FINNISH METEOROLOGICAL INSTITUTE

МИНИСТЕРСТВО ЗА ЖИВОТНА СРЕДИНА И ПРОСТОРНО ПЛАНИРАЊЕ

TWINNING INTERIM QUARTERLY REPORT number: 4

European Agency for Reconstruction

TWINNING PROJECT

INTERIM QUARTERLY REPORT

Project Title: Air Quality Improvement

Partners: The Finnish Meteorological Institute and the Ministry of Environment and Physical Planning

Date: 20th September 2007

Agency Contract Number 05MAC01/13/102

Twinning Contract number: MK05/IB-EN-01

Section 1: Project data

Twinning Contract Number	MK05/IB-EN-01
Project Title:	Air Quality Improvement
Twinning Partners (MS and BC)	The Finnish Meteorological Institute and the Ministry of Environment and Physical Planning
Report Number:	4
Period covered by the report:	1.6.-.31.8.2007
Duration of the project:	1.9.2006-29.2.2008
Rapporteur:	• Harri Pietarila, Member State Project Leader (MS PL) • Svetlana Gjorgjeva, Beneficiary Country Project Leader (BC PL) • Tiina Harju, Resident Twinning Advisor (RTA)

20.9.2007

Harri Pietarila, MS Project Leader Svetlana Gjorgjeva, BC Project Leader

Finnish Meteorological Institute
P.O. Box 503, FI-00101 Helsinki
Tel. +358-9-19295432, Fax. +358-919294129
www.fmi.fi

Ministry of Environment and Physical Planning
Drezdenska 52, 1000 Skopje
Tel. +389 2 3066-930, Fax. +389 2 3066-931
www.moepp.gov.mk

List of Abbreviations and Acronyms

AQFD	Air Quality Framework Directive
BC	Beneficiary Country
BTX analyser	An analyzer which measures benzene, toluene and xylene isomers in the air, also called BTEX analyser
CADASTRE	Cadastre of Air Polluters and Pollutants in the Republic of Macedonia, 2004 (also KATASTAR)
CARDS 2004 project	CARDS 2004 project “Environmental management strengthening”
CARDS 2005 project	CARDS 2005 project "Strengthening of Environmental management, former Yugoslav Republic of Macedonia"
CAR- FMI	Model for estimating the concentrations originating from traffic (FMI)
CCEA	Climate Change Enabling Activities Office
CEN	European committee for standardization
CLRTAP	Convention on Long-Range Transboundary Air Pollution
CRF	Common Reporting Format (UNFCCC)
DD	Daughter Directive
DeNOx	Nitrogen oxide (NOx) reduction
EAR	European Agency for Reconstruction
ECMWF	European Centre of Medium Range Weather Forecast
EEA	European Environment Agency
ETC-ACC	European Topic Centre – Air and Climate Change
EPER	European Polluting Emissions Register
EPRTR	European PRTR
FEA	Federal Environmental Agency (Umweltbundesamt)
FMI	Finnish Meteorological Institute
FWD	Framework directive (92/62/EC)

Finnish Meteorological Institute
P.O. Box 503, FI-00101 Helsinki
Tel. +358-9-19295432, Fax. +358-919294129
www.fmi.fi

Ministry of Environment and Physical Planning
Drezdenska 52, 1000 Skopje
Tel. +389 2 3066-930, Fax. +389 2 3066-931
www.moepp.gov.mk

GC	Gas chromatograph or gas chromatography
HM	Heavy metals (or trace elements)
HMA	Hydro-Meteorological Administration
ICEIM-MANU	Macedonian Academy of Sciences and Arts, Research Center for Energy, Informatics and Materials
IEC	The International Electrotechnical Commission
ISO	The International Organization for Standardization
KATASTAR	see CADASTRE
KS	Key Source
LAT	Lower Assessment Threshold
LCP	Large Combustion Plants (EU Directive)
LPS	Large Point Sources
MEIC	Macedonian Environmental Information Centre
MEPP	Ministry of Environment and Physical Planning
MPP	Meteorological PreProcessor (FMI)
MS	Member State
NCCC	National Climate Change Committee
NE	Not estimated
NEC	Net Emissions Ceiling (EU Directive)
NITL	National Inventory Team Leader
NFP	National Focal Point
NFR	Nomenclature for reporting (CLRTAP)
N.N.	No Name
PL	Project Leader
PM	Particulate Matter
PMT	Photo Multiplier Tube
PRTR	Pollutant Release and Transfer Register

Finnish Meteorological Institute
P.O. Box 503, FI-00101 Helsinki
Tel. +358-9-19295432, Fax. +358-919294129
www.fmi.fi

Ministry of Environment and Physical Planning
Drezdenska 52, 1000 Skopje
Tel. +389 2 3066-930, Fax. +389 2 3066-931
www.moepp.gov.mk

QA/QC	Quality Assurance and Quality Control
RIHP	Republic Institute for Health Protection
RTA	Resident Twinning Advisor
SCR	Selective Catalytic Reduction
SEA	Secretariat for European Affairs
SOP	Standard Operation Procedure
SRS	Sector of Regulation and Standardisation of the MEPP
SSO	State Statistical Office
SYKE	Finnish Environment Institute
TOC	Table of Concordance
UAT	Upper Assessment Threshold
UBA	Umweltbundesamt, Austria
UDM-FMI	Urban Dispersion Modeling System for stationary sources (FMI)
UNFCCC	United Nations Framework Convention for Climate Change
UNECE	United Nations Economic Council for Europe
VBS	Visual Basic Script
VOC	Volatile organic compounds
VTT	Technical Research Centre of Finland

Finnish Meteorological Institute
P.O. Box 503, FI-00101 Helsinki
Tel. +358-9-19295432, Fax. +358-919294129
www.fmi.fi

Ministry of Environment and Physical Planning
Drezdenska 52, 1000 Skopje
Tel. +389 2 3066-930, Fax. +389 2 3066-931
www.moepp.gov.mk

Section 2 and 3: Content

This section describes the activities of the project. It is divided in five sections.

Finnish Meteorological Institute
P.O. Box 503, FI-00101 Helsinki
Tel. +358-9-19295432, Fax. +358-919294129
www.fmi.fi

Ministry of Environment and Physical Planning
Drezdenska 52, 1000 Skopje
Tel. +389 2 3066-930, Fax. +389 2 3066-931
www.moepp.gov.mk

2A - BACKGROUND

Policy Developments

During the reporting period covered by the forth quarterly report, the following activities related to a further development of the legislation through transposition of Directives relevant to air, have been carried out in the Ministry of Environment and Physical Planning:

1. Under the CARDS 2005 Project - "National Strategy for Environmental Approximation"
Directive implementation plan for directive on national emission ceilings for certain atmospheric pollutants(2001/81/EC) and for directive on ambient air quality assessment and management (96/62/EC) and the plan for prioritization of implementation plans were deliver to BC expert Marijonka Vilarova for comments. These final documents concerning activities in the MEPP were delivered 12 September 2007.

A new Minister of Environment, Mr. Xzelil Bajrami had a meeting with the MS PL Harri Pietarila and the RTA Tiina Harju on 28 June 2007. It was discussed during the meeting about the Twinning project, its human and financial resource needs, importance for the MEPP and also a potential state visit to Finland during the study tour in August 2007. Unfortunately it was not possible to organise due to a tight time schedule for the Finnish Minister of Environment Paula Lehtomaki whose maternity leave will start soon.

Capacity of technical personnel has improved for operation, maintenance, calibration and repairing of instruments in the monitoring station and calibration instruments in the calibration laboratory (reference laboratory).

Project Assumptions

It has been expressed in the article 2 of the working plan in the Twinning contract that the Twinning project Air Quality Improvements relates to article 103 of the SAA, which mentions that “the Parties shall develop and strengthen their cooperation in the vital task of combating environmental degradation, with the view to supporting environmental sustainability”. It adds that “Cooperation should focus on several priorities”, including “combating air pollution, environmental impact assessment and strategic environmental assessment, continuous approximation of laws and regulations to Community standards”.

The assumptions given in the Twinning contract are shown in the following

Finnish Meteorological Institute
P.O. Box 503, FI-00101 Helsinki
Tel. +358-9-19295432, Fax. +358-919294129
www.fmi.fi

Ministry of Environment and Physical Planning
Drezdenska 52, 1000 Skopje
Tel. +389 2 3066-930, Fax. +389 2 3066-931
www.moepp.gov.mk

table.

Table 1. ASSUMPTIONS from the Twinning contract

Component Number	Assumptions	Status
I	Cooperation and outputs of CARDS 2004 and CARDS 2005 projects	Fulfilled
	Translation of legislation and documents	Partly fulfilled
	Co-operation with the relevant stakeholders functional	Partly fulfilled
II	Results from CARDS 2003 Regional available	Fulfilled
	Activity data is available and its quality meets the requirements	Partly fulfilled
	Software and hardware meets the requirement	Partly fulfilled
	Skilful personnel available and enough personnel resources	Partly fulfilled
	Stakeholders available and willing to cooperate	Partly fulfilled
III	Cooperation and outputs of CARDS 2004	Fulfilled – CARDS2004 finished
	Emission data, other activity data and AQ measurement data available and its quality meets requirements	Partly fulfilled
	Dispersion model and GIS tools existing and meets requirements	Partly fulfilled
	Enough personnel resources available	Fulfilled
	Enough resources for producing and distributing promotion materials	Not yet current issue

Finnish Meteorological Institute
P.O. Box 503, FI-00101 Helsinki
Tel. +358-9-19295432, Fax. +358-919294129
www.fmi.fi

Ministry of Environment and Physical Planning
Drezdenska 52, 1000 Skopje
Tel. +389 2 3066-930, Fax. +389 2 3066-931
www.moepp.gov.mk

IV	Skilful personnel available	Partly fulfilled
	Hardware and Software requirements met	Not fulfilled
	Enough resources for new spare parts and/or equipments	Not fulfilled, no new spare parts procured in year 2007 in the MEPP, no fund for repairing equipments
	New detector and a sample injection system for GC procured in the Environmental Laboratory	Partly fulfilled (no need for a new detector)
	New equipments and spare parts for mobile emission laboratory procured	Not fulfilled, specifications given in the tender announcement in April 2007 and for the second tender published by the EAR in August 2007
V	BC human resources and computer meets requirements	Fulfilled – two persons for training
	Resources for model procurement available	Fulfilled – the models of the FMI given free of charge
	Co-operation with HMA	Partly fulfilled – after negotiation between MEPP &HMA needed data available without extra

Finnish Meteorological Institute
P.O. Box 503, FI-00101 Helsinki
Tel. +358-9-19295432, Fax. +358-919294129
www.fmi.fi

Ministry of Environment and Physical Planning
Drezdenska 52, 1000 Skopje
Tel. +389 2 3066-930, Fax. +389 2 3066-931
www.moepp.gov.mk

	GIS, emission and meteorological data available	cost but encoded form, one meteorologist from the HMA to validate meteorology data in the MEPP Partly fulfilled – meteorology data already available for Skopje area, emission data for point sources, minor data/lack of data for traffic

Project assumptions and the status of their fulfilment are:

I COMPONENT – Guidelines and Secondary Legislation

- There are however fears about the expert resources, as key people suffer from an overload of work, and some are changed due to maternity leaves. Nevertheless the key personnel have a good previous experience of preparing sublaws for air so the task is not a big challenge for them.
- The finalising of documents in the CARDS2005 project is left.
- The TOCs concerning the implementation of the AQFD and its 4DD with respect to the Rulebook on Monitoring and Reporting and review of the Rulebook on Criteria, Methods and Procedures for the Assessment of Ambient Air Quality.

II COMPONENT – Emission Inventories

- Activity data available and its quality meets the requirements
  - Started on non-continuous basis. The preparation of inventories to the UNFCCC, UNECE CLRTAP and EU is currently project based

Finnish Meteorological Institute
P.O. Box 503, FI-00101 Helsinki
Tel. +358-9-19295432, Fax. +358-919294129
www.fmi.fi

Ministry of Environment and Physical Planning
Drezdenska 52, 1000 Skopje
Tel. +389 2 3066-930, Fax. +389 2 3066-931
www.moepp.gov.mk

in the BC, no permanent resources are used for estimation of emissions.

In this moment inventory work is funded by international projects.

There are skilful national experts capable of carrying out the air pollutant inventory in case funding exists.

- Software and hardware meets the requirements
  - Started on non-continuous basis. There exist at the moment at least four databases containing inventory related data created during the various international projects.

    ICEIM-MANU manages a database containing the greenhouse gas data for 1990-2005, which has been used in reporting to the UNFCCC. The database was prepared by ICEIM-MANU in the UNDP project in 2004-2006 (the project ends in April 2008)

    MEPP/MEIC manages a database containing both air pollutant and greenhouse data. The database was prepared by Tehnolab in the EU Regional CARDS 2002 project in 2005-2006.

    MEPP/MEIC manages a MsAccess database that is capable of processing and managing the inventory data for both greenhouse gases and air pollutants and using plant level data as input. The task of the BC experts has been to feed data into this system to make it operational. This database was prepared in the current Twinning project funded by the EU in 2007-2008 (the project ends in February 2008).
- Skilful personnel available and enough personnel resources
  - Started on non-continuous basis. These experts have been resourced thus far with the funding from GEF and EU only.
- Stakeholders available and willing to cooperate
  - No actions. According to the BC experts only external individual experts have been working in the internationally funded projects paid by the project thus far. The state governmental servant work in international funded project only paid by salary basis.

III COMPONENT – Preliminary Air Quality Assessment

- Cooperation and outputs of CARDS 2004 (concerning the component 3)
  - Fulfilled. Cooperation has been established with CARDS 2004 project and the results, data and reports of the project have been

Finnish Meteorological Institute
P.O. Box 503, FI-00101 Helsinki
Tel. +358-9-19295432, Fax. +358-919294129
www.fmi.fi

Ministry of Environment and Physical Planning
Drezdenska 52, 1000 Skopje
Tel. +389 2 3066-930, Fax. +389 2 3066-931
www.moepp.gov.mk

delivered to the Twinning project. Further processing of different data sets still requires some work.

- Emission data, other activity data and AQ measurement data available and its quality meets requirements
  - Partly fulfilled. AQ measurement data (CARDS 2004 and AQ measurement data 2006) available. Additional measurements are planned to be made presumably in the eastern part of the BC. Point source emission data from CARDS 2004 available but not the emission data from the year 2006. Traffic emission data available only for Skopje area. Some activity data available: population data on municipality level and land cover. Topography data is available as a picture but not as number values so far. The data sets mostly fulfil the requirements of the preliminary assessment.

    For dispersion modelling detailed emission data is needed. Especially the traffic data need further processing and hopefully it is possible to get more data during the project. Also additional indicative measurement data is desirable.
- Dispersion model and GIS tools existing and meets requirements
  - Partly fulfilled at the moment. GIS tool MapInfo is in use at the MEIC department and it meets the requirements but BC personnel working in the Twinning project need to practise the software independently. Ljupca Dimoska and Katerina Nikolovska from MEIC department are trained to use the program and they will share their experience with the people working in the Twinning project. GIS tool MapInfo and dispersion models for stationary sources (UDM-FMI) and mobile sources (CAR-FMI) are installed. First real dispersion modelling studies have been made for stationary emission sources. No practical dispersion modelling results available yet for preliminary assessment. More training in the use of dispersion modelling is needed. Dispersion modelling for traffic emission is a big challenge.
- Enough personnel resources available
  - Fulfilled at the moment. BC expert Marijonka Vilarova is the BC Component Leader and other persons working in the component 3 are RTA Counterpart Aleksandra Nestorovoska Krsteska, BC Expert Margareta Cvetkovska, BC Expert Arminda Rushiti and BC Expert Ljupco Grozdanovski.

Finnish Meteorological Institute
P.O. Box 503, FI-00101 Helsinki
Tel. +358-9-19295432, Fax. +358-919294129
www.fmi.fi

Ministry of Environment and Physical Planning
Drezdenska 52, 1000 Skopje
Tel. +389 2 3066-930, Fax. +389 2 3066-931
www.moepp.gov.mk

- Enough resources for producing and distributing promotion materials
  - Not yet valid issue. To be seen in future.

IV COMPONENT – Air Quality Measurements and Laboratory Work

- Skilful personnel available
  - The MEPP is starting to establish a documented quality management system (QA/QC plan) for the air monitoring network and the Calibration laboratory. Working out the draft QA/QC plan is based on one hand on working methods used more or less routinely at least for some years in field measurements and instrument calibrations and, on the other hand, on the requirements of the EU air quality directives, EN measurement standards and also the "accreditation" standard EN ISO/IEC 17025. Documenting the quality management system is a time-consuming process and needs persons with good knowledge and experience on the monitoring methods and laboratory calibration methods as well as on the quality and measurement standards and regulations concerning the tasks of the organization.
  - Working out the QA/QC plan is new to the MEPP personnel involved with the activities of the air monitoring program and the Calibration laboratory. Therefore the personnel is not very experienced and knowledgeable in this field. However, several QA/QC activities and operations involving both field and laboratory work have been planned and initiated. This has increased the knowledge and understanding of the importance of the QA/QC work. During the mission the personnel has showed great interest to broaden their knowledge into the topic of QA/QC and to work out the draft QA/QC plan for BC.
- Hardware and Software requirements met
  - Not fulfilled. No money available in the MEPP at the moment. It has not been either possible to finance hardware and software requirements fund coming from the EAR.
- Enough resources for new spare parts and/or equipments
  - Not totally fulfilled. Some of the needed equipments are included in the hardware/software tender and some of the spare parts in the procurement list to be financed by MEPP annual budget. Both are still waiting for final approval. The finance situation in MEPP at the

Finnish Meteorological Institute
P.O. Box 503, FI-00101 Helsinki
Tel. +358-9-19295432, Fax. +358-919294129
www.fmi.fi

Ministry of Environment and Physical Planning
Drezdenska 52, 1000 Skopje
Tel. +389 2 3066-930, Fax. +389 2 3066-931
www.moepp.gov.mk

beginning of 2007 has been extremely bad because all of the decisions are delayed. Most vital spare parts for AQ monitors at the moment are: membranes for pumps, spare external pumps for monitors, electronic cards for monitors and transfer boxes for monitors.

