FINNISH METEOROLOGICAL INSTITUTE

МИНИСТЕРСТВО ЗА ЖИВОТНА СРЕДИНА И ПРОСТОРНО ПЛАНИРАЊЕ

TWINNING INTERIM QUARTERLY REPORT number: 2

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: 16th March 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:	2
Period covered by the report:	1.12.2006-28.2.2007
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)

23.3.2007

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

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List of Abbreviations and Acronyms

BC	Beneficiary Country
CADASTRE	Cadastre of Air Polluters and Pollutants in the Republic of Macedonia, 2004 (also KATASTAR)
CARDS 2004	CARDS 2004 project “Environmental management strengthening”
CARDS 2005 project	CARDS 2005 project "Strengthening of Environmental management, former Yugoslav Republic of Macedonia"
CCEA	Climate Change Enabling Activities Office
CLRTAP	Convention on Long-Range Transboundary Air Pollution
CRF	Common Reporting Format (UNFCCC)
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
ICEIM-MANU	Macedonian Academy of Sciences and Arts, Research Center for Energy, Informatics and Materials
KATASTAR	see CADASTRE
KS	Key Source
LAT	Lower Assessment Threshold
LCP	Large Combustion Plants (EU Directive)
LPS	Large Point Sources

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MEIC	Macedonian Environmental Information Centre
MEPP	Ministry of Environment and Physical Planning
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
QA/QC	Quality Assurance and Control
PL	Project Leader
PRTR	Pollutant Release and Transfer Register
RTA	Resident Twinning Advisor
SCR	Selective Catalytic Reduction
SEA	Secretariat for European Affairs
SSO	State Statistical Office
SYKE	Finnish Environment Institute
UAT	Upper Assessment Threshold
UNFCCC	United Nations Framework Convention for Climate Change
UNECE	United Nations Economic Council for Europe
VTT	Technical Research Centre of Finland

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Section 2 and 3: Content

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

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2A - BACKGROUND

Policy Developments

The government changed in August 2006.

During the reporting period covered by the Quarterly Report, several activities related to 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 2004 Project – Environmental management:

   a. Component M3 - Development of Preliminary Assessment of the Air Quality and establishment of air quality zones and agglomerations on the territory of the Republic of Macedonia. Thus, in accordance with the Framework Air Directive 96/62/EC, draft "Proposed Zones and Agglomerations in the Republic of Macedonia and Minimum Required Measuring Points" has been produced.
   b. Under the same Component, in relation to secondary legislation development, the following legal acts have been drafted:
   - Rulebook on the introduction of CORINAIR methodology
   - Rulebook on preliminary air quality assessment and establishment of zones and agglomerations in the Republic of Macedonia.

2. Under the CARDS 2005 Project - "National Strategy for Environmental Approximation"

In the air component, implementation plans and costs analysis should be prepared in relation to 96/62/EC and 2003/87/EC Directives, implementation plans 2002/3/EC and 2001/81/EC Directives, and if sufficient resources remain available, tables of concordance and implementation plans will also be developed for other relevant Directives, such as 99/30/EC, 2000/69/EC, 99/94/EC, 99/32/EC, 98/70/EC.

- Tables of concordance have been developed for 96/62/EC, 2002/3/EC, 2001/81/EC and 2003/87/EC Directives, as well as the forms and the findings with regard to the status of transposition and gap analysis on 96/62/EC and 2001/81/EC Directives; lists of actions required for full transposition of 96/62/EC and 2001/81/EC have been developed, too.
- Under the project, presentation and training of the wider working group on air have been completed, focused on the methodology for financial estimate of costs required for full legal transposition of 96/62/EC and 2001/81/EC Directives.

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- Draft versions of implementation plans for 96/62/EC and 2001/81/EC Directives.

3. Amendment and Supplementing of the Law on Environment

The Law on Environment has entered a procedure for its amendment and supplementing. In this context, Articles regulating environmental monitoring and data reporting, Indicators based Report development and State of Environment Report, will be amended to be more detailed.

4. In the relevant period, several meetings among different projects implemented within the MEPP have been organized, in order to achieve mutual adjustments and avoid duplications and overlaps by different projects in the area of air, and thus to achieve the maximum cost-effectiveness possible.

According to the Twinning contract the project will assist 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 environmental assessment, air quality measurements and laboratory works, and dispersion modelling)."

First 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.

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 Meteorological Pre-Processor programs in MEPP and the dispersion model for stationary sources UDM-FMI have been installed and implemented.

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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 problems in BC human resources reported in the first quarterly report have been solved by employing new staff for the project. The new staff has been employed 18th December 2006.

The assumptions given in the twinning contract are shown in the following table.

