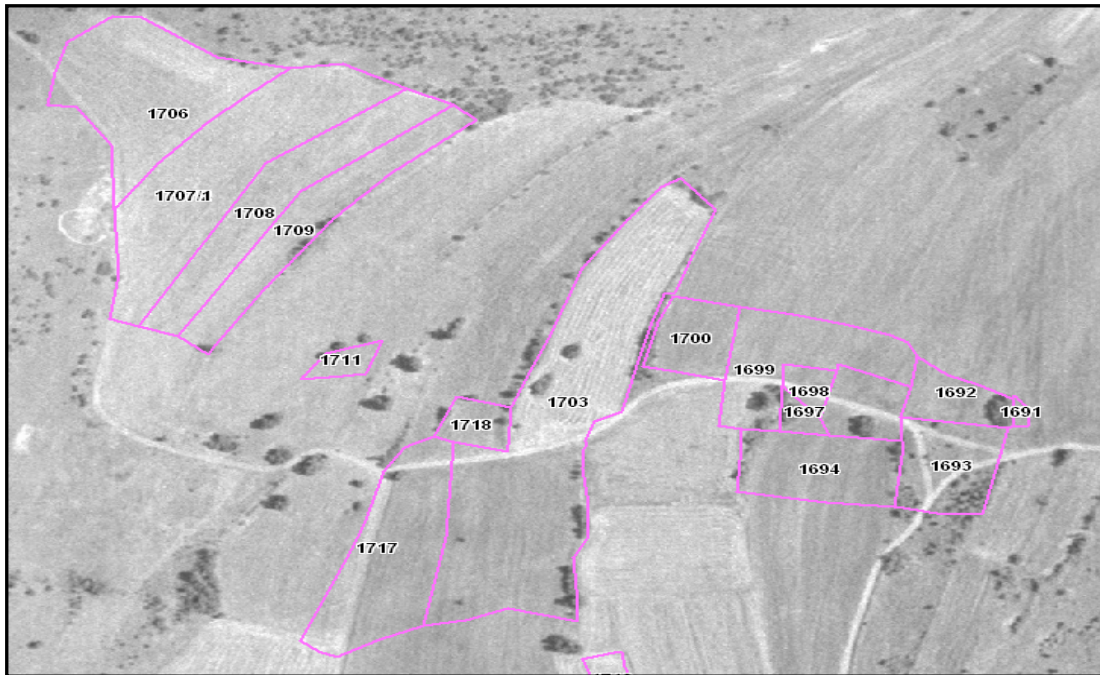


Figure 5

## Case 2

Land parcels No 106 and 119, subject of the second line of concessions, in the real estate cadastre are registered with mutual state and private ownership. According to the property lists No 355 and 354, these two land parcels have the following ownership:

Land number	parcel	State owned	Privately owned	No. of entities	Private
106		103 / 118	15/118	3	
119		1 / 167	166 / 167	7	

In addition, each of the land parcels have the same type of use (fields), but 2 soil types, which is registered in the cadastre and visible on the field – Figure 6.



Spatially, land parcels are correct comparing the cadastre data and on-the-field situation.



Figure 6

Having in mind that these two parcels are part of the second line of concession in this municipality, the legal obligation is all owners to provide written agreement for it.

The possible scenarios for this case are:

1. Land ownership is registered in the real estate cadastre, but there is possible legal discrepancy, most probably between the Law on Concession and Low on Ownership and other real property deeds.
2. There is regular documentation which was not available during the period of report preparation.

### Case 3

The Figure 7 shows a situation of land usurpation, quite interesting for a parcel in a state ownership. It is evident that the parcel 19 with its shape and the area position registered at the real estate cadastre is different from the situation on the



field. The parcel's boarder on one side is marked alongside the road, where the usurpation from the parcels 34, 33 and 32 forms new road and a new shape of the parcel 19. The parcel 19 in the second phase concession is marked with the figure registered in the cadastre, and the concessionaire will have more land for cultivation.

The possible scenarios for this case are:

1. This is typical case for land usurpation, which is strange looking from the point that the state land is expanded on the account of privately owned land. It leads to the possibility that this parcel is used by some private entity.