Calibration laboratory (reference laboratory)

- Skilful personnel available
  - Partly fulfilled. The static injection method is a primary method for preparation of the gas mixtures for calibration purpose. The reference laboratory is equipped with the SIM but also with the gas dilution device which has been used in routine calibration. The use of static injection method was new to the TS of the laboratory and therefore the experience was not very strong. However the personnel is very capable to achieve a good level of practice for operation of the method. The TS needs to practice the use of the static injection method continuously.
- Enough resources for new spare parts and/or equipments
  - Partly fulfilled. There is a lack of equipments to establish the traceability chain from the reference laboratory to the measurement station (e.g. field calibrator, ozone calibrator, devices to obtain span and zero checks at the stations in Skopje). In addition there is also a lack of equipments and reference standards that are needed to realize the traceability of the calibration method at the reference laboratory to the SI unit (high quality gas standards, temperature and pressure standards, flow measurement device). These two points are solved after the investment package has been conducted. The number of the spare parts in the reference laboratory for the analyzers is substantial, but fit for the purpose with respect to the experience of the most frequently needed spare parts in the BC. However the possibility to purchase spare parts right after the malfunctioning of the analyzer occur is difficult due to the existence of the supplier and the lack of consumable funds.

V COMPONENT – Dispersion Modelling

- Co-operation with HMA
  - Partly fulfilled. After negotiation between MEPP &HMA needed data would be available without extra cost but encoded form. Therefore

Finnish Meteorological Institute
P.O. Box 503, FI-00101 Helsinki
Tel. +358-9-19295432, Fax. +358-919294129
www.fmi.fi

Ministry of Environment and Physical Planning
Drezdenska 52, 1000 Skopje
Tel. +389 2 3066-930, Fax. +389 2 3066-931
www.moepp.gov.mk

MS expert's help would be needed to solve the problem. However, one meteorologist from the HMA will validate meteorology data of the MEPP in the future. Details will be confirmed later and a contract will be signed after it.

Finnish Meteorological Institute
P.O. Box 503, FI-00101 Helsinki
Tel. +358-9-19295432, Fax. +358-919294129
www.fmi.fi

Ministry of Environment and Physical Planning
Drezdenska 52, 1000 Skopje
Tel. +389 2 3066-930, Fax. +389 2 3066-931
www.moepp.gov.mk

2B - ACHIEVEMENT OF MANDATORY RESULTS

According to the Twinning contract the project has been assisting in implementing the air quality framework directive, in preparing relevant secondary legislation and in upgrading skills required to operate a significantly developed automatic ambient air quality monitoring network with supporting laboratory services. The project has 5 components (guidelines and secondary laws, emission inventories, preliminary air quality assessment, air quality measurements and laboratory works, and dispersion modelling).

Further steps for the developments in legislation and developing automatic ambient air quality monitoring network with supporting laboratory services have been taken in the Twinning project. A proposal for the future National System for air emission inventories and an establishment of a central national database for air emission inventories to improve emission inventories have been done. A plan to improve methodologies of preliminary assessment has started. Taken into account the finance situation in the MEPP additional measurements etc. needed to improve the preliminary assessment have not been made untill now. Improvement of the preliminary assessment and the revision of the zones are the main topics in the preliminary air quality assessment.

The resources used at the moment to the emission inventory work were explored. A proposal for arranging the national system for air emission inventories was drafted.

A lack of transport and traffic research in the BC is a hinder of fulfilling the emission inventory work properly. This situation affects many other sectors (preliminary assessment, modelling) as emission inventory as well.

For ambient air quality assessment and management including air quality modelling the availability and quality of relevant meteorological data is very important. Recommendations concerning the importance of the modernization and automation of the observation network including the upper air soundings, data acquisition, easily accessible database system and the data quality control have been given to strengthen the capabilities of the HMA in the future.

The practical training on using dispersion modelling in air quality assessment has been given and also some true dispersion modelling results are available for the use of preliminary assessment.

All the benchmarks which were achieved from the start of the project has

Finnish Meteorological Institute
P.O. Box 503, FI-00101 Helsinki
Tel. +358-9-19295432, Fax. +358-919294129
www.fmi.fi

Ministry of Environment and Physical Planning
Drezdenska 52, 1000 Skopje
Tel. +389 2 3066-930, Fax. +389 2 3066-931
www.moepp.gov.mk

been listed and indicated which of the mandatory results are completed or close to completion. Those which were achieved in the reporting period are written by italicization.

Mandatory Results

I COMPONENT – Guidelines and Secondary Legislation

1. *The EU air quality legislation based on the already harmonized air quality directive further aligned*
    - *GAP analysis – close to completion, further development in October 2007*
    - *Table of Concordance - completed*
2. *A Draft sub legislations on Air Quality completed*
    - *Draft Sub legislation existing – close to completion, further development in October*
        - *A Rulebook on Monitoring and Reporting produced further and delivered in a draft approved form to the MEPP.*
        - *The Decision on Zones and Agglomeration, as prepared by CARDS 2004, was discussed and delivered in a draft approved form to the MEPP.*
3. About 50 persons trained and training material and instructions manual prepared
    - About 25 pages manual – not yet current, at the end of project
    - Training for 50 people arranged – not yet current, at the end of project

II COMPONENT – Emission Inventories

1. *Institutional capacity and tools improved for maintaining emission data inventories and improved tools*
    - *Capacity of personnel and tools improved – close to completion.*
        - *After the previous mission 20. - 24th November 2006 the Copert 4 road transport emission model was installed and two BC experts were nominated to work with the Copert 4 model, Igor Paunovski and Driton Idrizi.*
        - *Untill July 2007 the experts fill in data into the MsAccess database improved by the MS IT expert*
2. *Report on compliance with EU based national emission system and priority list for improvement*
    - *Priority list – started.*
        - *Draft priority list was prepared by the MS expert during the mission in January 2007*
        - *Allocation of the inventory tasks under the national*

Finnish Meteorological Institute
P.O. Box 503, FI-00101 Helsinki
Tel. +358-9-19295432, Fax. +358-919294129
www.fmi.fi

Ministry of Environment and Physical Planning
Drezdenska 52, 1000 Skopje
Tel. +389 2 3066-930, Fax. +389 2 3066-931
www.moepp.gov.mk

authorities needs to be decided at the political level. A scheme for rearranging the organization of the Ministry of the Environment has been developed. Action is extended to 2008 in the new budget of the Ministry.

3. *Improvement of National methodology for air emission inventories for the country*
    - *Improved methodology and inventories – partly started*
4. *Capacities improved and draft training materials prepared on emission inventories and reports – partly started*
    - *During the missions, MS and BC experts start to work with COPERT 4 software.*
5. *Support to EPER reporting – partly started*
    - *The BC is not ready to prepare an EPER or PRTR report because the secondary legislation to support collection of data does not yet exist and the data collection procedures have not been developed*
    - *The MS IT expert Santtu Mattila has built up an updatable and expandable data system that can later be further developed to support reporting to the European PRTR. Data from the CADASTRE has been fed into this data system.*

III COMPONENT – Preliminary Air Quality Assessment

None of the benchmarks or mandatory results has been fully achieved at the moment.

1. *Improvement of methodology for preliminary assessment*
    - *Improved preliminary air quality assessment – close to completion.*
        - *Dispersion modelling results are not yet available. First traffic emissions data from Skopje has been recently delivered, but MS Experts have not evaluated the usefulness of the data for dispersion modelling.*
        - *The practical work concerning the improvement of methodology included training of MapInfo program and basic data analysis. Report examples of preliminary assessments were presented and the outlook of the preliminary assessment report was discussed*
        - *The practical training of GIS tool continued. Maps of spatial distribution of concentrations and emissions were produced and the emission data available was integrated within the preliminary assessment. The draft of the contents of the preliminary assessment report was prepared*
        - *Improvement plan made. It shall be revised and make more*

Finnish Meteorological Institute
P.O. Box 503, FI-00101 Helsinki
Tel. +358-9-19295432, Fax. +358-919294129
www.fmi.fi

Ministry of Environment and Physical Planning
Drezdenska 52, 1000 Skopje
Tel. +389 2 3066-930, Fax. +389 2 3066-931
www.moepp.gov.mk

concrete when the work continues and finance decisions are made in MEPP. Additional measurements will be carried out in year 2008.

2. *Revised agglomerations and non-agglomeration zones established with CARDS 2004 project*
   - *Zone and agglomeration definition ready – close to completion.*
     - *Proposal of CARDS 2004 project analysed and commented. Proposed zoning is well defined and justified but the possibility to integrate some zones is under consideration. The final zoning can be presented when all the data for preliminary assessment is available. GIS presentation of zones needs improvement and air quality assessment requirements within zones has to be revised according to the finalised preliminary assessment.*
3. *A preliminary assessment of ambient air quality has been worked out and reported to the EEA*
   - *Preliminary air quality assessment reported*
     - *Started. A draft version of the contents of the report is prepared. The drawing of graphs and maps is close to be completed. The analysis of the achieved results and the writing of the manuscript will be the next task.*
4. Awareness raised on the importance of the air quality monitoring system
   - Workshop
     - Not achieved so far but the process in going on and discussed about available funding in the MEPP. This mandatory result is planned to be fulfilled in the last quarter of the Twinning project.

IV COMPONENT – Air Quality Measurements and Laboratory Work

1. *Operation of the calibration laboratory improved and the staff is trained*
   - *Operation of the laboratory improved – partly completed*
     - A clear progress on the operation of the NRL for preparation of gas mixtures for calibration purposes was achieved. It was agreed that the BC sends the data for performing the gas mixtures by static injection methods for CO-, NO-, and for SO2 gases and comparisons to the dilution method. BC Experts did not have time due other duties to follow the plan.
2. *Capacity built for operation, maintenance, calibration and repairs of air quality monitoring stations and samplers*

Finnish Meteorological Institute
P.O. Box 503, FI-00101 Helsinki
Tel. +358-9-19295432, Fax. +358-919294129
www.fmi.fi

Ministry of Environment and Physical Planning
Drezdenska 52, 1000 Skopje
Tel. +389 2 3066-930, Fax. +389 2 3066-931
www.moepp.gov.mk

- *Capacity of people improved – partly completed.*
  - *Hands on training on maintenance, calibration and field operation has also given during the Study Tour to Finland in August 2007 (activity 4.1.3.).*

3. *A draft QA/QC plan has been worked out*
   - *A draft QA/QC plan – started. A proposed framework of the draft QA/QC plan was made in advance by the MS expert (see the table of content of the draft in the mission report of MS expert Veijo Pohjola as appendix). Some instructions for writing the draft as well as some proposed preliminary texts and tables for the content of the draft are included in every chapter. This proposed draft was handed and presented to BC experts during the first mission day and it was discussed and worked out further during the mission.*
4. Plan for improvement and training for data management has been completed
   - Improvement plan – close to completion
   - Staff trained - started
5. Plan for improvement and training for GCs analysis for air samples has been completed
   - Improvement plan – completed
   - Staff trained – partly completed
6. The operation of a Mobile Emission Laboratory is improved and the staff received proper training for emissions measurements
   - Operation improved – started, no tenders for the first tender announcement, new one is open until 26 September 2007 (opened by the EAR)
   - Staff trained – not done, same reason as above
7. *Specifications and priority list for mobile emission laboratory)*
   - *Specifications and priority list – completed, continued for the second tender announcement dividing one lot to two lots and even adding some equipments to one lot.*

V COMPONENT – Dispersion Modelling

1. *An air quality model has been supplied and implemented*
   - *Operational model for dispersion calculation procured and implemented at the MEIC - completed.*
     - *Dispersion model for stationary sources has been implemented. A new version of a traffic model (CAR-FMI) has been supplied*

Finnish Meteorological Institute
P.O. Box 503, FI-00101 Helsinki
Tel. +358-9-19295432, Fax. +358-919294129
www.fmi.fi

Ministry of Environment and Physical Planning
Drezdenska 52, 1000 Skopje
Tel. +389 2 3066-930, Fax. +389 2 3066-931
www.moepp.gov.mk

and installed.

- *An air quality model has been supplied and implemented. MS Expert provided earlier a list of the necessary meteorological data that the Ministry asked officially to get from the Hydro Meteorological Administration as a part of an official co-operation between the Ministry and the Meteorological Institute for utilizing the installed dispersion models. The negotiations between the Ministry and Hydro Meteorological Administration about the issue has continued. At the beginning of September it was decided that the HMA will provide one of its meteorologists to check/validate the meteorological data from the station of the MEPP.*

2. *Methods to provide meteorological and emission dataset for dispersion modelling has been established*
   - *Meteorological and emission dataset available* – close to completion
     - *The needed data and possibilities to get it on concrete level have been investigated. Discussion of the availability of data will continue.*
3. *The staff is trained in use and validation of the model results*
   - *Staff trained – close to completion, also course material partly developed*
4. *Real case studies prepared*
   - *Real case study – started*
     - *Most of required input data (e.g. meteorology, GIS-information) is already available for real-case model studies – and also the procedure in feeding in all the relevant data for the models is already documented and practiced with the local staff. A couple of real case studies already done.*
     - *A preliminary assessment on the availability of relevant emission data was made. For stationary sources there is already quite on extensive coverage of emission data available but unfortunately it is almost ten years old. (.e.g. "The Study on Air Pollution Monitoring System in the Former Republic of Macedonia , Final Report , Data Book, June 1999, Japan Environment Assessment Centre, CO. LTD., Tokyo ", provided by the BC Expert Marijonka Vilarova) . So it is expected that reasonable emission data for practical dispersion studies can be prepared during 2007.*

Finnish Meteorological Institute
P.O. Box 503, FI-00101 Helsinki
Tel. +358-9-19295432, Fax. +358-919294129
www.fmi.fi

Ministry of Environment and Physical Planning
Drezdenska 52, 1000 Skopje
Tel. +389 2 3066-930, Fax. +389 2 3066-931
www.moepp.gov.mk

2C. ACTIVITIES IN THE REPORTING PERIOD

The CARDS 2004 project ended in June 2007. A co-operation between the Twinning project and the CARDS 2005 project has had also a minor role compared to the previous reporting period. The CARDS 2005 project is also closed but preparation of final documents is still under progress.

A fourth steering committee meeting was held 28 June 2007 in the Ministry of Environment and Physical Planning. The following participants were involved in the steering committee meeting:

1. Dejan, Panovski, State Secretary, MEPP
2. Svetlana Gjorgjeva, BC PL, MEPP
3. Gordana Kozuharova, MEPP
4. Aleksandra N. Krsteska, RTA Counterpart (since 9th March 2007) and Leader of Component 4
5. Harri Pietarila, MS, PL, Finnish Meteorological Institute (FMI)
6. Tiina Harju, RTA, FMI
7. Ivan Borisavljevic, Programme Manager, EAR
8. Mihail Kocubovski, Republic Institute for Health Protection (RIHP)
9. Dejan Gjorsoski, European Commission
10. Martina Toceva, RTA Assistant

Absent

11. Dimitar Malinovski, EAR
12. Jane Sapardanovski, Ministry of Economy
13. Liljana Todorova Talevska, Hydro-Meteorological Administration (HMA)
14. Mate Gjorgievski, Secretariat for European Affairs (SEA)
15. Meri Georgievska, Secretariat for European Affairs (SEA)

Activities during short-term experts' missions in the reporting period:

I COMPONENT – Guidelines and Secondary Legislation

MS expert Wolfgang Spangl from 26th June to 29th June 2007

- Activity 1.2.1 Drafting of the sub legislation of Monitoring and Reporting for ambient air quality under the Framework Air Quality Directive and the Daughter Directives, 2 working days
- Activity 1.2.3. Review of a rulebook for zones and agglomerations prepared by the CARDS 2004 project (side letter no. 6, earlier name was 1.2.3 Drafting of the sub legislation on Zones and Agglomerations for ambient air quality assessment under the Framework Air Quality Directive and the Daughter Directives), 2 working day
- In addition, the ToC tables concerning the implementation of the AQFD

Finnish Meteorological Institute
P.O. Box 503, FI-00101 Helsinki
Tel. +358-9-19295432, Fax. +358-919294129
www.fmi.fi

Ministry of Environment and Physical Planning
Drezdenska 52, 1000 Skopje
Tel. +389 2 3066-930, Fax. +389 2 3066-931
www.moepp.gov.mk

and its 4DD with respect to the Rulebook on Monitoring and Reporting were checked.

- The Rulebook on Criteria, Methods and Procedures for the Assessment of Ambient Air Quality prepared by the CARDS 2004 project was reviewed by including the regulations of the 4. DD (2004/107/EC).

BC experts Marijonka Vilarova, Alexandra Krsteska and Arminda Rushiti from the MEIC in the MEPP and Biljana Stavrevska from SRS in the MEPP were involved in the activities.
Many meetings between the BC and MS experts were held concerning these activities during the mission.

II COMPONENT – Emission Inventories

MS expert Santtu Mattila from 28th May to 1st June 2007

- 2.1.2. Support to construct the database and its content for preparation of the reports to relevant international bodies, 1 working day
- 2.2.2. Preparing a draft list of priorities for recommended improvements, 1 working day.
- 2.3.2. Support to develop collection of activity data, 3 working days

BC experts Igor Paunovski and Driton Idrizi from the MEPP were involved in the activities.

The activities during this mission were as follows:

- Design a new database for recording and reporting emission data based on existing Cadastre data, the features needed in a system for annual reporting, outlines from the draft database from the previous mission and the principles discussed in the opening meeting of the mission.
- Design a simple way to use the database for emissions and a simple output.

This meant a lot of straight forward work together with BC experts.

Further work that was agreed to be done includes short user manual and if needed a user interface done by the BC experts and source classification check in both the MS and the BC.

There is a copy of the database in the MS, too, and the experts in the MS and the BC will be in touch vie e-mail so the changes can be made in cooperation.

MS expert Kari Makela from 11th June to 15tth June 2007

Finnish Meteorological Institute
P.O. Box 503, FI-00101 Helsinki
Tel. +358-9-19295432, Fax. +358-919294129
www.fmi.fi

Ministry of Environment and Physical Planning
Drezdenska 52, 1000 Skopje
Tel. +389 2 3066-930, Fax. +389 2 3066-931
www.moepp.gov.mk

- 2.3.1. Support to developing a National Emission Factors and inventory methods, 1 working day
- 2.3.2. Support to develop collection of activity data, 3 working days
- 2.3.3. Support to update the National Methodology for air emissions inventories for Macedonia with special attention on subjects that need improvements such as emission from farming, emissions from wood burning, emissions from road traffic, emissions from air traffic and railroad traffic, emissions from off-road machinery, 1 working day

  BC experts Marijonka Vilarova, Igor Paunovski and Driton Idrizi from the MEPP were involved in the activities

Start the work with the Copert 4 model. BC Expert Igor Paunovski had participated in a Copert seminar in Italy.
Much of the data input are only rough estimations (e.g. mileage and speed data according to estimates by Marijonka Vilarova, Igor Paunovski, Driton Idrizi and Kari Makela) and must be replaced with better data when it is available.
All possible sources were used to find adequate data for Copert model 4: Kari Makela's experience of the Finnish situation, Copert default values, figures from Bosnia and Herzegovina and estimates of the BC experts.
Accurate calculation results must be based on valid input data. The next step is to validate the input data. These are e.g. average mileage of every vehicle type, mileage division between urban, rural and highway, average speeds and correct number of vehicles (in register).