Table 1. ASSUMPTIONS from the Twinning contract

Component Number	Assumptions	Status
I	Cooperation and outputs of CARDS 2004 and CARDS 2005 projects	Partly 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

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	Stakeholders available and willing to cooperate	Partly fulfilled
III	Cooperation and outputs of CARDS 2004	Fulfilled
	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	Partly fulfilled; - BC expert's maternity leave from March to the end of year 2007
	Enough resources for producing and distributing promotion materials	-
IV	Skilful personnel available	Partly fulfilled, - new staff do not have experience on the PAH analysis or emission measurements
	Hardware and Software requirements met	Not fulfilled
	Enough resources for new spare parts and/or equipments	Partly fulfilled
	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
V	BC human resources and computer meets requirements	Almost fulfilled

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	Resources for model procurement available	Almost fulfilled
	Co-operation with HMA	Partly fulfilled
	GIS, emission and meteorological data available	Partly fulfilled

Project assumptions and the status of their fulfilment are:

II COMPONENT – Emission Inventories

- Description of the current situation
  - Though requested by the MS expert since spring 2006, little information was provided of the current situation on expertise, material and current arrangements related to the Macedonian emission inventories. Therefore, time was spent at the expense of actual inventory development work on exploring the necessary basic information.
- Availability of BC experts
  - Sharing of the experience of MS expert and BC experts was limited due to the fact that only one BC counterpart was pointed to work with the project Component II Emission inventories. The two other experts participating the meetings during the mission had other urgent tasks to carry out during the mission period. Also, their current duties do not allow them to go deeply into the specific areas and source categories of emission inventories.
- Availability of activity data
  - Possibilities to go to higher Tier levels in the inventory methodologies and to develop specific national methods depend on the availability of activity data and other country-specific information. These issues can be discussed further with the national experts that had worked in the previous inventory projects (by the EU and UNEP). Unfortunately, these experts were not available for meetings during this mission.

III COMPONENT – Preliminary Air Quality Assessment

- Cooperation and outputs of CARDS 2004

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  - Almost totally fulfilled. Cooperation has been established with CARDS 2004 project and it is good. Major part of the results, outputs, data and reports of CARDS 2004 project are finalized and has been delivered to the twinning project

- Emission data, other activity data and AQ measurement data available and its quality meets requirements
  - Partly fulfilled. CARDS 2004 data (AQ measurement data) available. 2006 AQ measurement data, emission data and other activity data not yet available. Quality of AQ measurement data is not good but it might be enough for requirements of preliminary assessment. The data coverage is also poor.
- Enough personnel resources available
  - Fulfilled at the moment. To be seen in the future when the work continues. There will be change of the BC component leader because nominated component leader is leaving to maternity leave at the beginning of March 2007 and other is working with a short periodical contract. The Ministry plans to keep the employee after the closure of the twinning project.
- Enough resources for producing and distributing promotion materials
  - Not yet valid issue. To be seen in future.

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2B - ACHIEVEMENT OF MANDATORY RESULTS

All the benchmarks which were achieved from the start of the project has 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 March 2007
    - Table of Concordance - close to completion, further development in March 2007

    No mission during the reporting period.

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.*
        - *An inventory was carried out over the existing material and current expertise in air emission inventories in Macedonia.*
        - *Two rough alternative proposals for the organization of National Systems for air emission inventories in Macedonia were drafted.*

2. *Report on compliance with EU based national emission system and priority list for improvement*
    - *Priority list – started.*
        - *A list of reporting obligations for Macedonia as well as reports already submitted by Macedonia to the international conventions was made. The international and Macedonian material collected from various sources was given to the BC Expert.*

III COMPONENT – Preliminary Air Quality Assessment

1. *Improvement of methodology for preliminary assessment*

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- *Improved preliminary air quality assessment – close to completion.*
  - *Improvement plan made. Partly reported in this mission report and to be finalized in the next mission of MS expert Harri Pietarila.*

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. GIS presentation of zones needs improvement and air quality assessment requirements within zones has to be revised.*

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

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 – not done
6. The operation of a Mobile Emission Laboratory is improved and the staff received proper training for emissions measurements
   - Operation improved – started
   - Staff trained – not done
7. Specifications and priority list for investment (software, laboratory equipment and additional equipment for air quality monitoring stations and mobile emission laboratory)
   - *Specifications and priority list – completed*

No mission during the reporting period.

V COMPONENT – Dispersion Modelling

1. *An air quality model has been supplied and implemented*
   - *Operational model for dispersion calculation procedured and implemented at the MEIC - close to completion.*
     - *An air quality model has been supplied and implemented. MS*

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Expert provided a list of the necessary meteorological data that the Ministry asked officially to get from the Macedonian Hydro Meteorological Institute as a part of an official co-operation between the Ministry and the Meteorological Institute for utilizing the installed dispersion models. The negotiation between the Ministry and Meteorological Institute about the issue continues.

2. *Methods to provide meteorological and emission dataset for dispersion modelling has been established*
    - *Meteorological and emission dataset available – started/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.*
        - *Programs of the meteorological pre-processor have been implemented and the first meteorological datasets have been compiled based on the available meteorological data*
3. *The staff is trained in use and validation of the model results*
    - *Staff trained – started, also course material partly developed*

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2C. ACTIVITIES IN THE REPORTING PERIOD

A co-operation between the twinning project and the CARDS 2004 and CARDS 2005 project has continued.

A second steering committee was held 15 December 2006 in the Ministry of Environment and Physical Planning. The following participants were involved in the steering committee:

1. Dejan Panovski, State Secretary, MEPP – after opening the meeting needed to go to another meeting
2. Svetlana Gjorgjeva, BC PL, MEPP
3. Gordana Kozuharova, MEPP
4. Aneta Stefanovska, RTA Counterpart and Leader of Component 3
5. Harri Pietarila, MS, PL, FMI
6. Tiina Harju, RTA, FMI
7. Ivan Borisavljevic, EAR
8. Dimitar Malinovski, EAR
9. Stefan Tanic, EAR
10. Liljana Todorova Talevska, Hydro-Meteorological Administration (HMA)
11. Mihail Kocubovski, Republic Institute for Health Protection (RIHP)
12. Dejan Gjorsoski, European Commission Delegation
13. Meri Georgievska, Secretariat for European Affairs (SEA)
14. Martina Toceva, RTA Assistant, Secretary
15. Vera Mircevska, Translator
16. Jane Sapardanovski, Ministry of Economy, absent
17. Mate Gjorgievski, Secretariat for European Affairs (SEA), absent

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

I COMPONENT – Guidelines and Secondary Legislation

No mission in the reporting period.