Figure 7

#### Case 4

The Figure 8 shows the increase of the parcels 7, 19 and 36 derived by a similar motive for usurpation as it was the case in the previous figure. The type of interventions that have occurred can be verified by legal and technical documentation, provided that such documentation exists. The cadastre municipality was not in a position to provide any documentation; with an explanation that documentation of that kind does not exist within the appropriate institutions.



Figure 8

### Case 5

Figure 9 shows a situation of completely altered situation of the parcel's shapes of 42, 43 and 44. We can note that the current condition of the parcel's shape of the whole area is completely different compared to the situation registered with the real estate registry.





Figure 9

There are many scenarios for this case that belongs to the all 4 situations that have been specified as reasons for problems in the process of concession administration.

Case 5

Figure 10 presents a situation where the current field condition and the situation obtained from the registry are identical and can be overlapped. We can note that the parcel 113 cultivates two crops, which overlaps with the situation recorded within the database of the real estate registry.

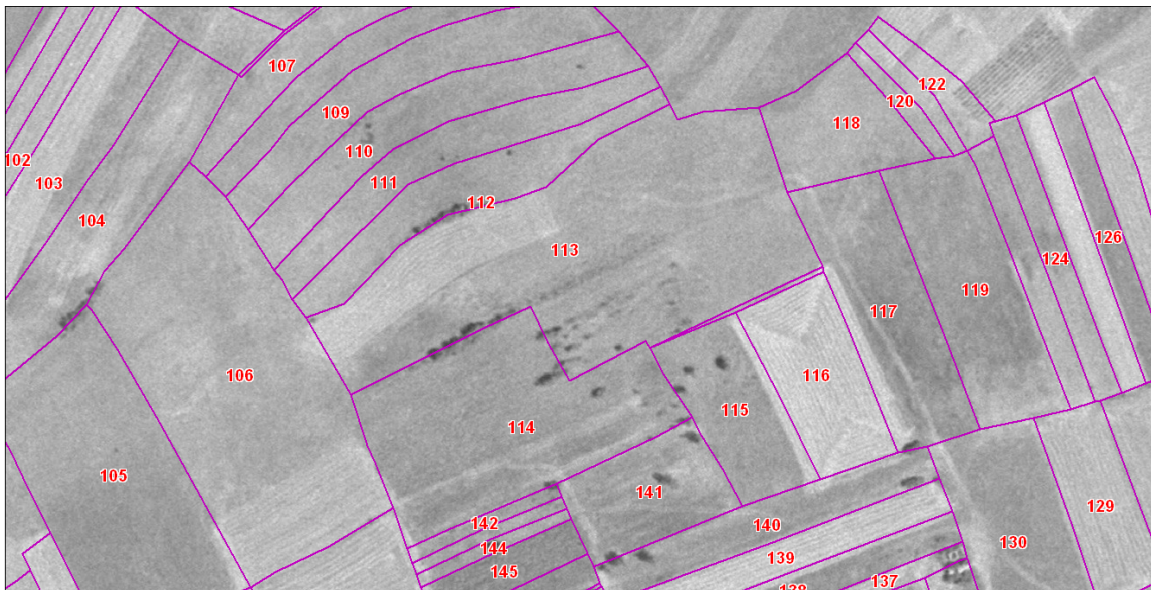


Figure 10

**Conclusions and recommendations**

In order to confirm the current situation on the field, as well the situation registered with the registry system, which have been used for concession purposes, the general conclusions based on the performed comparative analysis of the field, acquired with additional geodetic acquisition methods, are:



- ▽ Additional acquisitioned methods need to be employed and geodetical projects have to be prepared based on the results of the acquisition, in the preparatory phase
- ▽ The data obtained by the performed geodetic activities, should be integrated within the existing geometric database for the cadastral municipality
- ▽ Legal documentation needs to be determined and provided to resolve the ownership issues of the current situation on the field
- ▽ Develop a unique system for registry and administration of the state owned agricultural land
- ▽ Development of an infrastructure for data distribution and marketing of the agricultural land