MS Expert Kari Makela, BC Expert Igor Paunovski and BC Expert Driton Idrizi had a meeting with Dr. Nikola Krstanoski, Bitola University in Bitola. Bitola University is the only institute in the BC doing traffic research. Dr. Krstanoski expressed his willingness to participate in the emission estimate improvement process. He stressed that the use of Copert 4 model is difficult because there are not enough requested data.

The input to the model was completed and the first results could be examined. The first results produced by the model seem logical and reasonable. There are still many open questions that need further research efforts before the model can produce reliable results.

MS expert Kristina Saarinen from 2nd July to 6th July 2007

- 2.3.1. Support to developing a National Emission Factors and inventory methods, 3 working day
- 2.3.2. Support to develop collection of activity data, 2 working days
  BC experts Marijonka Vilarova and Alexandra N. Krsteska were involved in the activies. Also other experts in different meetings as

Finnish Meteorological Institute
P.O. Box 503, FI-00101 Helsinki
Tel. +358-9-19295432, Fax. +358-919294129
www.fmi.fi

Ministry of Environment and Physical Planning
Drezdenska 52, 1000 Skopje
Tel. +389 2 3066-930, Fax. +389 2 3066-931
www.moepp.gov.mk

Theodora Grncarovska from the MEPP, Bosko Nikov and Maja Azievska from the MANU.

The MS expert explored the current situation in developing national emission factors and collection of activity data in the BC. The MS expert repeated the recommendation given in January 2007 to start discussions with the State Statistical Office to improve and supplement the current data collection to get more detailed and better data for the inventories in the agriculture, energy, industrial processes and waste sectors. Development of data collection will enable preparing the inventories at a more detailed level and support developing of national methodologies.
To support the planning and organization of inventory work, the MS expert made a proposal for development of the national system for air emission inventories in the BC.
See more details in the mission report of MS expert.

III COMPONENT - Preliminary Air Quality Assessment

MS expert Birgitta Alaviippola from 28th May to 1st June 2007

- 3.1.3 Integrate emission inventory data and dispersion modelling within preliminary assessment, 5 working days
  BC experts Marijonka Vilarova, Aleksandra N. Krsteska, Margareta Cvetkovska and from the MEPP were involved in the activity.

  - The first assessment report includes the basic substances (SO2, NOX, PM10, CO, O3) and the second report will include heavy metals etc.
  - MS Expert presented new idea to use the mobile station for additional measurements planned for passive samplers in the eastern part of the BC for the determination the concentration levels. Measurement could be conducted e.g. in 2−3 cities in different environments and at least one rural background site should be included. MEPP people disagreed the idea because the mobile laboratory is situated in Kavadarci where concentrations are on a high level and a continuous monitoring station is missing. They also stated that the relocation of the station is very expensive and difficult because of the needed infrastructure etc.
  - Practical training of MapInfo with BC Experts Aleksandra Nestorovoska Krsteska, Arminda Rushiti and Margareta Cvetkovska. See prepared maps in the mission report of MS expert.
  - MS Expert wrote instructions for map making so that MEPP people can work with MapInfo independently in the future.
  - Planning of the content of the preliminary assessment report
  - Data sets missing for the preliminary assessment are the dispersion modelling results and traffic emissions on a map. The usefulness of the wood burning data needs to be evaluated.

Finnish Meteorological Institute
P.O. Box 503, FI-00101 Helsinki
Tel. +358-9-19295432, Fax. +358-919294129
www.fmi.fi

Ministry of Environment and Physical Planning
Drezdenska 52, 1000 Skopje
Tel. +389 2 3066-930, Fax. +389 2 3066-931
www.moepp.gov.mk

MS expert Harri Pietarila from 26th June to 28th June 2007

- 3.1.2 Improvement of methodology for preliminary assessment (done during the project coordination mission)
- 3.2.1 Revision of agglomeration and non agglomeration zones (done during the project coordination mission)
  BC experts Svetlana Gjorgjeva, Aleksandra N. Krsteska and Marijonka Vilarova and Ljupco Grozdanovski from the MEPP were involved in the activities.

Following meetings, visits and activities we carried out during the mission:

- Wednesday 27 June.
  - Visit to an EMEP background station Lazarapole together with RTA Tiina Harju, BC PL Svetlana Gjorgjeva and BC expert Ljupco Grozdanovski. The station seemed to be technically in excellent condition. HVS was not operating because there were some technical failures. The reason for failures was not known and no resources for repairing it are available at the moment in MEPP. PM10 levels were really high (over 40 µg/m3, daily averages has been over 50 µg/m3 in several days during resent weeks, highest hourly concentrations have been over 200 µg/m3!). Reason for high concentration levels was not known. One possible reason might be long range transportation, maybe Sahara dust. Levels of other pollutants were at normal level. MS expert suggested that reason for high PM levels should be analysed in more detailed: by comparing data between different stations during the episode, analysing the met. data together with concentration data, trajectory calculations would help the analyse (for this cooperation with HMA is needed). Lazarapole village is located quite close and right below the measurement site. Possible emissions of the villages might also contribute the concentrations (emissions from fireplaces and construction work, resuspension of particulates etc.). The AQ station was located very close to the HMA's meteorological station.

- Thursday 28 June
  - Meeting with the minister Xhelil Bajrami, RTA and MS PL. The importance of the human resources and finance for spare parts, equipments and additional measurement were discussed with the minister. Minister told that public awareness rising on environmental issues is very important issue and that ministry will strongly work for this. RTA and MS PL told that this issue is also part of the AQ twinning project but the finance resources in MEPP to implement this activity (3.4.1) is unclear. RTA and MS

Finnish Meteorological Institute
P.O. Box 503, FI-00101 Helsinki
Tel. +358-9-19295432, Fax. +358-919294129
www.fmi.fi

Ministry of Environment and Physical Planning
Drezdenska 52, 1000 Skopje
Tel. +389 2 3066-930, Fax. +389 2 3066-931
www.moepp.gov.mk

PL told that it would be very important if ministry could also support this issue. MS PL told that the study tour to Finland is organised in August and Finnish MoE could invite minister to Finland at the same time if the visit is possible for minister. Minister told that it might be possible for him but the final decision shall be made later on. If the visit will be organised minister wish to include following topics on the agenda: Participation of NGO's in decision making, waste treatment and climate change.

- Friday 29 June
  - Meeting with BC PL Svetlana Gjorgjeva. Discussions about the several project issues and how to develop project reporting. It was discussed if the quarterly reports could be revised so that only main project activities, results and recommendations etc. are included in the main text. The technical details and daily activities etc. would be included in annexes.
  - Some concrete results from dispersion modelling are prepared and they can be included in the preliminary assessment. The decisions were made how to proceed with the traffic data and traffic dispersion modelling. BC experts will check if the automatic traffic counter could be taken into use and if some additional traffic counting could be made in some of the major streets. Decision of processing the traffic data was made.
  - Component 3
    Advantages and disadvantages of different zoning approaches were presented. It was decided that MS experts will prepare different options to revise the zoning in BC and their consequences for AQ measurement obligation before next mission. Final decision about the zoning will be made after that.

IV COMPONENT – Air Quality Measurements and Laboratory Work

MS Expert Veijo Pohjola 11th June to 15th June 2007

- Activity No. 4.3.1. Developing draft QA/QC plan, 5 working days
  The training was done in the data centre, monitoring stations and calibration (reference) laboratory.
  BC experts Aleksandra Nestorovska - Krsteska, Margareta, Marijonka Vilarova, Margareta Cvetkovska, Arminda Rushiti, Ljupco Grozdanovski, Igor Atanasov and from the MEPP were involved in the activity. German expert Joachim Seewoester was also involved in the kick-off meeting and calibration laboratory. He works in the CIM project in the MEPP.

Finnish Meteorological Institute
P.O. Box 503, FI-00101 Helsinki
Tel. +358-9-19295432, Fax. +358-919294129
www.fmi.fi

Ministry of Environment and Physical Planning
Drezdenska 52, 1000 Skopje
Tel. +389 2 3066-930, Fax. +389 2 3066-931
www.moepp.gov.mk

- The framework for the draft QA/QC plan done by the MS expert in advance was presented and discussed. When going through the plan the BC experts were taught and advised of the purpose, structure, content and requirements of the QA/QC plan.
- Lots of suggestions, advice and recommendations were given to the BC experts for writing the draft QA/QC plan.
- Several examples of QA/QC, service and maintenance sheets and forms as well as logbook sheets were presented to give a concrete picture about the documentation.
- The personnel's understanding and knowledge of quality assurance and quality control work has increased e.g. the importance of comprehensive documentation, requirements for personnel training, responsibilities of key persons.

Visiting measuring stations and the Calibration laboratory

- To get acquainted with the QA/QC operations and their documentation at the measuring stations and in the Calibration laboratory the MS expert visited with the BC experts Igor Atanasov, Ljupco Grozdanovski and Aleksandra Nestorovska - Krsteska three stations in the town area of Skopje and the Calibration laboratory. The stations were Karpos, Rektorat and Centar. At the Calibration laboratory Mr. Joachim Seewoester from Germany was present. The findings are shown in the mission report.

Study tour in the Finnish Meteorological Institute from 27 August to 31 August 2007.

- Activity 4.5.3. Sharing EU MS country's experience and training on air quality monitoring, 5 working days
  Nine following BC experts together with the RTA assistant participated in the study tour: BC experts Svetlana Gjorgjeva Svetlana Gjorgjeva (Head of department), Marijonka Vilarova (Deputy head of department), Aleksandra Nestorovska Krsteska (Junior associate), Igor Atanasov, (Junior associate), Ljupco Grozdanovski (Junior associate), Igor Paunovski (Head of division), Driton Idrizi (Junior associate), Maja Gramatikova (Advisor) from the MEPP, Liljana Todorova Talevska (Advisor) from the HMA and Martina Toceva (RTA Assistant) as an interpreter

The objective of the study tour to Finland was to share MS country's experience and give hands on training for every day tasks for the BC experts. The programme of the study tour and the study tour report prepared by the BC experts are in appendices.

Finnish Meteorological Institute
P.O. Box 503, FI-00101 Helsinki
Tel. +358-9-19295432, Fax. +358-919294129
www.fmi.fi

Ministry of Environment and Physical Planning
Drezdenska 52, 1000 Skopje
Tel. +389 2 3066-930, Fax. +389 2 3066-931
www.moepp.gov.mk

Activity 4.7.1. Preparation a draft specification and priority list of instrument
No MS expert mission but MS experts and RTA have continued activity for the new tender.
The tender announcement "Supply for Equipment and Consumables for the MEPP" in three lots 1. Environmental Laboratory and Air Quality Equipment and Consumables, Lot 2. Environmental Laboratory and Equipment, Lot 3. Air Quality Monitoring Equipment was published on the website of the EAR and a local newspaper at the end of April 2007. The deadline for tenders was 28 May 2007. There was one combined tender for the lot 1&3 but no tender for the lot 2. The winner of the lot 1&3 was EAS Envimet Analytical Systems Ges.m.b.H. (EAS Envimet). EAS Envimet has signed the contract 20th July. The delivery time for the equipment after the signing of the contract is 60 days. The equipment will be delivered and installed in the week 38 by 18 September 2007. The training will be given in the week 39.

A new tender for the consumables (lot 1) and equipment (lot 2) was announced in the local newspaper 23/24 August 2007 and on the official EAR website and the RTA have sent the tender documents to the Finnish and Austrian MS Experts asking them to inform companies about the tender. The deadline for sending tenders is 26 September 2007.

V COMPONENT – Dispersion modelling

MS expert Sari Lappi from 25th June to 29th June 2007

- Activity 5.2.2 Preparation of emission and other input data for dispersion modelling, 2 working days
- Activity 5.4.1 Use of dispersion modelling for air quality in a couple of real cases, 3 working days
  BC experts Igor Paunovski and Driton Idrizi from the MEPP were involved in the activities.

During the mission practical guidance of urban dispersion model was given using real emission and other data from major emissions sources in Skopje. The concentration data from the model was processed and concentration maps for major sources produced. The concentration data and maps can be used in environmental impact assessment and strategic environmental assessment.

One of the major emissions sources, Okta oil refinery, was decided to be used as the first real case for urban dispersion model. As the most significant emission producers in the City of Skopje, four Toplificaticija energy production units were selected as the next dispersion modelling case. Sufficient emission and other technical data were found from the database and the

Finnish Meteorological Institute
P.O. Box 503, FI-00101 Helsinki
Tel. +358-9-19295432, Fax. +358-919294129
www.fmi.fi

Ministry of Environment and Physical Planning
Drezdenska 52, 1000 Skopje
Tel. +389 2 3066-930, Fax. +389 2 3066-931
www.moepp.gov.mk

meteorological data (for the year 2005) needed was already prepared over the previous missions.

The BC experts will use the urban dispersion model to evaluate the impact of other major emission point sources to the air quality in Skopje. The next mission will concentrate on the practical use of CAR-FMI. The model will need detailed information of the traffic flow on major roads of Skopje. The data available now will need to be completed to include the traffic flow data to each direction from major crossroads.

The CAR-FMI model will require digitised traffic data with start and end coordinates of roads. The digitising was practised with Mapinfo and short instructions for this were made.

The MS experts' mission reports are in appendices of this report.

Finnish Meteorological Institute
P.O. Box 503, FI-00101 Helsinki
Tel. +358-9-19295432, Fax. +358-919294129
www.fmi.fi

Ministry of Environment and Physical Planning
Drezdenska 52, 1000 Skopje
Tel. +389 2 3066-930, Fax. +389 2 3066-931
www.moepp.gov.mk

2D. TIMING AND DELAYS

Adherence to time schedule

During the reporting period eight mission and one study tour have taken place. The time schedule for the activities taken from the working plan is shown in a following table. All the activities which have planned and taken place from the start of the reporting period until the end of the reporting period are marked with a cross and pink colour in the relevant box. The activities which have started earlier and now continued are marked with a circle and blue colour in the relevant box. The activities which have done before planned are marked with a triangle and orange colour in the relevant box. In general the crosses show the time of the MS Expert's missions. Actually the activities have been done also before and after the missions in the BC.

Two MS experts have continued in Component 2. Emission inventories activities 2.1.2. & 2.2.1. & 2.3.1. & 2.3.2. The activity 2.3.3. was started earlier as planned (planned 9/2007). Also mission concerning activity 4.3.1. Developing draft QA/QC plan was done earlier as planned (planned 9/2007).

Activity 4.4.4 Training on validation, management, analysis and introducing methods for presentation and assessment data for MS experts Timo Salmi and Helena Saari planned for 5/2007 is not yet done. Because a procurement of new software will not be possible during the Twinning project Timo Salmi's mission will be allocated to another activity (probably training for maintenance of electronic parts of the analysers). A decision will be made later after all needed clarifications. MS expert Helena Saari's mission on the same activity concerning data validation will be postponed to the end of the Twinning project and will be done by MS expert Birgitta Alaviippola. Since all details are clear a side letter will prepared according to the above changes.

MS Expert Kari Makela's work on component 2. Emission Inventories is connected to the traffic and transport data, which are not involved in the activity 2.5.1. Support to EPER reporting in general. Therefore he has used 3 working days for the activity 2.3.2. Support to develop collection of activity data during his mission 11-15 June 2007 from the activity 2.5.1. Support to EPER reporting in general. A change has been done by side letter no. 7.

There is no delayed more than three months.

Finnish Meteorological Institute
P.O. Box 503, FI-00101 Helsinki
Tel. +358-9-19295432, Fax. +358-919294129
www.fmi.fi

Ministry of Environment and Physical Planning
Drezdenska 52, 1000 Skopje
Tel. +389 2 3066-930, Fax. +389 2 3066-931
www.moepp.gov.mk

Table 2. A time schedule in the reporting period.