Study tour in the Federal Environmental Agency in Austria from 26th February to 28th February 2007.

- Activity No 1.2.2.Drafting of sub legislation - 2004/224/EC and 96/62/EC regarding National plans and programs, 3 working days Marijonka Vilarova (Chief of the Division Environmental Information System), Aleksandra Nestorovska Krsteska (advisor), Arminda Rushiti, (junior advisor) from MEIC in MEPP and Biljana Stavrevska (junior associate) from the Sector of Regulation and Standardisation in MEPP and Mihail Kochubovski (Senior Environmental Health Officer, Chief of the Department of Waters and Communal Hygiene) from the Republic

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Institute for Health Protection (RIHP) and RTA Tiina Harju.

The leader of the component 1 Tanja Paunovska was not able to participate in the study tour due to a flight ban because of pregnancy. She was replaced by Biljana Stavrevska.

The main objective of the study tour to Austria was to concentrate on EU legal requirements and transposition of the EU Air Quality Framework directives and daughter directives, especially Monitoring and Reporting, National Plans and Programs and Agglomerations and Zones. The programme of the study tour is in an annex.

Study tour contains lectures given by MS experts from Jürgen Schneider, Wolfgang Spangl, Marina Fröhlich, Lorenz Moosman and Christian Nagl who are involved in the twinning project. MS Expert Jürgen Schneider started the study tour by presenting the FEA (Umweltbundesamt) and the Department of Air Quality Control. BC Expert Aleksandra Nestorovska Krsteska continued giving presentation about the legislation and air quality monitoring in the BC country.

MS experts Wolfgang Spangl gave five presentation about the topics EU legal requirements, monitoring, reporting and zoning on Monday 26th and 27th February:

- EU legal requirements and their transposition in Austrian legislation
- Monitoring – overview of EU legal requirements and the Austrian monitoring network
- Reporting – examples and requirements for rulebook
- Reporting and information of the public
- Zoning in Austria and in various EU countries

MS Expert Marina Fröhlich gave a presentation about Requirements of the EU legislation in the field of Air Quality and also gave a short introduction to the FEA's air quality laboratory. After her presentation she presented the air quality laboratory:

- PM10 measurements - type of filters, conditions, methods and frequency
- Equipments used in automatic stations and calibration laboratory
- High volume samplers which have been located in Austrian schools
- Transport cases for gas bottles and equipments to transport them from the monitoring stations to the laboratory for maintenance of the instruments

On 27th and 28th February MS experts Christian Nagl and Lorenz Moosmann gave three presentations about plans and programmes:

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- Plans and programmes
- Assessment of Plans and Programmes reported under 1996/62/EC – in-depth analysis of selected P&P
- Health Impact Assessesment; plans and programmes from the European perspectives

There were active and fruitful discussions during the presentations and at the end of the sessions.

MS experts gave the following Austrian legislation (in German) to the BC experts in the written form during the study tour and sent them by email to RTA Tiina Harju in order to make possible to delivery them for all BC experts, MS experts from Finland involved in the component 1 – Guidelines and secondary legislation and even for translation in case there would be a possibility to finance the translation cost by the Ministry of Environment and Physical Planning:

1. Air quality protection law (Immissionsschutzgesetz-Luft)
2. Ozone law (Ozongesetz)
3. Ordinance on the air quality monitoring concept (Messkonzept-Verordnung)
4. Update 2006 of the Ordinance on the air quality monitoring concept (Messkonzept-Verordnung)
5. Ordinance on the ozone monitoring concept (Ozon-Messkonzept-Verordnung)

The rest of the documentations given by Austrian experts to the BC experts were as printouts:

6. Mounthly report of Unweltbundesamt monitoring stations
7. Yearly report on data from Unweltbundesamt monitoring stations
8. Yearly report on data from all Austrian monitoring stations
9. Vienna program on air quality
10. Programme on air quality imrovement of federal provincy Steiermark
11. Results on the questionnaire 2004/461/EC
12. Guideline on measurement of Dust precipitation
13. Ordinance of Federal Agency Steiermark for emission from PM10
14. Detailed Twinning Light Project Fiche-Malta
15. Detailed Twinning Light Project Fiche-Bulgaria
16. Twinning Light Project Fiche(Cyprus) -Implementation of the directives on air quality assessment and management with main focus on quality control and quality assurance

Other presentation were given Robert Höller about the “EURAD” air quality modelling within the PROMOTE project - Regional/local air

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quality forecast service. The Macedonia has been chosen to be modelled in this project without costs. The IT expert Günter Pfaff presented IT solutions for the environment – Information of the public: IT services. All experts who gave presentations were from FEA. The participants of the study tour had also a possibility to meet and discuss with the managing director Georg Rebeling who emphasized the FEA's interest to be involved in twinning projects.