CARDS Twinning Project Air Quality Improvement

Reporting

Reports

	June, Year 2007 X	July, Year 2007 XI	August, Year 2007 XII
I COMPONENT - GUIDELINES AND SECONDARY LEGISLATION			
1.1.1 Review current secondary legislation, and preparation of Table of concordance for…			
1.1.2. Analysis of the needed sub legislation for further implementation of first, second and fourth…			
1.2.1. Drafting the sub legislation of monitoring and reporting for ambient air quality under the FW	x x x x x		
1.2.2. Drafting of sub legislation - 2004/224/EC and 96/62/EC…			(continue 10/2007)
1.2.3. Drafted Guidelines on establishing agglomeration and non-agglomeration zones		(done 9/2007)	
1.3.1. Draft instructors to assist the application of secondary legislation - …			
1.3.2. Capacity building of stakeholders to use Manual			
II COMPONENT - EMISSION INVENTORIES			
2.1.1 Identify and appoint stakeholders	done 5-6/2007, reporting now (below)		
2.1.2. Support to construct the database and its content for prepartion of the reports…	○ ○ ○ ○ ○		
2.2.1. Identify data gaps for compliance with EU-based national air emission system…	done 5-6/2007, reporting now (below)		
2.2.2. Preparing a Draft list of priorities for recommended improvements	○ ○ ○ ○ ○		
2.3.1. Support to develop a National Emission Factors and inventory methods		○ ○ ○ ○ ○	
2.3.2. Support to develop collection of activity data		○ ○ ○ ○ ○	
2.3.3. Support to update the National Methodology for air emissions inventories…	▲ ▲ ▲ ▲ ▲		
2.4.1. Improve capacities to Develop comprehensive training program…			
2.5.1. Support to EPER reporting in general			
III COMPONENT - PRELIMINARY ENVIRONMENTAL ASSESSMENT			
3.1.1. Analyses and review the outcome of CARDS 2004 projects			
3.1.2. Improvement of methodology for preliminary assessment taking accoount…	done 5-6/2007, reporting now (below)		
3.1.3. Integrate emission inventory data and dispersion modelling…	x x x x x		
3.2.1. Revision of agglomeration and non agglomeration zones			
3.3.1 Reporting and visualization of the assessment results			
3.4.1 Perform campaign to promote results for public			
IV COMPONENT - AIR QUALITY MEASUREMENTS AND LABORATORY WORK			
4.1.1. Review of the present situation at the calibration laboratory			
4.1.2 Preparing a Plan for improvement of calibration laboratory			Study Tour in Finland
4.1.3. Sharing EU MS country's experience and training on air quality monitoring			x x x x x
4.1.4 Training technical staff on calibration of instruments			
4.1.5. Calibrate and check instruments in cooperation with technical staff			
4.2.1. Training technical staff on repair maintenance			
4.2.2. Implement and assist in the preparation of SOP for maintenance and…			(done 9/2007)
4.3.1. Developing draft QA/QC plan	▲ ▲ ▲ ▲ ▲		
4.3.2. Training on QA/QC plan			
4.4.1. Review of present situation for data management system			
4.4.2. Identified needs for furthered development of the software			
4.4.3 Plan and specification for procurement of new data management software			
4.4.4. Training on validation, management, analysis and introducing methods for presentation…			
4.5.1. Review of present situation in Central Environmental Laboratory on GCs analysis…			
4.5.2. Preparing a plan for improvement of chemical laboratory…			
4.5.3. Arrange and perform training courses for staff concerning standard operation procedures…			
4.6.1. Check instruments of mobile emission laboratory and prepare plan for improvement…			
4.6.2. Check the results of improvements			
4.6.3. Training course (part 1) on emission measurements; basic principles			
4.6.4. Training course (part 2) on emission measurements; advanced emission…			
4.7.1. Preparation a draft specification and priority list of investments…	Done without MS expert mission - new tender announcement		
V COMPONENT - DISPERSION MODELLING			
5.1.1. Specification and procurement of an appropriate system for AQ modelling…			
5.2.1. Investigate available meteorological data from HMA and Skopje airport and…			
5.2.2. Preparation of emission and other input data for dispersion modelling	○ ○ ○ ○ ○		
5.3.1. Training course on dispersion modelling and demonstrate methods for ….			
5.3.2. Develop training course materials	(continue 10/2007)		
5.4.1. Use of dispersion modelling for air quality assessment in couple of real cases	x x x x x		

Activities planned
x Activities planned and done
x Activities done
○ Activities started in time and now continued
▲ Activities done before planned

Finnish Meteorological Institute
P.O. Box 503, FI-00101 Helsinki
Tel. +358-9-19295432, Fax. +358-919294129
www.fmi.fi

Ministry of Environment and Physical Planning
Drezdenska 52, 1000 Skopje
Tel. +389 2 3066-930, Fax. +389 2 3066-931
www.moepp.gov.mk

Recuperation of delays

A time schedule for the following reporting period (3 months) is shown in the next table. During the following reporting period ten missions are scheduled after discussions about suitable dates for MS and BC experts.

Activity 1.2.4. Amendments of the CAFÉ directive on air quality law was added to the Twinning contract by the side letter no. 4 (11 May 2007).

As well activity 4.2.3 Training technical staff on repair and maintenance for BTX analyser for (Hands on training)
1 MS expert Pirjo Kuronen, 5 days, 2 BC experts Igor Atanasov and Ljupco Grozdanovski, 10/2007 was added to the Twinning contract by the side letter number no. 3 (23 March 2007). All three BTX analysers in the monitoring stations are out of order. If all BTX analysers are out of order it is not possible to organise training on BTX analyser.

In the last steering committee meeting 28 June 2007 RTA Tiina Harju informed about this situation. RTA Tiina Harju has asked as the steering committee advises her to do whether the EAR could finance at least a preparation of one of those BTX analysers. Project Manager Ivan Borisavljevic replied her that it is not possible to prepare the BTX analyser by the EAR fund.

Therefore those BTX analysers were decided to bring to Vienna or directly to Essen on the way to an intercomparison measurement organised 8-12 October 2007 in Essen. The experts of the EAS Enviment (supplier) could check the analysers, repair them or at least estimate the cost of repair.

MS expert Pirjo Kuronen gave already training on BTX analysers during the sudy tour in Finland in August 2007.

Activity 5.3.1.Training course on dispersion modeling and demonstrate methods for validation of AQ models and for scenario making planned in the Twinning contract for 4/2007 & activity 5.3.2. Develop training course material (together with activity 5.1.1.) planned for 6/2007 have already started in the previous reporting periods and will be continued in the following reporting period.

Also activities 5.2.2. Preparation of emission and other input data for dispersion modelling & 5.4.1. Use of dispersion modelling for air quality assessment in couple of cases will continue during the following reporting period or latest just after it.

Finnish Meteorological Institute
P.O. Box 503, FI-00101 Helsinki
Tel. +358-9-19295432, Fax. +358-919294129
www.fmi.fi

Ministry of Environment and Physical Planning
Drezdenska 52, 1000 Skopje
Tel. +389 2 3066-930, Fax. +389 2 3066-931
www.moepp.gov.mk

Table 3. A time schedule for the following reporting period (next three months).

CARDS Twinning Project Air Quality Improvement

Reporting

Reports

	September, Year 2007	October, Year 2007	November, Year 2007
	XIII	XIV	XV
I COMPONENT - GUIDELINES AND SECONDARY LEGISLATION			
1.1.1 Review current secondary legislation, and preparation of Table of concordance for…			
1.1.2. Analysis of the needed sub legislation for further implementation of first, second and fourth…			
1.2.1. Drafting the sub legislation of monitoring and reporting for ambient air quality under the FWD…			
1.2.2. Drafting of sub legislation - 2004/224/EC and 96/62/EC…			
1.2.3. Drafted Guidelines on establishing agglomeration and non-agglomeration zones			
1.2.4. Amendments of the CAFE directive on air quality law			
1.3.1. Draft instructors to assist the application of secondary legislation - …			
1.3.2. Capacity building of stakeholders to use Manual			
II COMPONENT - EMISSION INVENTORIES			
2.1.1 Identify and appoint stakeholders			
2.1.2. Support to construct the database and its content for prepartion of the reports…			
2.2.1. Identify data gaps for compliance with EU-based national air emission system…			
2.2.2. Preparing a Draft list of priorities for recommended improvements			
2.3.1. Support to develop a National Emission Factors and inventory methods			
2.3.2. Support to develop collection of activity data			
2.3.3. Support to update the National Methodology for air emissions inventories…			
2.4.1. Improve capacities to Develop comprehensive training program…			
2.5.1. Support to EPER reporting in general			
III COMPONENT - PRELIMINARY ENVIRONMENTAL ASSESSMENT			
3.1.1. Analyses and review the outcome of CARDS 2004 projects			
3.1.2. Improvement of methodology for preliminary assessment taking accoount…			
3.1.3. Integrate emission inventory data and dispersion modelling…			
3.2.1. Revision of agglomeration and non agglomeration zones			
3.3.1 Reporting and visualization of the assessment results			
3.4.1 Perform campaign to promote results for public			
IV COMPONENT - AIR QUALITY MEASUREMENTS AND LABORATORY WORK			
4.1.1. Review of the present situation at the calibration laboratory			
4.1.2 Preparing a Plan for improvement of calibration laboratory			
4.1.3. Sharing EU MS country's experience and training on air quality monitoring			
4.1.4 Training technical staff on calibration of instruments			
4.1.5. Calibrate and check instruments in cooperation with technical staff			
4.2.1. Training technical staff on repair maintenance			
4.2.2. Implement and assist in the preparation of SOP for maintenance and…			
4.2.3. Training technical staff on repair and maintenance for BTX analysers			
4.3.1. Developing draft QA/QC plan			
4.3.2. Training on QA/QC plan			will be 1/2008
4.4.1. Review of present situation for data management system			
4.4.2. Identified needs for furthered development of the software			
4.4.3 Plan and specification for procurement of new data management software			
4.4.4. Training on validation, management, analysis and introducing methods for presentation…			
4.5.1. Review of present situation in Central Environmental Laboratory on GCs analysis…			
4.5.2. Preparing a plan for improvement of chemical laboratory…			
4.5.3. Arrange and perform training courses for staff concerning standard operation procedures…			
4.6.1. Check instruments of mobile emission laboratory and prepare plan for improvement…			
4.6.2. Check the results of improvements			
4.6.3. Training course (part 1) on emission measurements; basic principles			
4.6.4. Training course (part 2) on emission measurements; advanced emission…			
4.7.1. Preparation a draft specification and priority list of investments…			
V COMPONENT - DISPERSION MODELLING			
5.1.1. Specification and procurement of an appropriate system for AQ modelling…			
5.2.1. Investigate available meteorological data from HMA and Skopje airport and…			
5.2.2. Preparation of emission and other input data for dispersion modelling	11/2007 or later (on the right)		
5.3.1. Training course on dispersion modelling and demonstrate methods for ….			
5.3.2. Develop training course materials			
5.4.1. Use of dispersion modelling for air quality assessment in couple of real cases	11/2007 or later (on the right)		

Activities planned
Activities added by side letters
Activities start in time but now continue

Finnish Meteorological Institute
P.O. Box 503, FI-00101 Helsinki
Tel. +358-9-19295432, Fax. +358-919294129
www.fmi.fi

Ministry of Environment and Physical Planning
Drezdenska 52, 1000 Skopje
Tel. +389 2 3066-930, Fax. +389 2 3066-931
www.moepp.gov.mk

2E. ASSESSMENT Overall

Assessment of progress

Overall the progress achieved during the mission time was to be considered really good. The mandatory activities, being crucial for BC transposition of EU regulations, were both achieved during the mission. In addition, several other tasks, either important for the process, or otherwise helpful to the BC administration, were undertaken and results produced.

The work in the component 3 – Preliminary assessment − is going along well. The co-operation with CARDS 2004 project has been successful and the plan to improve the preliminary assessment has been delivered. During the last two missions practical training has been given to manage and visualize the data. Possibly before the next mission dispersion modelling results are also available and can be integrated to the preliminary assessment report. Preparing of the preliminary assessment report has been started by making the draft of the content. The prepared graphs and maps will be included in the report before the next mission.

There is a need for additional measurements to have better picture on the air quality in different parts of the country. All of the needed data can not be provided during the Twinning project because the advisable minimum measurement time is one year.

A lot of practise will be needed by the BC staff to reach the required level of operation of the Static Injection Method as a primary measurement method. A good start to use the SIC has been carried out with very intensive working hours.

The workout for the draft QA/QC plan has been started and is well under way. The work was carried out in co-operation with the BC experts interviewing and counselling them. However, the development and documentation the QA/QC systems is a very demanding task and it takes a lot of time. To reach the target it is essential that enough resources will be reserved for this purpose.

The contracts of seven experts, being well trained and experienced during this Twinning project, will be expire in December 2007. Untill now there is no new information concerning extension of the contracts.

Component 2. Emission inventories

1. National System for inventories

Finnish Meteorological Institute
P.O. Box 503, FI-00101 Helsinki
Tel. +358-9-19295432, Fax. +358-919294129
www.fmi.fi

Ministry of Environment and Physical Planning
Drezdenska 52, 1000 Skopje
Tel. +389 2 3066-930, Fax. +389 2 3066-931
www.moepp.gov.mk

The BC experts made the following progress between the MS expert's missions in January and July 2007 in planning and preparation of the BC's national system for air emission inventories:

- The BC experts for greenhouse gases (T. Grncarovska) and air pollutants (M. Vilarova) have discussed with independent experts that have participated in the projects resourced by GEF/UN and EU. All the experts have agreed that the plan is to allocate the responsibility of all inventory work in one location, which would be the MEPP.
- The solution for allocation of the tasks under the national authorities still needs to be decided at the political level. The practical organization of tasks has therefore not been discussed further.
- Based on the proposal from the MS expert an amendment was made to the Law of Ambient Air Quality (Article 46) that the Ministry responsible for inventories is the MEPP.

2. Appointing national experts

Since the last MS expert mission progress has been made in appointing IT experts who can also participate in preparation of the inventory database. The MEIC experts explained that at the present, the resources for all emission inventory work including participation to international meetings, includes altogether eight man-months a year divided by four experts, out of which two have permanent contracts and two a non-permanent contract. These BC experts have several other tasks not related to the inventory work. Thus it can be concluded that all the goals set for the Twinning project cannot be achieved by February 2008 when the project ends.

On the other hand, there are several national experts that have participated in preparation of UNFCCC inventories in the projects funded by the GEF (UNIDO/UNDP) is thus skilful in carrying out the work, if funding would be available.

IT personnel

Since the last MS expert mission progress has been made in appointing IT experts who can also participate in preparation of the inventory database. The permanent IT resources used for emission inventory work at the MEPP/MEIC in 2007 are around 1 man-month. The BC is not preparing annual inventories at the moment. However, in case the BC would start a regular process to prepare inventories, the resource need for an IT person is one full time working expert to build up and maintain the data system.

General and sector specific experts

No evident progress had been made to organization of the inventories since the last MS expert mission in January. To get the maximum benefit out of the Twinning project it would have been necessary that the BC had appointed

Finnish Meteorological Institute
P.O. Box 503, FI-00101 Helsinki
Tel. +358-9-19295432, Fax. +358-919294129
www.fmi.fi

Ministry of Environment and Physical Planning
Drezdenska 52, 1000 Skopje
Tel. +389 2 3066-930, Fax. +389 2 3066-931
www.moepp.gov.mk

designated national experts to be educated in their specific areas of expertise, especially regarding the general issues related to the National Inventory Agency tasks and sector specific issues related to developing national methodologies. However, no sectoral experts were available during the mission. The two BC experts with whom the MS expert discussed during the mission, were neither able to focus on the general issues full time.

3. Correction of emission data in the BC's NFR Tables for 2004 on the EIONET CDR website

According to the BC experts, the data will be corrected during summer 2007 by BC expert MarijonkaVilarova. Correction of emission data will be done by BC experts.

Cross cutting issues

At the moment there are twenty BC experts named into the Twinning project, fifteen of them from the MEPP, three of them from the HMA and two of them from the RIHP. Addition to these BC experts two other female BC experts from the MEPP were involved in the Twinning project at the beginning of the project but at the moment they are on the maternity leave (another one since 8 Mach 2007 & other one since June 2007).

Table 4. Number of BC experts involved in the Twinning project.

	MEPP	HMA	RIHP	**Total**
Women	7	1	1	**9**
Men	8	2	1	**11**
Total	**15**	**3**	**2**	**20**

A share of female and male BC experts is equal – both somewhere 50 %, slightly more male. Three of the BC experts are ethnic Albanians, from which one is female and two males, and seventeen of them ethnic Macedonians. A share of the ethnic Albanians in the Twinning project is 15 %.

Most of the key persons in the Twinning project as BC PL, RTA counterpart, BC component leaders are female. Only one BC component leader is male and other four key persons are female, one BC PL, one RTA counterpart & BC component leader, two BC component leader from which one is BC component leader of two components.

Improving a basis of an air monitoring system and an operation of national

Finnish Meteorological Institute
P.O. Box 503, FI-00101 Helsinki
Tel. +358-9-19295432, Fax. +358-919294129
www.fmi.fi

Ministry of Environment and Physical Planning
Drezdenska 52, 1000 Skopje
Tel. +389 2 3066-930, Fax. +389 2 3066-931
www.moepp.gov.mk

ambient air monitoring network in the BC during the Twinning project will have a positive impact on the environment and human health as the data collected will enable the country to cure areas where pollution levels are unacceptably high. By implementation of a prepared national legislation in the Twinning project according to the EU directives the air quality of the country would be improved.

Issues

No problems with management or co-operation. The co-operation between MS and BC experts has been good.

There is still a lack of human resources to fulfil all responsibilities on air quality field. More human resources would be needed for emission inventory (Component 2).

II COMPONENT – Emission Inventories

There were no problems in the management of the Mission, as all tasks and the share of work were agreed in close cooperation between all parties, and all issues were discussed openly as a continuous process.

In the planning phase of the Twinning project the BC experts believed that inventories could be carried out annually. However, it has turned out that no resources were allocated to the inventory work this year, therefore no inventories have been prepared during the Twinning project.
Funding will be allocated for inventory work from the BC's government in 2008, the work will be continued after the current projects have been completed. The GEF/UNIDO funded project ends in April 2008 and the EU Twinning project Air Quality Improvement in February 2008.

III COMPONENT – Preliminary Air Quality Assessment

Co-operation with the BC experts worked well. The planned topics of the mission were not totally fulfilled because the dispersion modelling results and new emission data were not available. Generally the planned work followed through as expected. The progress of the next missions of the component 3 depends on the processing of available emission data and outputs of dispersion modelling. The latest emission data and dispersion modelling results are needed to further improve the air quality assessment.

The decision concerning the additional measurements should be made as soon as possible in order to obtain new data for the preliminary assessment

Finnish Meteorological Institute
P.O. Box 503, FI-00101 Helsinki
Tel. +358-9-19295432, Fax. +358-919294129
www.fmi.fi

Ministry of Environment and Physical Planning
Drezdenska 52, 1000 Skopje
Tel. +389 2 3066-930, Fax. +389 2 3066-931
www.moepp.gov.mk

during the Twinning project. One option for the additional measurements is passive sampling. Another alternative could be the employment of the mobile station. The measurements with the mobile station could be conducted e.g. in 2−3 cities in 6 different environments. It would be preferable for at least one of the sites to be a rural background site. The idea is that the mobile station could stay in one place for a week and then move to another place. After six weeks the mobile station would start a new cycle from the first site.

The mobile station is located in Kavadarci at the moment. It would be desirable in the future to use the mobile station for the purpose it has been planned, e.g. to measure air quality in different environments and change the place of the station for example once a year. Pollution levels are high in Kavadarci and a continuous monitoring station should be established in the area. BC experts stated that it is very expensive to move the mobile station and that the local authorities have required this station to be considered as a stationary one.

The progress and possibilities in dispersion modelling look at the moment very promising. Still lot of work and practise is needed.

IV COMPONENT – Air Quality Measurements and Laboratory Work

It is found out that there is a need for training on BTEX analyser. It was decided to give one day training on maintenance of BTEX analyser during a study tour in Finland in August 2007. An extra mission is accepted by the side letter number 3 (23 March 2007) concerning Activity 4.2.3 Training technical staff on repair and maintenance for BTEX analyser. MS expert Pirjo Kuronen will give this training in autumn 2007 if one of the BTX analyser is repaired by then by the manufactory. RTA informed about the situation in the last steering committee meeting.