On the request of BS expert a meeting with Johannes Mayer, head of unit International cooperation was managed on 28th February. Mr. Johannes Mayer stressed their support for the Ministry of Environment and Physical Planning regarding EEA activities, and future EEA membership, and invite BS experts to send a paper with their needs in the area of environment for further possibilities for cooperation in a frame of other projects.

The study tour was finished by visiting in the waste incineration plant called Spittelau which is located in the city centre of Vienna. After a short video about the function of the incineration plant the high technology (highly effective electrostatic precipitator, SCR-DeNOx) and the process of incineration plant which burn municipal solid wastes was presented to the visitors.

II COMPONENT – Emission Inventories

MS expert Kristina Saarinen from 15.10.2006 to 20.10.2006

- Activity No. 2.1.1 Identify and appoint stakeholders, 2 working days
  Marijonka Vilarova from MEIC in MEPP was involved in the activity.
- Activity No. 2.1.2. Support to construct the database and its content for preparation of the reports to relevant international bodies, 2 working days
  Marijonka Vilarova and Aneta Stefanovska from MEIC in MEPP were involved in the activity.
- Activity No. 2.2.1 Identify data gaps for compliance with EU-based national air emission system, 1 working day
  Marijonka Vilarova, Aneta Stefanovska and Aleksandra Nestorovska Krsteska from MEIC in MEPP were involved in the activity.

III COMPONENT - Preliminary Air Quality Assessment

MS expert Harri Pietarila from 16th January to 19th January 2007

- Activity No. 3.1.1 Analysis and review the outputs of CARDS 2004 project, 4 working days

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Svetlana Gjorgjeva, Aneta Stefanovska, Aleksandra N. Krsteska, Marijonka Vilarova and Ljupco Grozdanovski from MEIC in MEPP

The third workshop on Air Quality of the CARDS 2004 project in Skopje Fair was held 17 January 2006. Harri Pietarila gave a presentation about the objectives and activities of twinning project and participated in the discussion of proposed zones and agglomerations. There were over 60 participants from MEPP, industry, municipalities, different institutions, NGO's in the workshop.

The participants in the Air Quality Workshop who are involved in the twinning project were:
BC PL Svetlana Gjorgjeva, Former RTA Counterpart Aneta Stefanovska (left for maternity leave 8 March 2006) , RTA Counterpart Aleksandra Nestorovska Krsteska, BC Expert Marijonka Vilarova, BC Expert Igor Atanasov, BC Expert Ljupco Grozdanovski, German Expert Joachim Seewoester from MEIC in MEPP, BC Expert Liljana Talevska Todovska from HMA, MS Expert Harri Pietarila, RTA Tiina Harju and RTA Assistant Martina Toceva from FMI.

IV COMPONENT – Air Quality Measurements and Laboratory Work

No mission in the reporting period.

- Activity No. 4.7.1 Preparation a draft specification and priority list of investments (software, laboratory equipment and additional equipment for air quality monitoring stations and mobile emission laboratory). The list was prepared with the consultation of MS for items 4.1.1, 4.1.2, 4.4.1, 4.4.2, 4.4.3, 4.5.1, 4.5.2 and 4.6.1.

  MS Experts together with RTA Tiina Harju has continued the discussion with the BC experts concerning the specification list of the needed investments. The specifications have been completed. MS expert Jari Walden has given final specifications concerning these issues. MS expert Hannele Hakola has prepared the specifications concerning needed investments for PAH analysis. The final specifications concerning a mobile emission laboratory has been given MS expert Harri Puustinen and MS expert Tuula Vahlman. MS expert Timo Salmi and MS expert Helena Saari have further developed the specifications of software prepared by the CARDS 2004 project.

  Some specifications of needed investments found out in the CARDS 2004 project were added to the specification list made by the twinning project. The BC counterpart wanted to get four ozone calibrators to the monitoring stations from the same supplier as other instruments has

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been provided to the monitoring stations. Therefore the investment procedure has not yet reached the level of tender announcement. The documents are on the administration of the EAR to be waited for approving of BC Counterpart's request.

The list of investments:

LOT1 **Development and Implementation of Software Application to Support the Air Environmental Topic Area**		
Description of Item	Estimated cost (€)	Justification
1) The first phase of Development of a software tool.	6.000	The software tool is needed for automatically gathering, analysing, validating and reporting data from the automated stations and from other institutions that produce air quality data.
Subtotal	6.000	
LOT 2 **Instrument Specifications for the Investments for the Reference Laboratory and Monitoring Stations**		
Description of Item	Estimated cost (€)	Justification
Calibration laboratory		
1) The national ozone photometer for the calibration of the ozone analysers.	11.000	The national ozone photometer is used for the calibration of the ozone analysers at the measurement stations
2) Field calibrator for calibration of gas analyzers at the measurement station equipped	15.000	The calibrator is used for multipoint calibration of the gas analyzers and to perform the converter