Recommendations

I COMPONENT – Guidelines and Secondary Legislation

The project should strive at influencing MEPP policies and activities so that the sustainability of the project is ensured. This means argumentation for the need to have key personnel employed on a permanent basis, so that not the personnel, that has been well trained and obtained fruitful international experience, is either sacked or will strive to find other jobs.

The MS experts strongly recommend reducing the number of zones under

Finnish Meteorological Institute
P.O. Box 503, FI-00101 Helsinki
Tel. +358-9-19295432, Fax. +358-919294129
www.fmi.fi

Ministry of Environment and Physical Planning
Drezdenska 52, 1000 Skopje
Tel. +389 2 3066-930, Fax. +389 2 3066-931
www.moepp.gov.mk

consideration, reducing monitoring requirements and costs, and giving more flexibility.

II COMPONENT – Emission Inventories

1. Ensure resources

Currently no funding is allocated for inventory work from the BC's government. The work on air emission inventories will be continued after the current projects have been completed with financial resources from the Budget in 2008.

2. Establish legal framework, appoint responsible parties and develop a national system for inventories

To ensure resources for the development of the national inventory system it is essential to establish the legal framework to support the tasks. – already done
Responsible parties shall be appointed for each task and adequate resources shall be reserved for each task.
A national system shall be organized to support reliable and timely working with inventories.
A proposal for the BC's national inventory system is presented in Annex 1.

3. Organize data collection

The MS expert repeats the recommendation given in January 2007 to start discussions with the State Statistical Office to improve and supplement the current data collection to get more detailed and better data for the inventories in the agriculture, energy, industrial processes and waste sectors.
Development of data collection will enable preparing the inventories at a more detailed level and support developing of national methodologies.
In addition to collection of statistical data it is recommended to explore other ways of national data collection:

- Industrial organizations often have good and detailed data
- Inquiries can be made to target groups such as operators of industrial facilities, farmers, solvent users
- Universities and research institutes
- Municipal authorities

Two examples of database features that could be implemented in the future would be emission calculations integrated in the system and handling of area source data. Both of these can (and should be) be done based on the work done during MS expert mission.

On the last mission reports there were two options given: doing the work on the inventory database either in the Ministry of Environment (and having all the necessary files there) or having the work done by a consultant. The recommended option was the first one. On this mission the work got started well and in the current situation it is obvious that it is best to do the work and

Finnish Meteorological Institute
P.O. Box 503, FI-00101 Helsinki
Tel. +358-9-19295432, Fax. +358-919294129
www.fmi.fi

Ministry of Environment and Physical Planning
Drezdenska 52, 1000 Skopje
Tel. +389 2 3066-930, Fax. +389 2 3066-931
www.moepp.gov.mk

have all the data in the ministry.

On staff: It would be best to have both of the technological experts working on this project and to have at least two substance experts to work with the database from the beginning. On technological side this way there would always be support and a possibility to do quick modifications available and on the operational side the training part would be easier.

On future features in the system: As mentioned, there is activity data available for calculating fuel use based energy production's emissions and in point source data handling and a draft list of area sources there is a template for designing are source section.

However, at this point the recommendation for future would be this: we should see, what the outcomes of the other this summer's missions in component 2 will look like and plan the next steps accordingly. This can be done in cooperation between everyone involved in component 2 in the MS and the BC.

Emission Inventory – Transport

Sustainable cooperation between the Ministry of environment and the Ministry of internal affairs should be continuously improved.
The problem of unregistered and uninsured vehicles should be solved. According to the estimates made by insurance companies a certain amount of the vehicles is unregistered and uninsured. This is one of the biggest problems in the road transport emission inventory work. It also affects the other sectors of transport mentioned above.
Introduction of adequate traffic research in Macedonia should be a common interest for many stakeholders. A work group should be established to define a prioritised list of the most urgent research topics and to guarantee appropriate funding.

In any case cooperation between BC experts, the Bitola University and the Faculty of Mechanical Engineering is a prerequisite for the successful inventory work with the Copert model.

Introduction of adequate traffic research in the BC should be a common interest for many stakeholders. A work group should be established to define a prioritised list of the most urgent research topics and to guarantee appropriate funding.

III COMPONENT – Preliminary Air Quality Assessment

Finnish Meteorological Institute
P.O. Box 503, FI-00101 Helsinki
Tel. +358-9-19295432, Fax. +358-919294129
www.fmi.fi

Ministry of Environment and Physical Planning
Drezdenska 52, 1000 Skopje
Tel. +389 2 3066-930, Fax. +389 2 3066-931
www.moepp.gov.mk

A separate A4 for the draft of the contents has been given to BC Expert Aleksandra Nestorovoska Krsteska during the mission. Description of needed graphs and data for emissions, concentrations, dispersion modelling and activity data on a map, in the preliminary assessment report as well recommendations for needed additional measurements for preliminary assessment has been given in the mission report.

IV COMPONENT – Air Quality Measurements and Laboratory Work

When writing the draft QA/QC plan the requirements of the "accreditation standard" EN ISO/IEC 17025 (General requirements for the competence of testing and calibration laboratories) and the requirements of the EN standards for the air pollutant standard measurement methods (EN 14625 for 03, EN14626 for CO, EN 14212 for SO2, EN 14211 for NO2 and NOx, EN 14662-3 for benzene, EN 12342 for PM10, EN 14907 for PM2,5, EN 14902 for Pb, Cd, As and Ni in PM10) should be well known. Also the requirements presented in European Union air quality directives (1999/30/EC, 2000/69/EC, 2002/3/EC and 2004/107/EC) should be well known. The BC experts writing the draft should thoroughly familiarize themselves with these documents.

The draft QA/QC plan should be tailored for the BC needs and purposes taking into consideration the present level of the QA/QC system and the air pollutant monitoring program and structure of BC. However, it must be kept in mind that the possible future nomination of the Calibration laboratory as the National Reference Laboratory for air quality measurements will require the QA/QC system with the status of accreditation.

Recommendations concerning monitoring stations and calibration (reference) laboratory – e.g. transformation analysers, calibration, location and organisation of technical staff was given in the last quarterly report. Detailed instructions were also given how to proceed the use of the static injection methods.

Mobile Emission Laboratory

It would be important to have a responsible person for the mobile emission laboratory and emission measurement to be able to develop activities.

V COMPONENT – Dispersion Modelling

Using good quality emission and other technical input data is essential for achieving reliable results from the modelling. The most essential input data needed for the urban dispersion model is available (at least for Skopje area)

Finnish Meteorological Institute
P.O. Box 503, FI-00101 Helsinki
Tel. +358-9-19295432, Fax. +358-919294129
www.fmi.fi

Ministry of Environment and Physical Planning
Drezdenska 52, 1000 Skopje
Tel. +389 2 3066-930, Fax. +389 2 3066-931
www.moepp.gov.mk

and the BC experts are able to do the modelling in practice. However, it is essential that the input data is checked before modelling by an emission expert to decrease the possibility of errors in the data.

BC Experts are recommended to go through the model documentation and commenting on further refinements needed in the model manuals and model interfaces. The comments will be sent to MS experts in September 2007 and the MS expert Ari Karppinen will prepare the next, refined version of the model user guides.

After negotiation between MEPP & HMA needed meteorological data will be available without extra cost but encoded form. Therefore MS expert's help is needed to solve the problem. A sample of file containing encoded data from HMA will be sent to MS expert in order to determine what type of coding is used.

However, one meteorologist from the HMA will validate meteorology data of the MEPP in the future.

Finnish Meteorological Institute
P.O. Box 503, FI-00101 Helsinki
Tel. +358-9-19295432, Fax. +358-919294129
www.fmi.fi

Ministry of Environment and Physical Planning
Drezdenska 52, 1000 Skopje
Tel. +389 2 3066-930, Fax. +389 2 3066-931
www.moepp.gov.mk

3 – EXPENDITURES

Twinning Contract number: MK05/IB-EN-01 – 05MAC01/13/102 ***Makedonia - 2006***

Section 3: Expenditures 1st June 2007-31st August 2007

Provide total figures of disbursement in the reporting period for key groups of costs

Travels (8 Missions, fourth quarter year period, including study tour (10 persons) in Finnish Meteorological Institute, Finland)

Expert fees	**11 014,00 €**
Twinning Management costs	**16 521,00 €**
Per diems	**23 244,00 €**
Air tickets	**8 510,18 €**
Taxi fares (22:00-7:00)	**152,79 €**
Visiability	**11,42 €**

		Actual travel costs 1stSep 06- 31st Aug 07
Total	*59 453,39 €*	*233 315,78 €*

1.1. RTA remuneration and allowances

	Actual costs 1st June 07-31st Aug 07	Actual costs 1st Sep 06 – 31st Aug 07 The whole project	Original budget The whole project
Tiina Harju			
1. Salary+labour costs	17 742,00 €	70 968,00 €	106 452,00 €
Remaining budget			35 484,00 €
2. RTA Allowances	14 192,37 €	62 486,54 €	100 888,00 € (original budget+side letter 6, contingencies)
Remaining budget			38 401,46 €
4. RTA Assistant salary	1 454,57 €	5 590,98 €	9 000,00 €
Remaining budget			3 409,02 €
Total	33 388,94 €	139 045,52 €	216 340,00 €
Remaining budget			77 294,48 €

TOTAL COSTS / fourth quarter year period (travels and RTA costs) **92 842,33 €**

Travels: costs by actions 1st Sept 2006 – 31st AuG 2007:

Amount paid in Euro	**Original budget, the whole project or new budget (side letter)**	**Remain to the next periods or other actions**
3. RTA training		
1 092,68 €	1 323,00 €	0 € (reallocated to 4.2.3.)

5. Project Preparation

Finnish Meteorological Institute
P.O. Box 503, FI-00101 Helsinki
Tel. +358-9-19295432, Fax. +358-919294129
www.fmi.fi

Ministry of Environment and Physical Planning
Drezdenska 52, 1000 Skopje
Tel. +389 2 3066-930, Fax. +389 2 3066-931
www.moepp.gov.mk

13 741,56 €	16 668,00 €	0 € (reallocated to 4.2.3.)
Amount paid in Euro	**Original budget, the whole project or new budget (side letter)**	**Remain to the next periods or other actions**
Project co-ordination		
24 436,49 €	54 382,00 €	29 945,51 €

6. Project Activities

1.1.1. Review current secondary legislation, and preparation of Table of concordance		
5 919,65	6 620,00	0 € (reallocated to 4.2.3.)
1.1.2. Analysis of the needed sub legislation for further implementation of daughter directives		
5 505,00	5 560,00	0 € (reallocated to 1.2.4.)
1.2.1. Drafting the sub legislation of monitoring and reporting for ambient air quality		
21 274,18	23 441,00 (side letter)	2 166,82 €
1.2.2. Drafting of sub legislation		
20 677,64	24 053,95 (side letter)	3 376,31 €
1.2.3. Review of a rulebook for zones and agglomerations prepared by the CARDS 2004 project		
2 915,60	3 069,00 (side letter)	153,40 €
2.1.1. Identify and appoint stakeholders		
6 503,80	7 070,00	0 € (reallocated to 4.2.3.)
2.1.2. Support to construct the database and its content for preparation of the reports		
7 740,05	9 228,00	1 487,95 €
2.2.1. Identify data gaps for compliance with EU-based national air emission system and reporting requirements		
2 885,00	2 124,00	-761,00 €
2.2.2. Preparing a Draft a list of priorities for recommended improvements		
2 578,44	3 356,00	777,56 €
2.3.1. Support to developing a National Emission Factors and inventory methods		
4 836,30	7 042,00	2 205,70 €
2.3.2. Support to develop collection of activity data		
12 835,00	13 726,00 (side letter 7)	891,00 €
2.3.3. Support to update the National Methodology for air emissions inventories for Macedonia		
1 487,26	10 818,00	9 330,74 €
3.1.1. Analyses and review of the outcomes of CARDS 2004 project		
4 312,13	4 730,00	0 € (reallocated to 1.2.4.)
3.1.2. Improvement of the methodology for preliminary assessment		
3 805,73	4 730,00	924,27 €

Finnish Meteorological Institute
P.O. Box 503, FI-00101 Helsinki
Tel. +358-9-19295432, Fax. +358-919294129
www.fmi.fi

Ministry of Environment and Physical Planning
Drezdenska 52, 1000 Skopje
Tel. +389 2 3066-930, Fax. +389 2 3066-931
www.moepp.gov.mk

3.1.3. Integrate emission inventory data and dispersion modelling to the preliminary assessment

4 642,74	4 730,00	87,26 €

4.1.1. Review of the present situation at the calibration laboratory

2 009,90	2 294,00	0 € (reallocated to 4.2.3.)

4.1.2. Preparing a Plan for Improvement of calibration laboratory

2 403,00	2 436,00	33,00 €

Amount paid in Euro	**Original budget, the whole project or new budget (side letter)**	**Remain to the next periods or other actions**

4.1.3. Sharing EU MS country's experience and training on air quality monitoring

21 284,40	15 973,00 (side letter 5)	15 973,00 € and 5 311,40 € **charged to Contingencies**

4.1.4. Training technical staff on calibration of instruments

2 132,00	2 294,00	0 € (reallocated to 1.2.4.)

4.1.5. Calibrate and check instruments in cooperation with technical staff

2 376,00	2 435,00	0 € (reallocated to 1.2.4.)

4.2.1. Training technical staff on repair maintenance

4 389,63	4 730,00	0 € (reallocated to 1.2.4.)

4.3.1. Developing draft QA/QC plan

4 453,78	9 460,00	5 006,22 €

4.4.1. Review of present situation for data management system

2 019,18	2 294,00	0 € (reallocated to 1.2.4.)

4.4.2. Identified needs for furthered development of the software

1 602,00	1 624,00	22,00 €

4.4.3. Plan and specification for procurement of new data management software

801,00	2 810,00	2 009,00 €

4.5.1. Review of present situation in Central Environmental Laboratory on GCs analysis for air samples

1 977,07	2 294,00	0 € (reallocated to 1.2.4.)

4.5.2. Preparing a Plan for improvement of chemical laboratory

5 180,51	7 166,00	0 € (reallocated to 1.2.4.)

4.5.3. Training for GC analysis of air samples

9 701,30	17 105,00	7 403,70 €

4.6.1. Check instruments and plan for improvement of mobile emission laboratory

3 560,98	3 856,00	0 € (reallocated to 1.2.4.)

4.7.1. Draft specification and priority list of investments

4 505,00	6 996,00	293,00 € (side letter 5) (2198,00 € reallocated to 4.1.3.)

Finnish Meteorological Institute
P.O. Box 503, FI-00101 Helsinki
Tel. +358-9-19295432, Fax. +358-919294129
www.fmi.fi

Ministry of Environment and Physical Planning
Drezdenska 52, 1000 Skopje
Tel. +389 2 3066-930, Fax. +389 2 3066-931
www.moepp.gov.mk

5.1.1. Specification and procurement of an appropriate system for AQ modelling on local scale
3 575,94 4 730,00 1 154,06 €

5.2.1. Investigate meteorological data and develop methods to provide it for dispersion modelling
3665,77 4 730,00 1064,23 €

5.2.2. Preparation of emission and other input data for dispersion modeling
4 505,78 4 730,00 224,22 €

5.3.1. Training course on dispersion modelling and methods for validation and for scenario making
3 598,29 4 730,00 1 131,71 €

5.3.2. Develop training course materials
2 385,00 4 730,00 2 345,00 €

Finnish Meteorological Institute
P.O. Box 503, FI-00101 Helsinki
Tel. +358-9-19295432, Fax. +358-919294129
www.fmi.fi

Ministry of Environment and Physical Planning
Drezdenska 52, 1000 Skopje
Tel. +389 2 3066-930, Fax. +389 2 3066-931
www.moepp.gov.mk

ANNEX I : Expenditures (See excel file - Expenditure Report Template)
Twinning Contract number: MK05/IB-EN-01 - 05MAC01/13/102 Makedonia -2006 -
Section 3: Expenditures

Section No.	Name of services / goods purchased or direct costs	Date(s) of services	Invoice number	Date of invoice	Breakdown and clarification	Amount paid in local currency (if applicable)	INFO-EURO exchange rate	Amount paid in EUR	Amount foreseen in original budget	Amount introduced by side letter /amendment	Amount charged to contingenc ies
xx	**Resident Twinning Adviser [Tiina Harju]**								(3 months)		
	Gross salary	30.6.2007, 31.7.2007 and 31.8.2007	70012, 70014, 70016	30.6.2007, 31.7.2007 and 31.8.2007	3 x **[MONTHLY SALARY 3553,20]**			10 659,60	10 659,60		
	Non wage labour costs	30.6.2007, 31.7.2007 and 31.8.2007	70012, 70014, 70016, 55311	30.6.2007, 31.7.2007 and 31.8.2007	3 x 2025,80			6 077,40	6 077,40		
	6%of sal+non wage	31.8.2007	55311	31.8.2007	3 X 335,00			1 005,00	1 005,00		
	RTA 50 % allowances (RTA costs reports)				**(Monthly cost reports)**						
	Total							**17 742,00**	**17 742,00**		
xx	**RTA Assistant Martina Toceva (acting on a freelance basis) salary costs**	30.6.2007, 31.7.2007 and 31.8.2007	30.6.2007 29062 31.7.2007 29063 28.8.2007 60112	30.6.2007, 31.7.2007 and 28.8.2007	30.6.2007 477,27 eur, 31.7.2007 500,00 eur and 31.8.2007 477,30			1 454,57	1 500,00		
	Total							**1 454,57**	**1 500,00**		
xx	**Activity no. [5.Project Co-ordination Visiability costs]**	23.8.2007	29069	28.8.2007	Business cards for RTA (100)	700 MKD	61,3	**11,42**	**2 987,79**		

ANNEX I : Expenditures (See excel file - Expenditure Report Template)
Twinning Contract number: MK05/IB-EN-01 - 05MAC01/13/102 Makedonia -2006 -
Section 3: Expenditures