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with GPT-method.		efficiency of the NO_x analyzers by gas phase titration method. The field calibrator is calibrated at the reference laboratory against the static injection method. This ensures that the traceability of the field measurements is traceable to reference laboratory and to SI-unit as required by the CEN standards.
3) Certified reference gas standard (CRM) of CO at low concentration (appr. 40 ppm with uncertainty of 1 %). Suppliers are from the metrological laboratory (e.g. National Physical laboratory (NPL), UK or Nederlands Meetinstitute (NMi) The Netherlands).	3.000	The CRM is used for the cross check of the performance characteristic of the static injection method.
4) Pressure regulators for the CRM (2 unit two-stage regulators)	2.000	Pressure regulators are used in the gas cylinders for the CRM.
5) Flow meter	10.000	Flow meter is used for calibration of the mass flow controllers of the existing gas dilution devices both at the laboratory, at the measurement station, and at the mobile emission laboratory. Flow meter is also used to calibrate the flow of the sample flows of the PM devices (continuous and samplers). The temperature and the pressure of the gas flow is needed to measure on line. At least nitrogen, synthetic air and the clean air should

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		be possible to use as reference gases.
6) Certified reference gas standard (CRM) of BTEX at high concentration (appr. 1 ppm with uncertainty of 1 %).	3.000	The CRM is used for the calibration of the BTEX analyzers.
7) Four pieces of Zero (reference) Air Generator and Calibrator	48.000	Calibration of analyzers and zero and span check.
Subtotal	92.000	

LOT 3

Instrument Specifications for the Investments for PAH (Polycyclic Aromatic Hydrocarbon) Analyses and Mobile Emission Laboratory

Description of Item	Estimated cost (€)	Justification
Chemical laboratory (Equipment needed for PAH analysis)		
1) Soxhlet extractor (30 ml) with round-bottomed flask (100 ml) 2 pieces, á 150 €	300	Soxhlet extractor is used for extraction of air quality samples for PAH analysis.
2) Electric bath for 100 ml flasks, 2 pieces, á 600 €	1.200	Electric bath is used for extraction of air quality samples for PAH analysis
3) GC-column, type HP-5MS, (5%)-difenyl-(95%)-dimethylpolysiloxane, length 30 m, inner diameter 0,25 mm, film thickness 0,25 µm,	600	GC-column is used in the GC for PAH analyses in the air quality samples.
4) Purification system for the carrier gas	150	Purification system is used for PAH analyses in the air quality samples.
5) Reference material NIST1649a	600	Reference material is used for quality assurance of PAH analyses in the air

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		quality samples.
6) Deuterated internal PAH standard	100	Deuterated internal PAH standard is used for PAH analyses in the air quality samples.
7) External PAH standard mixture	100	External PAH standard mixture is used for PAH analyses in the air quality samples
8) Sample vials for GC autosampler, 100 pieces	140	Sample vials are used for PAH analyses in the air quality samples.
9) PTFE filters for filtering the liquid sample, 100 pieces	200	Filters are used for preparation of PAH analyses in the air quality samples.
10) Disposable gloves, 100 pieces	60	Disposable gloves are used for protection of the personnel during preparation of the samples and PAH analysis in the air quality samples.
11) Solvent resistant gloves, 100 pieces	60	Solvent resistant gloves are used for protection of the personnel during preparation of the samples and PAH analysis in the air quality samples.
12) Blunt tweezers, 2 pieces, á 10 €	20	Blunt tweezers are used for PAH analyses in the air quality samples.
13) UV lamp	40	UV lamp is used for checking the laboratory benchtops and equipment for contamination.

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14) Pasteur pipettes, 250 pieces	20	Pasteur pipettes is used for PAH analyses in the air quality samples.
15) Teflon membrane filters, type 3.0 µm FS, 100 pieces, for sampling	600	Teflon filters are used for sampling of air quality samples for PAH analyses.
Mobile emission laboratory		
1) New control and condensation units for particulate emission measurement equipment	14.000	New control and condensation units are needed to measure particulates emission in power or industrial plants.
2) O_2-analyser based on electrochemical cell	3.000	O_2-analyser is used for measuring O_2 concentration in the combustion gas/ exhaust gas.
3) Miscellaneous • Teflon tube, inner diameter 6 mm, 100 m • Regulator valves, inner diameter 6 mm, 4 pieces • Tube fittings and adapter fittings, stainless steel - straight unions, inner diameter 6 mm, 10 pieces - elbows, inner diameter 6 mm, 10 pieces - tees, inner diameter 6 mm, 10 pieces - extra female nuts for 6 mm connections, 20 pieces - extra ferrule sets for 6 mm connections, 20 pieces	3.000	Teflon tube, regulator valves, tube fittings and adapter fittings are used for connecting instruments to sampling probes in emission measurements. A A rotameter is used to measure gas flow in emission measurements.

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• Rotameter - stainless steel - connections 6 mm - nominal flow 0 – 10 l/min		
Subtotal	24.190	
Total	**122.190**	

V COMPONENT – Dispersion modelling

Risto Varjoranta from 19.2.2006 to 23.2.2006

- Activity 5.2.1. Investigate available meteorological data from HMA and Skopje airport and develop methods to provide meteorological data for dispersion modelling, 3 working days
  Igor Paunovski and Driton Idrizi from MEIC in MEPP
- Partly Activity No. 5.1.1. Specification and procurement of an appropriate system for AQ modelling, 2 working days
  Igor Paunovski, Driton Idrizi and Aneta Stefanovska from MEIC in MEPP

  During the mission in the meeting in HMA the representatives of HMA told that observation data is recorded only manually on paper documents. To get the needed data for dispersion modelling on electronic form will need a lot of time consuming human work and it is outside the routine tasks of HMA. HMA gave a cost estimate for one year data in one station. After the mission MEPP and HMA has started the negotiation to make an agreement changing/receiving data without paying. The negotiation is still in progress.