Section No.	Name of services / goods purchased or direct costs	Date(s) of services	Invoice number	Date of invoice	Breakdown and clarification	Amount paid in local currency (if applicable)	INFO-EURO exchange rate	Amount paid in EUR	Amount foreseen in original budget (left after previous periods)	Amount introduced by side letter /amendment	Amount charged to contingenc ies
xx	**Activity no. [Project co-ordination]**										
	Mission of expert **[Harri Pietarila 3 days], Visiability costs**	26/6/2007-29/6/2007, 23/08/07 business cards									
	Fees				**[3 X 250,00]**			750,00			
	Flat rate compensation				**1,5*750,00**			1 125,00			
	Per diem				**[3]** x 167,00			501,00			
	Air ticket **[PLACE OF DEPARTURE Helsinki -DESTINATION Skopje]**				**[2. CLASS]**			470,26			
	Local travel to location				**Taxi**			22,41			
	Visiability costs: Business cards for RTA				**100 business cards**			11,42			
	Total							**2 880,09**	**32 825,60**		
xx	**Activity no. [1.2.1. Drafting the sub legislation of monitoring and reporting for ambient air quality]**										
	Mission of expert [Wolfgang Spangl, 2 days]	25/6/2007-29/6/2007									
	Fees				**2 x 441,00**			882,00			
	Flat rate compensation				**1,5 x 882**			1 323,00			
	Per diem				**2 x 167**			334,00			
	Air ticket				**[2. CLASS]**						
	Local travel to location				Taxi						
	Total							**2 539,00**	**4 705,82**	**(side letter, new budget)**	
xx	**Activity no. [1.2.3. Drafted Guidelines on establishing agglomeration and non-agglomeration zones, 2 days]**										
	Mission of expert **[Wolfgang Spangl]**	25/6/2007-29/6/2007									
	Fees				**2 x 441,00**			882,00			
	Flat rate compensation				**1,5 x 882**			1 323,00			
	Per diem				**2 x 167**			334,00			
	Air ticket **[PLACE OF DEPARTURE Helsinki -DESTINATION Skopje]**				**[2. CLASS]**			376,6			
	Local travel to location Home-Airport				**Taxi**						
	Total							**2 915,60**	**3 069,00**		

Finnish Meteorological Institute
P.O. Box 503, FI-00101 Helsinki
Tel. +358-9-19295432, Fax. +358-919294129
www.fmi.fi

Ministry of Environment and Physical Planning
Drezdenska 52, 1000 Skopje
Tel. +389 2 3066-930, Fax. +389 2 3066-931
www.moepp.gov.mk

ANNEX I : Expenditures (See excel file - Expenditure Report Template)
Twinning Contract number: MK05/IB-EN-01 - 05MAC01/13/102 Makedonia -2006 -
Section 3: Expenditures

Section No.	Name of services / goods purchased or direct costs	Date(s) of services	Invoice number	Date of invoice	Breakdown and clarification	Amount paid in local currency (if applicable)	INFO-EURO exchange rate	Amount paid in EUR	Amount foreseen in original budget (left after previous periods)	Amount introduced by side letter /amendment	Amount charged to contingencies
xx	**Activity no. [2.1.2. Support to construct the database and its content for preparation of the reports]**										
	Mission of expert [Santtu Mattila 1 day]	28/05/2007-01/06/2007									
	Fees				**[1 x 250,00]**			250,00			
	Flat rate compensation				**1,5*250,00**			375,00			
	Per diem				**[1]** x 167,00			167,00			
	Air ticket **[PLACE OF DEPARTURE Helsinki -DESTINATION Skopje]**				**[2. CLASS]**						
	Local travel to location										
	Total							**792,00**	**2 279,95**		
xx	**Activity no. 2.2.2. Preparing a Draft list of priorities for recommended improvements**										
	Mission of expert Santtu Mattila 1 day	28/5/2007-1/6/2007									
	Fees				**[1 x 250,00]**			250,00			
	Flat rate compensation				**1,5*250,00**			375,00			
	Per diem				**[1]** x 167,00			167,00			
	Helsinki - Skopje Air ticket				**[2. CLASS]**			744,44			
	Local travel (Taxi) to location Helsinki Airport - home										
	Total							**1 536,44**	**2 314,00**		
xx	**Activity no. 2.3.1. Support to developing a National Emission Factors and inventory methods**										
	Mission of expert Kari Mäkelä 1 day, Kristina Saarinen 3 days	11/6/2007-15/6/2007, 2/7/2007-7/7/2007									
	Fees				**[1 X 350,00 + 3 x 350,00]**			1 400,00			
	Flat rate compensation				**1,5*1400,00**			2 100,00			
	Per diem				**[1]** x 167,00 + [3] x 164			659,00			
	Air ticket **[PLACE OF DEPARTURE Helsinki -DESTINATION Skopje]**				**[2. CLASS]**			630,26			
	Local travel to location Home-Airport				**Taxi**			47,04			
	Total							**4 836,30**	**7 042,00**		

ANNEX I : Expenditures (See excel file - Expenditure Report Template)
Twinning Contract number: MK05/IB-EN-01 - 05MAC01/13/102 Makedonia -2006 -
Section 3: Expenditures

Section No.	Name of services / goods purchased or direct costs	Date(s) of services	Invoice number	Date of invoice	Breakdown and clarification	Amount paid in local currency (if applicable)	INFO-EURO exchange rate	Amount paid in EUR	Amount foreseen in original budget (left after previous periods)	Amount introduced by side letter /amendment	Amount charged to contingencies
xx	**Activity no. 2.3.2. Support to develop collection of activity data**										
	Mission of expert [Santtu Mattila 3 days, Kari Mäkelä 3 days, Kristina Saarinen 2 days]	28/05/07-01/06/07, 11/06/07-15/06/07, 02/07/07-07/07/07									
	Fees				**[3 X 250,00 + 3 x 350 + 2 x 350]**			2 500,00			
	Flat rate compensation				**1,5*2500**			3 750,00			
	Per diem				**[6]** x 167,00 + 2 x 164,00			1 330,00			
	Air ticket [PLACE OF DEPARTURE Helsinki -DESTINATION Skopje]				**[2. CLASS]**						
	Local travel to location										
	Total							**7 580,00**	**8 471,00**		
xx	**Activity no. 2.3.3. Support to update the National Methodology for air emissions inventories for Macedonia**										
	Mission of expert Kari Mäkelä 1 day	11/6/2007-15/6/2007									
	Fees				**[1 x 350,00]**			350,00			
	Flat rate compensation				**1,5*350,00**			525,00			
	Per diem				**[5]** x 167,00			167,00			
	Helsinki - Skopje Air ticket				**[2. CLASS]**			445,26			
	Total							**1 487,26**	**10 818,00**		
xx	**Activity no. 3.1.3. Integrate emission inventory data and dispersion modelling to the preliminary assessment**										
	Mission of expert Birgitta Alaviippola 5 days	27/05/2007-01/06/2007									
	Fees				**[5 x 250,00]**			1 250,00			
	Flat rate compensation				**1,5*1250,00**			1 875,00			
	Per diem				**[5]** x 167,00			835,00			
	Helsinki - Skopje Air ticket				**[2. CLASS]**			651,44			
	Local travel Taxi Airport-home							31,3			
	Total							**4 642,74**	**4 730,00**		

Finnish Meteorological Institute
P.O. Box 503, FI-00101 Helsinki
Tel. +358-9-19295432, Fax. +358-919294129
www.fmi.fi

Ministry of Environment and Physical Planning
Drezdenska 52, 1000 Skopje
Tel. +389 2 3066-930, Fax. +389 2 3066-931
www.moepp.gov.mk

ANNEX I : Expenditures (See excel file - Expenditure Report Template)
Twinning Contract number: MK05/IB-EN-01 - 05MAC01/13/102 Makedonia -2006 -
Section 3: Expenditures

Section No.	Name of services / goods purchased or direct costs	Date(s) of services	Invoice number	Date of invoice	Breakdown and clarification	Amount paid in local currency (if applicable)	INFO-EURO exchange rate	Amount paid in EUR	Amount foreseen in original budget (left after previous periods)	Amount introduced by side letter /amendment	Amount charged to contingenc ies
xx	**Activity no. 4.1.3. Sharing EU MS country's experience and training on air quality monitoring**										
	7 days study trip to Finland for 10 Macedonian staff	26/08/07-02/09/07									
	Per diems for Macedonian participants (10 x 7 days)				**10 x 7 x 244**			17 080,00			
	Air tickets for Macedonian participants				**10 x 420,44**			4 204,40			
	Total							**21 284,40**	**13 775,00**	**2 198,00**	**5 311,40**
xx	**Activity no. 4.3.1. Developing draft QA/QC plan**										
	Mission of expert [Veijo Pohjola]	10/6/2007-15/6/2007									
	Fees				**[5 x 250,00]**			1 250,00			
	Flat rate compensation				**1,5*1250,00**			1 875,00			
	Per diem				**[5]** x 167,00			835,00			
	Helsinki - Skopje Air ticket				**[2. CLASS]**			470,28			
	Local travel Taxi Airport-home							23,52			
	Total							**4 453,78**	**9 460,00**		
xx	**Activity no. 5.2.2. Preperation of emission and other input data for dispersion modelling**										
	Mission of expert [Sari Lappi 5 days]	24/6/2007-29/6/2007									
	Fees				**[5 x 250,00]**			1 250,00			
	Flat rate compensation				**1,5*1250,00**			1 875,00			
	Per diem				**[5]** x 167,00			835,00			
	Helsinki - Skopje Air ticket				**[2. CLASS]**			517,28			
	Local travel Taxi Airport-home							28,52			
	Total							**4 505,78**	**4 730,00**		
xx	**Resident Twinnning Adviser [Tiina Harju]**								(3 months)		
	Gross salary	30.6.2007, 31.7.2007 and 31.8.2007	70012, 70014, 70016	30.6.2007, 31.7.2007 and 31.8.2007	3 x **[MONTHLY SALARY 3553,20]**			10 659,60	10 659,60		
	Non wage labour costs	30.6.2007, 31.7.2007 and 31.8.2007	70012, 70014, 70016, 55311	30.6.2007, 31.7.2007 and 31.8.2007	3 x 2025,80			6 077,40	6 077,40		
	6%of sal+non wage	31.8.2007	55311	31.8.2007	3 X 335,00			1 005,00	1 005,00		
	RTA 50 % allowances (RTA costs reports)				**(Monthly cost reports)**						
	Total							**17 742,00**	**17 742,00**		
xx	**RTA Assistant Martina Toceva (acting on a freelance basis) salary costs**	30.6.2007, 31.7.2007 and 31.8.2007	30.6.2007 29062 31.7.2007 29063 28.8.2007 60112	30.6.2007, 31.7.2007 and 28.8.2007	30.6.2007 477,27 eur, 31.7.2007 500,00 eur and 31.8.2007 477,30			1 454,57	1 500,00		
	Total							**1 454,57**	**1 500,00**		

REPORT OF RTA COSTS IN JUNE 2007

TWINNING PROJECT
Project Title: Air Quality Improvement
Twinning Contract Number: MK05/IB-EN-01
Agency Contract Number: 05MAC01/13/102

Name of services / goods purchased or direct costs	Date(s) of services	Invoice No.	Date of invoice	Breakdown and clarification	Costs, €	Notes
Daily Allowances (50%)	from [date] to [date] 1.-30.6.2007	No. of MS administration document against which payment has been made to the RTA	Date of this MS administration document	[No of days] * 50% [per diem] 30 days* 93.5 €/day	2805.00	1. The applicable rates are fixed at the time of the signature of the Twinning Contract for its entire duration. They are not subject to revision during the lifetime of the project. 2. This is checked against the dates of travel to/from place of duty for the first and last quarter respectively
Monthly allowance for special economically priced return tickets	Period 6/2007	Quotation No. 29062	Quotation date 30.6.2007	[Name of travel agency that has issued the quotation] [No. of months] * [flat rate as stated in the quotation] AREA, 6th month 1 month * 600 €	600.00	1. Only applicable, if no removal of personal belongings or any other costs related to accompanying family members are charged to the project. 2. Eligible from the second month of secondment
Taxi Flight 22:00-07:00	15.6.2007	29062	15.6.2007 FMI 30.6.2007	Transfer from the airport, Helsinki- home, Espoo 40,37 €	40,37	Taxi Flight 22:00-07:00
Accommodation	from [date] to [date] 1.6.2007-30.6.2007	No. of receipt FMI: 55195	Date of receipt FMI paid 26.6.2007	[Starting date of lease] [Name of landlord] (for first report only and after that if changed) [No. of months] * [monthly rent] 1.11.2006, Marija Boskovska, 1 month * 1 250,00 €/month	1 250,00	1. Full month's rent can be claimed even if some of the period is beyond the period reported in the Quarterly Report. 2. The first month for which rent is claimed must not overlap with the period claimed under "Allowances for first 30 days". In case of overlap the first rent is reduced accordingly
TOTAL					**4 695,37**	

Finnish Meteorological Institute
P.O. Box 503, FI-00101 Helsinki
Tel. +358-9-19295432, Fax. +358-919294129
www.fmi.fi

Ministry of Environment and Physical Planning
Drezdenska 52, 1000 Skopje
Tel. +389 2 3066-930, Fax. +389 2 3066-931
www.moepp.gov.mk

REPORT OF RTA COSTS IN JULY 2007

TWINNING PROJECT
Project Title: Air Quality Improvement
Twinning Contract Number: MK05/IB-EN-01
Agency Contract Number: 05MAC01/13/102

Name of services / goods purchased or direct costs	Date(s) of services	Invoice No.	Date of invoice	Breakdown and clarification	Costs, €	Notes
Daily Allowances (50%)	from [date] to [date] 1.-31.7.2007	No. of MS administration document against which payment has been made to the RTA	Date of this MS administration document	[No of days] * 50% [per diem] 31 days* 93.5 €/day	2898.50	1. The applicable rates are fixed at the time of the signature of the Twinning Contract for its entire duration. They are not subject to revision during the lifetime of the project. 2. This is checked against the dates of travel to/from place of duty for the first and last quarter respectively
Monthly allowance for special economically priced return tickets	Period 7/2007	Quotation No. 29063	Quotation date 31.7.2007	[Name of travel agency that has issued the quotation] [No. of months] * [flat rate as stated in the quotation] AREA, 6th month 1 month * 600 €	600.00	1. Only applicable, if no removal of personal belongings or any other costs related to accompanying family members are charged to the project. 2. Eligible from the second month of secondment
Accommodation	from [date] to [date] 1.7.2007-31.7.2007	No. of receipt FMI: 55227	Date of receipt FMI paid 2.7.2007	[Starting date of lease] [Name of landlord] (for first report only and after that if changed) [No. of months] * [monthly rent] 1.11.2006, Marija Boskovska, 1 month * 1 250,00 €/month	1 250,00	1. Full month's rent can be claimed even if some of the period is beyond the period reported in the Quarterly Report. 2. The first month for which rent is claimed must not overlap with the period claimed under "Allowances for first 30 days". In case of overlap the first rent is reduced accordingly
TOTAL					**4 748.50**	

REPORT OF RTA COSTS IN AUGUST 2007

TWINNING PROJECT
Project Title: Air Quality Improvement
Twinning Contract Number: MK05/IB-EN-01
Agency Contract Number: 05MAC01/13/102

Name of services / goods purchased or direct costs	Date(s) of services	Invoice No.	Date of invoice	Breakdown and clarification	Costs, €	Notes
Daily Allowances (50%)	from [date] to [date] 1.-31.8.2007	No. of MS administration document against which payment has been made to the RTA	Date of this MS administration document	[No of days] * 50% [per diem] 31 days* 93.5 €/day	2898.50	1. The applicable rates are fixed at the time of the signature of the Twinning Contract for its entire duration. They are not subject to revision during the lifetime of the project. 2. This is checked against the dates of travel to/from place of duty for the first and last quarter respectively
Monthly allowance for special economically priced return tickets	Period 8/2007	Quotation No. 29065	Quotation date 28.8.2007	[Name of travel agency that has issued the quotation] [No. of months] * [flat rate as stated in the quotation] AREA, 1 month * 600 €	600.00	1. Only applicable, if no removal of personal belongings or any other costs related to accompanying family members are charged to the project. 2. Eligible from the second month of secondment
Accommodation	from [date] to [date] 1.8.2007-31.8.2007	No. of receipt FMI: 55262	Date of receipt FMI paid 9.8.2007	[Starting date of lease] [Name of landlord] (for first report only and after that if changed) [No. of months] * [monthly rent] 1.11.2006, Marija Boskovska, 1 month * 1 250,00 €/month	1 250,00	1. Full month's rent can be claimed even if some of the period is beyond the period reported in the Quarterly Report. 2. The first month for which rent is claimed must not overlap with the period claimed under "Allowances for first 30 days". In case of overlap the first rent is reduced accordingly
TOTAL					**4 748.50**	

Finnish Meteorological Institute
P.O. Box 503, FI-00101 Helsinki
Tel. +358-9-19295432, Fax. +358-919294129
www.fmi.fi

Ministry of Environment and Physical Planning
Drezdenska 52, 1000 Skopje
Tel. +389 2 3066-930, Fax. +389 2 3066-931
www.moepp.gov.mk

APPENDICES

- **Programme of the study tour in Finland 27th-31st August 2007**
- **Study tour report prepared by the BC Experts**
- **MS Experts' mission reports**
- **Presentations during the study tour in Finland**

Finnish Meteorological Institute
P.O. Box 503, FI-00101 Helsinki
Tel. +358-9-19295432, Fax. +358-919294129
www.fmi.fi

Ministry of Environment and Physical Planning
Drezdenska 52, 1000 Skopje
Tel. +389 2 3066-930, Fax. +389 2 3066-931
www.moepp.gov.mk

APPENDIX

STUDY TOUR "SHARING EU MS COUNTRY'S EXPERIENCE AND TRAINING ON AIR QUALITY MONITORING" IN FINLAND

Time: **27-31 August, 2007**
Place: **Finnish Meteorological Institute (FMI)**
Address: **Erik Palménin aukio 1, FI-00560 HELSINKI**

- FMI website: http://www.fmi.fi/en/index.html
- FMI Location on a map: http://www.fmi.fi/organization/contacts_30.html
- Hotel Helka: http://www.helka.fi/
- Helsinki website (maps, public transport etc.): http://www.helsinki.fi/en/

Lunch in the canteen at the FMI or on Tuesday at the SYKE and on Wednesday at the VTT

BC participants
Main programme
Separate programme

PROGRAMME

Monday 27 August

8:20 Pick-up from the Hotel Helka, Pohjoinen Rautatiekatu 23, FI-00100 HELSINKI

FMI, seminar room Kontti
9:00 Kick-off meeting (All BC experts)

- Welcoming addresses & FMI in nutshell, Mikko Alestalo, Deputy Director General
- FMI's Air Quality Research, Jaakko Kukkonen, Director
- Study Tour programme, MS PL Harri Pietarila

13:00-17:30 FMI's operational activities (Svetlana, Marijonka, Aleksandra, Igor P., Driton, Maja, Liljana, Martina)

- FMI's IT-department and software development, director Mikko Strahlendorff
- FMI's observational networks, data acquisition, databases, Pauli Rissanen, Special Scientist, Observation Service
- Meteorological research at FMI, Priit Tisler

13:00-17:30 Training on calibration laboratory, Jari Walden (Igor A., Ljupco)

Finnish Meteorological Institute
P.O. Box 503, FI-00101 Helsinki
Tel. +358-9-19295432, Fax. +358-919294129
www.fmi.fi

Ministry of Environment and Physical Planning
Drezdenska 52, 1000 Skopje
Tel. +389 2 3066-930, Fax. +389 2 3066-931
www.moepp.gov.mk

Tuesday 28 August

8:30- 12:00 Visit to the Finnish Environment Institute, address: Mechelininkatu 34 a, Helsinki 25, 8th floor, seminar room Tervapääsky. (Svetlana, Marijonka, Aleksandra, Igor P., Driton,
Maja, Liljana, Martina)

- Finnish Environmental legislation and organization, Alec Estlander, Director, Environmental Management Division
- Transposition of AQ directives in Finland, Tarja Lahtinen, Senior Adviser, Ministry of Environment
- Emission inventory systems and scenarios in Finland, Kristina Saarinen, Team Leader

- *Meeting with Santtu Mattila (Igor P., Driton)*
- *Lunch meeting with Tapani Säynätkari (Svetlana)*

8:30- 12:00 Training on calibration laboratory, Jari Walden (Igor A., Ljupco)

13:00- 16.00 Visit to the Helsinki Municipal Area Council, address: Opastinsilta 6A, 5th floor, seminar room 2 (entrance from 2nd floor)
(Svetlana, Marijonka, Aleksandra, Igor A., Ljupco, Maja, Liljana, Martina)

- Air Quality measurements at Helsinki municipal area, Maria Myllynen
- Dissemination of AQ, Maria Myllynen
- Information to public, Maria Myllynen
- AQ Plans and Programmes, Jari Viinanen

13:00- 15.30 Dispersion modeling training, Sari Lappi (Igor P., Driton)

- Evening programme; Sauna & swimming possibilities (take your swimming suites with you!)
- Kauniasten kaupungin virkistysalue, Soukanniemi, Frosteruksentie 3, Soukanniemi, Espoo

Wednesday 29 August

9:00-12:00 Visit to the VTT , address: Biologinkuja 7, Otaniemi, Espoo (Svetlana, Marijonka, Aleksandra, Igor P., Driton, Liljana, Martina)

- Presentation of VTT, technology manager Jukka Lehtomäki
- VTT`s activities related to emission measurements and relevant legislation, team leader Tuula Pellikka
- Visit to the laboratory of transport emission research, team leader Juhani Laurikko

Finnish Meteorological Institute
P.O. Box 503, FI-00101 Helsinki
Tel. +358-9-19295432, Fax. +358-919294129
www.fmi.fi

Ministry of Environment and Physical Planning
Drezdenska 52, 1000 Skopje
Tel. +389 2 3066-930, Fax. +389 2 3066-931
www.moepp.gov.mk

9:00-12:00 AQ data management training, Timo Salmi (Maja)

13:30-15.00 Air Quality data management (Svetlana, Marijonka, Aleksandra, Igor P., Driton, Maja, Liljana, Martina)

FMI, Seminar room Natura

- AQ mesurement networks in Finland & data management and reporting, Timo Salmi
- Dissemination of AQ information to public - presentation of Finnish AQ portal, Virpi Tarvainen

15:00-16.30 Quality management and laboratory tour (Svetlana, Marijonka, Aleksandra, Liljana, Martina)

FMI, Seminar room Natura

- QA/QC - Jari Walden & Veijo Pohjola
- Visit to the Air chemistry laboratory and calibration laboratory, Hannele Hakola, Group Leader & Jari Walden, Group Leader

15:00-16.30 Data management and reporting training, Timo Salmi (Igor P., Driton, Maja)

9:00-16:30 Maintenance training on Thermo monitors, Harri Granath (Igor A., Ljupco)

Thursday 30 August

8:30-17:30 Visit to a EMEP background monitoring station in Virolahti, Jari Walden, Kaj Lindgren, Harri Pietarila (All BC experts)

- Measurement programme and equipments
- Maintenance and calibration
- Hands on training on sampling equipments

Friday 31 August

FMI, Seminar room Kontti

9:00-10:00 Dispersion Modelling at FMI, Ari Karppinen (Svetlana, Marijonka, Igor P., Driton, Liljana, Martina)

10:00-11:00 Preliminary Assessment and Zones in Finland, Harri Pietarila (Svetlana, Marijonka, Aleksandra, Liljana, Martina)

11:00-12:00 Using GIS tools in preliminary assessment, Birgitta Alaviippola (Svetlana, Marijonka, Aleksandra, Liljana, Martina)

Finnish Meteorological Institute
P.O. Box 503, FI-00101 Helsinki
Tel. +358-9-19295432, Fax. +358-919294129
www.fmi.fi

Ministry of Environment and Physical Planning
Drezdenska 52, 1000 Skopje
Tel. +389 2 3066-930, Fax. +389 2 3066-931
www.moepp.gov.mk

12:00-14:00 Project management meeting, Harri Pietarila (Svetlana, Marijonka, Aleksandra, Liljana, Martina)

14:00-16:00 Closing meeting, Harri Pietarila (All BC experts)

9:00-14:00 HQC training, Helena Saari (Igor A., Ljupco, Maja, Aleksandra)

10:00-14:00 Dispersion modelling training, Sari Lappi (Igor P., Driton)

Attention! BTEX training for Igor A. & Ljupco & Aleksandra (if time allows for Aleksandra) during the days when Igor A. & Ljupco are in the calibration laboratory.

Finnish Meteorological Institute
P.O. Box 503, FI-00101 Helsinki
Tel. +358-9-19295432, Fax. +358-919294129
www.fmi.fi

Ministry of Environment and Physical Planning
Drezdenska 52, 1000 Skopje
Tel. +389 2 3066-930, Fax. +389 2 3066-931
www.moepp.gov.mk

Report for study tour in Helsinki, Finland held on 27th – 31st August, 2007

Project: **Twinnig project Improvement of air quality**

Short description of the training

The training was designed into several days, as follows:

27 August (Monday)

Finnish meteorological institute (FMI):
In the morning, all the participants were welcomed by deputy director general Mr. Mikko Alestalo who gave general information of FMI regarding budget, employees, organization place in society, sources for founding and their activities concerning the environment. Afterwards, Mr. Jaakko Kukkonen, Director Air Quality Research presented this department their goals, project topics, and other areas of expertise. At the end of the section all the experts and leader of the project Mr.Harri Pietarila discuss the study tour programme and some minor changes were included in it.
In the afternoon session, a presentation regarding FMI's IT-department and software development was given by the director of this department Mikko Strahlendorff.
FMI's observational networks, data acquisition, databases were explained by Mr. Pauli Rissanen, special Scientist in the Observation Service in FMI. At the end, participants were also informed for the Meteorological research activities in FMI by the Director Juhani Damski.
The group consists of BC experts Aleksandra N.Krsteska, Ljupco Grozdanoski and Igor Atanasov, receive training regarding procedure for calibration and function of the chromatography part of BTX analyzer. It was conclude that condition parameters should be checked on our BTX analyzers in order to see if they make any problems regarding proper function of this type of instruments.

28 August (Tuesday)

SYKE (Finish environment institute)
In the morning, the participants visited the Finish environment institute where Director of the Environmental Management Division, MS expert Mr. Alec Estlander presented the organization, their goals, project topics, and other areas of expertise. MS expert Mrs. Kristina Saarinen, Team Leader, informed us of air emission inventory and scenarios in Finland. Her presentation also includes information regarding data sources, organization of inventories and reporting.
Senior adviser Mrs. Tarja Lahtinen, from the Ministry of environment in Finland gave presentation on transposition of AQ directives in Finland. This presentation provide

Finnish Meteorological Institute
P.O. Box 503, FI-00101 Helsinki
Tel. +358-9-19295432, Fax. +358-919294129
www.fmi.fi

Ministry of Environment and Physical Planning
Drezdenska 52, 1000 Skopje
Tel. +389 2 3066-930, Fax. +389 2 3066-931
www.moepp.gov.mk

detail information which can be use to compare the role of our Ministry and the Finish ministry of environment and responsibilities of the regional and local authorities regarding national legislation.
We invited Mr. Alec Estlander to make a project fiche regarding our needs in other required secondary legislation. The morning section was finished with questions and discussions for the responsibilities of regional and local authority on preparation of legislation acts.
BC experts Igor Paunovski and Driton Idrizi meet Mr.Santtu Mattila, who will show them the national inventory database structure in Finnish Environment Institute. During this meeting they also discuss their tasks between missions.

(FMI) Finnish meteorological institute

Group consists of BC experts Igor Atanosov and Ljupco Grozdanovski continued with their training in calibration laboratory with Mrs. Sisko Laurila. They were trained to gather, store and calculate the data form the calibration of the analyzers in the laboratory. The training was of great importance since they learn things that they can implement in our calibration laboratory.
Group consists of BC experts Igor Paunovski and Driton Idrizi, in the afternoon, continue with training given by MS expert Mrs. Sari Lappi regarding for urban traffic dispersion modeling for a part of Helsinki.

Helsinki metropolitan area council

In the afternoon, we visited Helsinki metropolitan area council, where we have been introduced with Air Quality measurements at Helsinki metropolitan area, dissemination of AQ and information to public by Mrs. Maria Myllynen.
The AQ Plans and Programmes, were presented by Mrs. Mervi Weckstrom. The presentation contain information on Helsinki preparedness plan for serious air pollution episodes(PM10, NO2, PM2,5) and measures which are given in the action plans.

29 August (Wednesday)

VTT(Technical research center of Finland)

In the morning, we visit Technical research center of Finland where the technology manager Mr.Jukka Lehtomäki gave presentation on VTT, activities with special accent to activities concerning environment. Team leader, MS expert Tuula Pellikka introduced us with VTT`s activities related to emission measurements and relevant legislation (short presentation of Waste Incineration directive 2000/76/EC was given).
We were also able to visit to the laboratory of transport emission research, where team leader Mr. Juhani Laurikko explained the step by step procedure of emission measurements from different type of vehicles, equipment and measurements of the pollutants.

Finnish Meteorological Institute
P.O. Box 503, FI-00101 Helsinki
Tel. +358-9-19295432, Fax. +358-919294129
www.fmi.fi

Ministry of Environment and Physical Planning
Drezdenska 52, 1000 Skopje
Tel. +389 2 3066-930, Fax. +389 2 3066-931
www.moepp.gov.mk

FMI (Finnish meteorological institute)

During this day BC experts Ljupco Grozdanovski and Igor Atanasov continue their training with Mr. Harri Granath, an expert from private company who is responsible for the maintenance of analyzers within the monitoring stations in Finland. The hands on training was most successful because of the exchange of practical experience.

In the morning, BC experts Maja Gramatikova, Igor Paunovski and Driton Idrizi meet MS expert Mr. Timo Salmi, senior system analyst in the Air Quality Information Unit, who in details introduced them the AQ monitoring in Finland, AQ data management and reporting.

In the afternoon session all participants, except BC experts Ljupco Grozdanovaksi and Igor Atanasov, participated on the general presentation of MS expert Mr.Timo Salmi regarding AQ measurement networks in Finland & data management and reporting. Afterwards, Mrs. Virpi Tarvainen, Head of Research Group Air Quality Research presented the dissemination of AQ information to public presentation of Finnish AQ portal.

MS experts Mr. Veijo Pohjola and Mr Jari Walden gave short presentation on calibration laboratory in FMI and implementation of QA/QC system in accredited calibration laboratory. BC experts stress their need on future cooperation between the experts of this area and they asked help from these MS expert in preparation of fiche project regarding the topic, “Preparation for accreditation of the calibration laboratory”.

Mr. Jari Walden introduced the participants with the equipment, static injection system and activities which they carried on in calibration laboratory. The whole group was also introduced with chemical laboratory and the type of measurements which are preformed there, by the head of air chemical laboratory Mrs. Hannele Hakola.

30 August (Thursday)

Virolahti background station:

On Thursday all participant visited EMEP background monitoring station in Virolahti where they were introduced with the measurement equipments, frequency of measurement and maintains of the samplers and analyzers by MS experts Mr.Harri Pietarila and Mr. Kai Lindgren. BC experts Ljupco Grozdanovski and Igor Atanasov received hands on training on calibration of analyzers by Mr.Kaj Lindgren.

31 August (Friday)

FMI (Finnish meteorological institute):

The training continued with presentation of MS expert Mr.Ari Karppinen on modelling system of FMI giving special accent on weather prediction models, dispersion models-long range, regional, dispersion and effects models-urban, and locals.

Finnish Meteorological Institute
P.O. Box 503, FI-00101 Helsinki
Tel. +358-9-19295432, Fax. +358-919294129
www.fmi.fi

Ministry of Environment and Physical Planning
Drezdenska 52, 1000 Skopje
Tel. +389 2 3066-930, Fax. +389 2 3066-931
www.moepp.gov.mk

Group consists of BC experts Ljupco Grozdanovski, Igor Atanasov and Aleksandra N. Krsteska were introduced with the data validation software. MS expert Mrs. Helena Saari introduced them with calibration procedures, statistical processing of the data, data checked and data validation on the new and old version of the software. Macedonian participants request participation of Mrs. Helena Saari in future missions because of the importance of the topic of this training, but it was agreed that Mrs. Birgitta Alaviippola will provide this type of training during her last mission.
Group consists of BC experts Igor Paunovski and Driton Idrizi that proceed on meeting with MS expert Sari Lappi regarding tasks of BC experts between missions in component 5.
MS expert Birgitta Alaviippola introduced the rest of the participants with implementation of GIS tools in their preliminary assessment reports in Finland. She also show few slides of Gis tools used in Macedonian preliminary assessment report. The section was closed by discussion and questions on this topic regarding content of the Improved Preliminary assessment report for R. Macedonia.
The final topic of the study tour was discussion regarding the mandatory results and future steps of all the components within the twining project between BC expert and the leader of the project Mr. Harri Pietarila. The conclusions of this discussion are given in written form in the Minutes of the final meeting.

List of documentation given by Finnish experts:

1. Long-range transport episodes of fine aerosol particles in southern Finland during 1999-2005
2. Air quality of Helsinki metropolitan area in 2006
3. Air quality in Finland – monitoring results in relation to the guidelines and limit value and comparison with European concentration levels
4. The particles in the Helsinki subway system
5. Innovative technologies for clear environment
6. For better urban environment
7. SYKE-laboratory
8. SYKE – Environmental expert
9. Air quality in Helsinki Metropolitan area
10. VTT creates business from technology
11. Annual report 2006- Helsinki metropolitan Area council
12. Manual for Emission measurements Part 1 Basics of Emission Measurement

PARTICIPANTS REPORTS

Svetlana Gjorgjeva, head of department MEIC

During the Study Tour in Finland that took place in the period from 26.08.2007 to 02.09.2007 we had a five day Programme Agenda according to which our delegation from the MEPP had an opportunity to get to know more closely with the complete organization, structure and the way of work of the relevant Institutions in Finland responsible for the Environment and the Air Quality.
My overall evaluation of this event is a successful and very well organized Study Tour.

Finnish Meteorological Institute
P.O. Box 503, FI-00101 Helsinki
Tel. +358-9-19295432, Fax. +358-919294129
www.fmi.fi

Ministry of Environment and Physical Planning
Drezdenska 52, 1000 Skopje
Tel. +389 2 3066-930, Fax. +389 2 3066-931
www.moepp.gov.mk

I had a chance to see various useful presentations from various MS Experts in different Institutions like the Finnish Meteorological Institute (FMI), the Environmental Agency (SYKE), the Institute for research and measurements of the emissions in the air (VTT) and the Helsinki Metropolitan Area Council. Especially interesting and useful for me were the presentations where I could see the organizational structure and the human resources distribution of the Institutions as well as the structure of the responsibilities and the intercommunication between the relevant Institutions.
Also, I had a chance to see the Air Quality data management, the way of processing of the data flow, the gathering of data from different networks, the integrated modeling systems, the real time monitoring systems, the preliminary assessment zone structuring in Finland, the way of preparation of preparedness and action plans etc.
Especially impressive was the new established web portal that was recently introduced by FMI to increase the awareness of the public and to disseminate air quality information on national level.
In the agenda also there was a planned visit of one of the background measurement stations in Virolahti, where we saw the equipment for air quality measurements.
During the Study Tour I had a meeting with the European environmental Agency - National Focal Point for Finland Tapani Saynatkari regarding the work, the organization and structure of EIONET Finland and the development of Shared European Environmental Information System.
On the last day of the Study Tour we had a final meeting with the MS, PL Harri Pietarila to make a revision of the progress of the project so far and to determine the future activities necessary for complete finalization of the project and fulfillment of all Mandatory Results.

Marijonka Vilarova, deputy head of department for MEIC

During the Study Tour in Finland, in various institutions like the Finnish Meteorological Institute (FMI), the Environmental Agency (SYKE), the Institute for research and measurements of the emissions in the air (VTT) we had presentations and meetings with Experts in the area of the air quality concerning all the questions listed in the agenda.
Regarding certain questions and parts of the agenda each participant had a visit to the relevant institution regarding the field of his/her expertise. In general the prepared presentations were significantly professional with advanced knowledge in the air quality area.
For me the greatest impression and the most useful information were the following presentations:

- The presentations regarding the forecasting and simulation of the concentration of the specific pollutants in the ambient air
- The monitoring network for air quality and its management

Finnish Meteorological Institute
P.O. Box 503, FI-00101 Helsinki
Tel. +358-9-19295432, Fax. +358-919294129
www.fmi.fi

Ministry of Environment and Physical Planning
Drezdenska 52, 1000 Skopje
Tel. +389 2 3066-930, Fax. +389 2 3066-931
www.moepp.gov.mk

- The distribution of the monitoring stations in the zones and agglomerations (regions) depending on the pollution, i.e. measurement of the concerning pollutant determined as risk causing for the separate zones and agglomerations.
- The functioning of the information system
- The zoning in Finland and the use of GIS tools
- The organizational set up of the Environmental Institute (SYKE), the presentation for the inventory of the air emissions
- The methods for measurement of the emissions from stationary sources and the measurements of the emissions from mobile sources, as well as other new information regarding the research in this area in VTT Research Centre

During our stay we discussed with the Finnish Experts regarding the problems and the future activities by each Component of the Project 1, 2, 3, 4 and 5.
I have to emphasize that all presentations and gaining of experience and knowledge from the Finnish experts during the Study tour were of great use and interest to me. I will use this experience and knowledge in the future work on the Twinning Project Components, as well as in the further development of the activities in the area of the air quality improvement after the finishing of the Twinning Project. Worth mentioning is the approach and the behavior of the Finnish Experts regarding their professional activities.