The BC experts' study tour report and the MS experts' mission reports are in the annexes to this report.

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2D. TIMING AND DELAYS

Adherence to time schedule

The time schedule for the activities taken form the working plan is shown in a following table. All the activities which have 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. A study tour to Austria (Activity No. 1.2.2) has changed by a side letter from October 2006 to February 2007.There is one activity (No. 2.1.1) which has been continued in the reporting period but already started and planned to do in the first reporting period. Another activity (No. 2.2.2.) has already started though it is planned to do in the third reporting period. Also a postponement of an activity 4.6.2. Check the results of improvements has been done by side letter from February 2007 to September 2007. The investment procedure for the mobile laboratory is still ongoing with the EAR.

There is no delayed more than three months.

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Table 2. A time schedule in the reporting period.

CARDS Twinning Project Air Quality Improvement

	December, Year 2006					January, Year 2007					February, Year 2007				
	IV					V					VI				
Reporting															
Reports															▮
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…											x	x	x	x	x
1.2.3. Drafted Guidelines on establishing agglomeration and non-agglomeration zones															
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…						x	x	x	x	x					
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						x	x	x	x	x					
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…															
4.3.1. 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											Postponed to 9/2007				
4.6.3. Training course (part 1) on emission measurements; basic principles											- no investments yet				
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…											x	x	x	x	x
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															
5.4.1. Use of dispersion modelling for air quality assessment in couple of real cases															

▮ **Activities planned**
x **Activities planned and done**
○ **Activities started in time and now continued**
Activities not planned but partly done

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Recuperation of delays

A mission concerning an activity number 4.6.2. Check the results of improvements has been postponed from February 2007 to September 2007. There is no improvement in the mobile laboratory yet though the investment procedure is still ongoing with the EAR.

A time schedule for the following reporting period (3 months) is shown in the next table. A study tour to Finland concerning a sharing of EU MS country's experience and training on air quality monitoring (activity number 4.1.3) has postponed from March to August 2007. Another study tour to Finland covering GC analysis for air samples (activity number 4.5.3.) has also postponed from March to May 2007. An activity number 4.6.3. Training course (part 1) on emission measurements; basic principles has been necessary to postpone from April to December 2007 due to a lack of needed instruments in the mobile laboratory (same reason as above for the postponement of the activity 4.6.2.). All changes have been done by the side letter.

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

CARDS Twinning Project Air Quality Improvement

Reporting

Reports

	March, Year 2007	April, Year 2007	May, Year 2007
	VI	VII	IX
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			
1.3.1. 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	Study Tour in Finland postponed to 8/2007		
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…			
4.3.1. 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…	GC Study Tour in Finland postponed to 5/2007		
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		Mission postponed to 12/2007	
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			
5.3.1. Training course on dispersion modelling and demonstrate methods for ….			
5.3.2. Develop training course materials		Partly activity postponed to 6/2007	
5.4.1. Use of dispersion modelling for air quality assessment in couple of real cases			

Activities planned Activities postponed by a side letter

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2E. ASSESSMENT Overall

Assessment of progress

The co-operation between the beneficiary country and member state has been good. The started COWI Progress Monitoring Project, financed by the EU Commission and deadlines (deadlines were not only for the air quality), has drawn heavily on MEPP resources, which had hampered mildly the participations of some BC experts in the Twinning project. More problematic period will be March in which there are lot of missions in the twinning project and many other activities for the BC experts.

Issues

Several meetings have been held in December to solve the lack of human resource after termination of the contracts:

- Meetings between State Secretary Dejan Panovski and RTA Tiina Harju
- 13 December 2006 a meeting between State Secretary Dejan Panovski , MS PL Harri Pietarila and RTA Tiina Harju
- 14 December 2006 a meeting between MEPP, EAR and FMI, SEA as an observer

The last meeting was planned to be held in the premises of the EAR but the meeting place was changed one day before to the Minister of the Environment Imer Aliu's room to make a possible for the Minister of the Environment Imer Aliu to take part in the meeting. The participants in the meeting were:

1. Minister of Environment Imer Aliu, MEPP
2. State Secretary Dejan Panovski, MEPP
3. Head of Centre Luigi Sandrin, EAR
4. Twinning Coordinator Piet Blondé, EAR
5. Project Manager Ivan Borisavljevic, EAR
6. Task Manager Dimitar Malinovski, EAR
7. MS PL Harri Pietarila, FMI
8. RTA Tiina Harju, FMI
9. BC PL Svetlana Gjorgjeva, MEPP
10. Head of Unit for Coordination of EU Funds Utilisation and Deputy National Contact Point for Twinning Meri Georgievska, SEA
11. State Councillor and National Contact Point for Twinning Dragan Tilev, SEA

The result of the meeting was that the Minister of the Environment Imer Aliu

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and the state secretary Dejan Panovski promised to employ to the MEPP six new employees to the twinning project from Monday 18 December 2006.

The issue is solved by employing six new persons to MEPP 18 December 2006. They have one year contract but the Ministry plans to keep those employees after the closure of the winning project. A seventh new person named to the twinning project already worked in the Ministry of Environment and Physical Planning :

1. Aleksandra N. Krsteska, Leader of Component 4, involved in all Components (also named to RTA counterpart since the former RTA counterpart left for maternity leave 8 March 2006)
2. Margareta Cvetkovska, Component 4 (QA/QC) and Component 5
3. Ljupco Grozdanovski, Component 4 (Calibration Laboratory and Monitoring stations) and Component 3
4. Arminda Rushiti, Component 1 and Component 4 (QA/QC)
5. Driton Idrizi, Component 5
6. Suat Ibishi, Component 4 (GC)
7. Valerij Penev, Component 4 (Mobile Laboratory)

Aleksandra Nestorovska Krsteska and Ljupco Grozdanovski were involved in the twinning project in the same tasks before the termination of the contracts on Friday 6 October 2006. Margareta Cvetkovska and Valerij Penev were employed in MEPP before the termination of the contracts but with different duties and neither involved in the twinning projects.

Two other new employees Arminda Rushiti and Suat Ibishi came directly from the university and Driton Idrizi had a half year experience on the field of his task (IT, Component 5. Dispersion modelling).

There is still a lack of human resources to fulfil all responsibilities on air quality field. New BC experts would be needed in the future to share some of the BC experts' tasks, e.g. more human resources would be needed for emission inventory (Component 2).

I COMPONENT – Guidelines and Secondary Legislation

A fruitful and educational study tour was held in the FEA in Austria concerning EU legal requirements and transposition of the EU Air Quality Framework directives and daughter directives, especially Monitoring and Reporting, National Plans and Programs and Agglomerations and Zones.

II COMPONENT – Emission Inventories

Limited and not comprehensive material or information on the emission

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inventories and existing data was provided by the BC in the starting phase of the project. The MS expert, however, received additional material from the EEA and the UNDP through personal contacts. Putting this information together with the interviews of the BC experts to get a holistic picture of the current situation took two whole working days. The BC experts were helpful in providing information and contacts when these were asked for.
Progress was made in clarifying the current situation on Macedonian air emission inventories and national expertise available in the different areas of air emission inventories. As it was not possible to interview those who actually had made the calculations, the BC experts need to communicate with the national experts between the missions to explore the current situation with activity data and additional needs for it, so that the work can continue with the methodological issues during the next mission.
To get the maximum benefit out of the twinning project it is necessary that the BC experts appoint designated national experts to be educated in their specific areas of expertise. In case there will be only one expert with a permanent contract and another expert with several other tasks not related to the inventory work the usefulness of all training can be questioned. To ensure good progress and continuity, the resources should be ten to twenty instead of 1-2 persons.

III COMPONENT – Preliminary Air Quality Assessment

The overall assessment of the methods and data used in the CARDS 2004 preliminary assessment was carried out as planned. There are clear possibilities to improve the methodology nevertheless it is challenging task because the amount and availability of needed data and human and financial resources is limited.

No problems with management or co-operation. The co-operation between MS and BC expert has been extremely good. The co-operation with CARDS 2004 and 2005 projects has been established and co-operation is good. Major part of the CARDS 2004 data and results has been delivered and analysed.

The improvement plan of preliminary assessment is depending on the finance available for additional indicative measurements to support the assessment. The detailed plan and timetable for the measurements can be done after the amount of money for measurements is clear, maybe during March 2007.

The time table of future missions of preliminary assessment depends on progress of other components in the project, mainly the progress of component 2 emission inventories and component 5 dispersion modelling since more detailed emission data and dispersion modelling is needed to further improve the assessment.

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V COMPONENT – Dispersion Modelling

No problems in the management of the mission or in the co-operation the MS and BC expert. The co-operation between the MEPP and HMA on the concrete level were discussed during this visit. The discussion shall continue in the near future between the two institutes. As meteorological data will be needed for the dispersion modelling purposes quite regularly also in the future working co-operation and routines to transmit needed data should be established.

Recommendations

I COMPONENT – Guidelines and Secondary Legislation

Good continued cooperation with the COWI projects needs to be ensured and adequate resources by the MEPP for the Twinning and other projects. BC expert Biljana Stavrevska should be engaged in the missions and activities completely before BC Component leader Tanja Paunovska leave for maternity leave in June 2006.

II COMPONENT – Emission Inventories

Priorities for recommended improvements (Activity No. 2.2.2.)

Six major recommendations, explained in details below the list, are given below to enhance and improve the current work on air emission inventories in Macedonia:

1) Share information on national level
2) Merge inventories and improve cooperation between experts
3) Appoint designated experts, especially an IT expert → BC expert Igor Paunovski is nominated
4) Build a central database for all inventory work
5) Use key sources to prioritise development of the methodologies
6) Establish a Macedonian national system for the emission inventories

The activities will be continued in the next mission in spring 2007. The content of the missions might have to be revised according to BC resources for the work.

Emission Inventory – Transport

The discussion concerning emission inventory on transport has continued.