Aleksandra Nestorovska-Krsteska, junior associate

In the FMI we were introduced with organization schedule of their organization, activities and services. We get familiar with the activities which are carrying on in the air quality control department. In the afternoon, I proceed in calibration laboratory where I was introduced with the staff, equipment and QA/QC requirements from the people working in this calibration laboratory. I have received training regarding chromatography function of BTX analyzer. It was interesting and useful to see the condition parameters and to receive a good overview of the chromatography process in this type of equipment, since this type of analyzer is also used in our laboratory.
In SYKE we were introduced with the organization schedule and goals, and activates of separate departments with special accent of the department for preparation of emission inventory. We invited Mr. Alec Estlander to make a project fiche regarding national plan and to give recommendation on further secondary legislation. It was also very important the presentation of the Ministry of environment in Finland in order to see the type of legislation, implementation of EU directives and responsibilities of different authorities for preparations and implementation of the legislation on air.
In Helsinki Metropolitan Area council I received a good overview of their experience in preparation and implementation of action plans for improvement

Finnish Meteorological Institute
P.O. Box 503, FI-00101 Helsinki
Tel. +358-9-19295432, Fax. +358-919294129
www.fmi.fi

Ministry of Environment and Physical Planning
Drezdenska 52, 1000 Skopje
Tel. +389 2 3066-930, Fax. +389 2 3066-931
www.moepp.gov.mk

of air quality. This experience was of great importance regarding the fact that now in near future, we should prepare the national plan in which we will include the directions for preparation of action plans.
In VTT, we were introduced with the organization activities, air emission measurements and we had had a short presentation on waste incineration directive. We also visit the laboratory in which emissions from traffic were measured.
In the afternoon, we were introduced with air web portal, reports and data processing where we saw a lot of which van be implemented in our departments. We had had discussion regarding the implementation of QA/QC system in calibration laboratory which is also one of the activities in the twining project. I have also a meeting with Mr. Veijo Pohjola regarding the documents that we have prepared for the QA/QC plan.
We also visited EMEP background monitoring station in Virolahti. MS expert Kaj Lindgren, Harri Pietarila introduced us with the equipment for measuring meteorological and ecological data.
On the last day we achieved a good knowledge and experience for collecting, processing and validation of the data. Mrs. Helena Saari which for example gave us closer look in their new and old software for data validation. It was interesting to see the process of collecting data from calibration of the instruments and their storing in labeled files.
The application of GIS tools in preliminary assessment report in Finland, and Macedonia during the twining project was presented to us by MS expert Birgitta Alaviippola. Discussion for preliminary assessment report content and future activates were discussed between myself BS expert Marijonka Vilarova and MS expert Birgitta Alaviippola.
At the end of the study tour we had had meeting with the leader of the project Mr. Harri Pietarila and discuss the mandatory results of the twining project the current status of all components and the future steps.
Finally, I would like to conclude the importance of the gained experience which will be used in the activities during the twining project and afterwards also the study tour gives the open possibility for future cooperation with finish experts in air quality field.

Driton Idrizi, junior associate
From the period of 27 the 31 the of August 2007 I took part in **STUDY TOUR "SHARING EU MS COUNTRY'S EXPERIENCE AND TRAINING ON AIR QUALITY MONITORING" IN FINLAND.** From this well organized study tour I was really impressed how institutions in Finland are organized and their way of working. It was a good experience for me to see and learn.

Our host was FMI – Finnish Meteorological Institute. First we visit FMI. In the morning session there was a presentation from Mr. Jaakko Kukkonen, director of FMI Air Quality Research. He present us how the FMI is organized, hot it

Finnish Meteorological Institute
P.O. Box 503, FI-00101 Helsinki
Tel. +358-9-19295432, Fax. +358-919294129
www.fmi.fi

Ministry of Environment and Physical Planning
Drezdenska 52, 1000 Skopje
Tel. +389 2 3066-930, Fax. +389 2 3066-931
www.moepp.gov.mk

works, the number of employers the budget. After that there was a discussion with Ms Project leader Mr. Harri Pietarila about the study tour program. After the break there was a presentation about FMI's IT – Department and Software Development held by Mikko Strahlendorff. He was presenting the IT department and software development. Also he presents us technical services that they are doing, weather services called SmartMet which is a software tool for visualizing and editing meteorological data, the architecture of this tool, how they collect data. Also he shows to us some product examples done by the IT Department. Then it was a presentation from Pauli Rissanen about data flow from stations to data archives.
In second day of our study tour we visit the Finnish Environment Institute. I and Igor had a meeting with Santtu Mattila about emission inventories. There were discussions about continuing the work in Air Emission database that has been done during his mission in Macedonia. We agreed that in the database need to make some changes and those changes will be done in cooperation with him. Afternoon we continue to the FMI and start working with Sari Lappi. The training was about dispersion modeling. It was a good training on how to digitize the roads in MapInfo. Also during the training we had a discussion about what we have done during the period from the last mission of Sari till the study tour in field of dispersion modeling.
On Wednesday we had a meeting in FMI with Timo Salmi. He presents to us Air quality measurement networks in Finland, data management and report. He was presenting to us how the Air Quality monitoring network in Finland is organized, data flow of air quality monitoring in Finland.
On Thursday we visit EMEP background monitoring station in Virolahti, with, Kaj Lindgren, Harri Pietarila where we have been introduced with Measurement programmed and equipments,
On the last day of our Study Tour we had a presentation from Ari Karppinen about Air Quality Modeling Group. He was focused especially in Dispersion Modeling:

- ✓ Development and evaluation of air quality models
- ✓ Combination of meteorological models and dispersion models
- ✓ Application of models and dissemination of information

He presents to us the modeling system of FMI: Weather prediction models, dispersion models-long range, regional, dispersion and effects models-urban, locals.
Then we continue training in dispersion modeling with MS expert Sari Lappi. During the training we discuss about next tasks till the next mission of MS expert Sari in Macedonia.
After that we have a closing meeting with MS PL Harri Pietarila about our impression from the study tour. During this meeting we also discuss about future activities in each component of the project, how to realize the necessary tasks that project would be successfully implemented. Every

Finnish Meteorological Institute
P.O. Box 503, FI-00101 Helsinki
Tel. +358-9-19295432, Fax. +358-919294129
www.fmi.fi

Ministry of Environment and Physical Planning
Drezdenska 52, 1000 Skopje
Tel. +389 2 3066-930, Fax. +389 2 3066-931
www.moepp.gov.mk

participant on this meeting spoke about problems and to find the best solution how to solve it.

Liljana Todorova Talevska, Advisor of Air Quality Research in Hydro-Meteorological administration

From the well-organized study tour in Finland I have received more experience from the operational activities of Air Quality Research in FMI. Also, I have been introduced with AQ measurement networks in Finland, data management and reporting. Also I have been inform with the International background AQ monitoring programs, about Organizations Responsible for Local/Regional AQ measurements, development of AQ legislation and number of AQ monitoring stations per pollutant in Finland. Also I have received Reporting at local and national level, Annual reporting for background AQ monitoring programs, Reporting to DG ENV(EC) and EEA and data flows of AQ monitoring in Finland. I have to please to see dissemination of air quality information in Finland – the national air quality portal.

In study tour in Finland I have received more experience when we visit Finnish Environment Institute, where I listening something Facts about Finland, Water quality, Inputs of nitrogen into the Baltic Sea, Water resources management and SYKE's organization. I have been also introduced with the zones and agglomeration in Finland. After that I have introduced in Transposition of AQ directives in Finland and Air Emission Inventories.

In that study tour I have a detail information on their AQ measurement at Helsinki municipal area, Monitoring and Informing the Public on Air Quality in the Helsinki Metropolitan Area, Air Quality Action Plan 2008-2016 and in the end We visit Air quality monitoring station in Helsinki city centre.

In VTT visit I see biggest multidisciplinary research organization, part of the Finnish innovation system, Environmental Technology Innovations, Emission Measurement Technology and Waste Incineration directive 2000/76/EC.

Visit of their Air chemistry laboratory was very interesting. I see Measurement networks, Background air quality monitoring network, and accredited laboratories at FMI.

I have a pleasure to visit Virolahti EMEP station – Measurement program at Meteorological measurements.

I also have interesting information for Air Quality Modeling Group, Dispersion modeling, Modeling system – FMI, Modeling from emissions to health effects, Health effects of urban particulate matter and Allergenic pollen.

At the last meeting we receive proposal for meeting between MS PL Harri Pietarila representatives from HMA and MOEPP, during his stay in September in Macedonia regarding future joint project for dispersion modeling.

The end of study tour in Finland I see Using GIS tools in preliminary assessment, Location of the measurement stations, Location and amount of

Finnish Meteorological Institute
P.O. Box 503, FI-00101 Helsinki
Tel. +358-9-19295432, Fax. +358-919294129
www.fmi.fi

Ministry of Environment and Physical Planning
Drezdenska 52, 1000 Skopje
Tel. +389 2 3066-930, Fax. +389 2 3066-931
www.moepp.gov.mk

emissions, Emission sources measurement stations, Traffic density, Population density, Wood burning emissions, Zones in Finland.

Igor Paunovski, Head of Division for Information technology

By participating in this study tour I was enabled to acquire useful knowledge in the parts of the twinning project that I'm involved in.
I have been introduced to FMI's observational networks, data acquisition, databases and dispersion modeling. We have been informed about Information systems at FMI-with an Operational information flow. We received some basic information about the SmartMet software, as a tool for visualizing and editing of the meteorological data, as well as with the ways of distribution of the visualized meteorological data by: e-mail, SMS/WAP, WWW, ftp etc.
With Mr. Santtu Mattila we had a more than useful meeting. I've seen the national inventory database structure in Finnish Environment Institute. There are linked tables with inventory data that are filled and maintained by local authorities and then exported to the Finnish Environment Institute. We have discussed what we should do before his next mission. A designing of a new table for boilers is needed. Also, we should define the emission factors before next mission.
With Ms. Sari Lappi we discussed about traffic data that we have. We have agreed that we should construct new excel sheets with traffic data in the format specified during this meeting. We have gained a basic training for urban traffic dispersion modeling for a part of Helsinki. I've created new thematic layer in MapInfo software containing line object segments with attribute table for dispersion modeling. We have been trained how to prepare thematic map in MapInfo. We have discussed what we should do before her next mission. We have to prepare new digital layer in MapInfo containing the street network of Skopje with designed attribute table. We should derive new street network out of the digital layer from the GIS department in the Ministry.
From the presentation from Mr. Ari Karppinen we have been informed about the dispersion modeling at FMI. We got information about the unit dispersion modeling at FMI. Also, an information about for We understood that a new, international version of CAR-FMI application software is developing and it will be finished in 2-3 months time.
On the meeting with Mr. Timo Salmi we had a presentation for AQ data management at FMI. We have been introduced to the Air Quality measurement networks in Finland & data management and reporting. We have been informed about s web portal for air quality as a way for dissemination of Air Quality information to public.

Ljupco Grozdanovski and Igor Atanasov, engineers for automatic monitoring stations and calibration laboratory

From the well-organized training in Helsinki, I have received more experience from the manner of work for the calibration laboratory, preparing and calculate the data

Finnish Meteorological Institute
P.O. Box 503, FI-00101 Helsinki
Tel. +358-9-19295432, Fax. +358-919294129
www.fmi.fi

Ministry of Environment and Physical Planning
Drezdenska 52, 1000 Skopje
Tel. +389 2 3066-930, Fax. +389 2 3066-931
www.moepp.gov.mk

from the laboratory, servicing and maintenance of the analyzers from the automatic monitoring stations.
We meet an expert from Finish meteorological institute (expert from laboratory and data management), expert Harri Granath from private company Kontram responsible for service of the stations and expert from one municipality.
One the first of the study I had the very good theoretical and practical training for BTX analyzers from Pirjo Kuronen. She explained me how can I adjust the analyzers for BTX in Macedonia. Also she gave us a lot of information which can we use for better work of the analyzers. The other experts from the laboratory show me they manner of work, they experience and everyday activities in the.
Second day Sisko Laurila, from the laboratory, show and explain me how she use the data from the laboratory, her responsibility and calculation of some data. Also she explains their manner of work for writing of all information which is important for the calibration laboratory.
Also on second day we have a meeting with Maria Myllynen, expert on Air Quality from YTV Helsinki Metropolitan Area Council. There I got presentation for measurement points for pollutants in Helsinki, how they manage with pollution in some areas in Helsinki, and what kind of preventives they have for decreasing of pollution, how they inform the peoples for pollution, etc. We visit one of the stations in centre of Helsinki, which was underground, and have a discussion with Jari Bergius who is responsible for service and maintenance of instruments in this station.
Next day I had an excellent training from Harri Granath, an expert from private firm who is responsible for the service of the monitoring stations in Finland. He gave us an excellent knowledge for the work of the all analyzers in the stations and very good explanation for basic principal of work in the analyzers and measured with oscilloscope of some part in the all analyzers. We had very good conversation with him about his and my experience from our manner work in Macedonia, our maintenance and service of the analyzers.
On fourth day or my study tour we visited one of the EMEP station in Virolahti, which is responsibility under the FMI. Expert Kai Lindgren show me how can we make a calibration with field calibrator and adjusting the analyzers if it is possible.
On the last day of our study tour I visited office of Helena Saari. She showed us principle of evaluation of the data, presentation of the data on internet in real time, which software they use for all of the data.
In generally that was very good training especially for the service and maintenance of the stations and calculates the data form the laboratory and the monitoring stations. All of that information I will use to reach my knowledge and use for good future work into calibration laboratory and monitoring stations.
On the last day of our study tour I visited office of Helena Saari. She showed us principle of evaluation of the data, presentation of the data on internet in real time, which software they use for all of the data.
In generally that was very good training especially for the service and maintenance of the stations and calculates the data form the laboratory and the monitoring stations. All of that information I will use to reach my knowledge and use for good future work into calibration laboratory and monitoring stations.

Finnish Meteorological Institute
P.O. Box 503, FI-00101 Helsinki
Tel. +358-9-19295432, Fax. +358-919294129
www.fmi.fi

Ministry of Environment and Physical Planning
Drezdenska 52, 1000 Skopje
Tel. +389 2 3066-930, Fax. +389 2 3066-931
www.moepp.gov.mk

Maja Gramatikova, advisor

This study tour was excellent opportunity to get acquainted with the air quality information system in Finland, especially AQ data management, which is my main area of interest and professional occupation in the Macedonian Environmental Information Center.

During our visit of the Finish Meteorological Institute, one of our host experts and presenters, Mr. Timo Salmi, senior system analyst in the Air Quality Information Unit, introduced us to the AQ monitoring in Finland, AQ data management and reporting, with special focus on following topics:

- Development of AQ legislation in Finland,
- Organizations responsible for AQ measurements,
- AQ monitoring stations per pollutant and monitoring stations classification;
- Structure of the Finish air quality monitoring system:
    - 33 local (regional) AQ monitoring networks responsible for AQ monitoring, data validation and local reporting which are under responsibility of the municipalities or industrial plants, and
    - one national background AQ monitoring network under management of the Finnish Meteorological Institute;
- Air quality data flows from the measurements performed by the AQ monitoring networks:
    - near real-time hourly data sent by the regional networks to FMI on voluntary bases,
    - once a year collection of the validated AQ data and meta information for the previous calendar year from all local networks as legal obligation.
- National air quality database under FMI's maintenance.

FMI stores all collected data into the AQ database where they are being checked, processed and calculated, and publish the data on the national AQ web portal.

- Local and national responsibilities for fulfilling the national and international reporting obligations.

During the study tour we also had opportunity to be introduced to the main tasks of the Air Quality Information Unit by Mr. Virpi Tarvainen:

- AQ data management (maintaining the national AQ database, data processing, reporting and dissemination)
- Dissemination of AQ in Finland on the National AQ web portal (server architecture, technical solutions, such as: management system for real-time and historical data, user interface for data management, automated reporting, quality control etc. and also the portal content),
- Research in the AQ area,
- National and international activities and cooperation,

Finnish Meteorological Institute
P.O. Box 503, FI-00101 Helsinki
Tel. +358-9-19295432, Fax. +358-919294129
www.fmi.fi

Ministry of Environment and Physical Planning
Drezdenska 52, 1000 Skopje
Tel. +389 2 3066-930, Fax. +389 2 3066-931
www.moepp.gov.mk

One of the most important issues of the overall data management process is the quality control of collected data. In this regard, a quality control (QC) method used for the FMI's Meteorological databases was presented by Mr. Pauli Rissanen. This method is responsible for the automatic quality checking of data fed into National Meteorological Service database. As a very useful tool in the QC process, this method should be taken into consideration when developing the data management system in the MOEPP.
The last checking of the AQ data in the whole quality control process is the Human Quality Control (HCQ). Very useful training was made by Mrs. Helena Saari who is responsible for performing the HQC of the incoming data from the background monitoring network - responsibility of the FMI.
My personal opinion is that the organization and conduction of the study tour has been carried out on a very high professional level, with carefully prepared and performed theoretical presentations and on-site visits, which has given us a complete picture of the air quality monitoring system in Finland.
Excellent marks for all engaged experts for their professional attitude, unselfishly sharing their knowledge and experience with us, opened for communication and available for all our questions and unknowns.
The knowledge we have acquired and the lessons we have learnt will be a solid base for the right approach to successful management of the National Air Quality Monitoring System in our country.

Finnish Meteorological Institute
P.O. Box 503, FI-00101 Helsinki
Tel. +358-9-19295432, Fax. +358-919294129
www.fmi.fi

Ministry of Environment and Physical Planning
Drezdenska 52, 1000 Skopje
Tel. +389 2 3066-930, Fax. +389 2 3066-931
www.moepp.gov.mk