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The following things should be done by the next mission to be taken place in April 2007:

- Funding for the Copert model work should be resolved
- Organisation and person(s) involved for the use of Copert model and gathering of the information needed for it should be chosen
- Analysis of the vehicle data and gathering of other input data for the Copert model should be ongoing
- Transport expert

III COMPONENT – Preliminary Air Quality Assessment

Based on the review of the results of the CARDS 2004 project following recommendations to improve preliminary assessment in R. Macedonia is given:

- Representativeness of the stations should be estimated to make better estimates how and where can the results of individual measuring site be extracted. For this metadata of the stations should be checked and updated (location, siting, nearest emission sources, distance from nearest streets and traffic fleet, etc.). Review of the new document - meta data of automatic stations prepared by CIM expert.
- Data from the year 2006 should be included in the assessment to have longer time series in the assessment.
- All results from additional measurements should be included in the assessment (measurements of local authorities, industry etc.)
- In the CARDS 2004 assessment only yearly averages and exceeding of assessment thresholds were calculated. Also the percentages corresponding to the allowed exceeding should be calculated because time coverage of the data is quite poor.
- CARDS 2004 project presented only histograms of measured concentrations. Also different kind of statistical graphs should be prepared to have better understanding of the air quality (monthly, seasonal and daily variation; results classified by station type, etc)
- Presentation of results by stations on a map
- Additional measurement campaigns (lead, benzene, heavy metals, PAH; regions where is no data available - Southeast etc.): indicative measurements by mobile station, using passive sampling
- Using dispersion modelling (largest point sources, traffic (Skopje & major roads), wood burning) – representative meteorological and emission data is needed
- Using available results from long range dispersion modelling systems in Europe (EMEP, SILAM etc.)
- Using GIS tools in analysis and visualisation
  - emission and other activity information (stationary sources, traffic, wood burning, population density)

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- measurements station (results classified by pollutant measured and station type and location)
- elevation
- municipalities and zones classified by different concentration levels
- presentation of dispersion modelling results
- introducing new interpolation methods for estimating concentrations levels

IV COMPONENT – Air Quality Measurements and Laboratory Work

Mobile Emission Laboratory

It would be important that a new named person could concentrate completely on the mobile emission laboratory and emission measurement.

V COMPONENT – Dispersion Modelling

The modernization and automation of the observation network including the upper air soundings, data acquisition, easily accessible database system and the data quality control would be highly recommended to strengthen the capabilities of the HMA in the future.

The quality of meteorological data available from the air quality monitoring stations of the MEPP could be better if it would be possible to arrange the quality assurance including the maintenance and calibration of the equipment and the validation of the data on more regular bases.

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3 – EXPENDITURES

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

Section 3: Expenditures 1st Dec 2006-28th Feb 2007

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

Travels (4 Missions, second quarter year period, including study tour (5 persons) in Vienna, Austria)

Expert fees	4 750,00 €	
Twinning Management costs	7 125,00 €	
Per diems	7 366,00 €	
Air tickets	3 825,22 €	
Taxi fares (22:00-7:00)	155,45 €	
Visiability	12,25 €	
		Actual travel costs 1st Sep 06-28th Feb 07
Total	*23 233,92 €*	*110 717,91 €*

RTA remuneration and allowances

	Actual costs 1st Dec 06-28th Feb 07	Actual costs 1st Sep 06 - 28th Feb 07 The whole project	Original budget The whole project
Tiina Harju			
1. Salary+labour costs	17 742,00 €	35 484,00 €	106 452,00 €
Remaining budget			*70 968,00 €*
2. RTA Allowances	14 142,61 €	33 300,84 €	100 288,00 €
Remaining budget			*66 987,16 €*
4. RTA Assistant salary	1 386,40 €	2 840,95 €	9 000,00 €
Remaining budget			*6 159,05 €*
Total	33 271,01 €	71 625,79 €	215 740,00 €
Remaining budget			*144 114,21 €*

TOTAL COSTS / second quarter year period (travels and RTA costs) 56 504,93 €

TRAVELS: COSTS BY ACTIONS 1ST SEB 2006 – 28TH FEB 2007:

Amount paid in Euro	**Original budget, the whole project**	**Remain to the next periods or other actions**
3. RTA training		
1 092,68 €	1323,00 €	230,32 €
5. Project Preparation		
13 741,56 €	16 668,00 €	2 926,44 €

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Amount paid in Euro	Original budget, the whole project	Remain to the next periods or other
Project co-ordination (Kick off, 2nd steering committee meeting, visiability costs)		
18 758,74 €	*54 382,00 €*	*35 623,26 €*
6. Project Activities		
1.1.1. Review current secondary legislation, and preparation of Table of concordance		
5 919,65	6 620,00	700,35 €
1.1.2. Analysis of the needed sub legislation for further implementation of daughter directives		
5 505,00	5 560,00	55,00 €
***1.2.2.** Drafting of sub legislation*		
6 643,95	*23 175,00*	*16 531,05*
2.1.1. Identify and appoint stakeholders		
6 503,80	*7 070,00*	*566,20 €*
2.1.2. Support to construct the database and its content for preparation of the reports		
6 948,05	9 228,00	2 279,95 €
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*		
1 042,00	*3 356,00*	*2 314,00 €*
2.3.2. Support to develop collection of activity data		
5 255,00	10 540,00	5 285 €
3.1.1. Analyses and review of the outcomes of CARDS 2004 project		
3 520,13	*4 730,00*	*1209,87*
4.1.1. Review of the present situation at the calibration laboratory		
2 009,90	2 294,00	284,10 €
4.1.2. Preparing a Plan for Improvement of calibration laboratory		
2 403,00	2 436,00	33,00 €
4.4.1. Review of present situation for data management system		
2 019,18	2 294,00	274,82 €
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 €

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

1 977,07	2 294,00	316,93 €

4.5.2. Preparing a Plan for improvement of chemical laboratory

5 180,51	7 166,00	1 985,49 €

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

3 560,98	3 856,00	295,02 €
Amount paid in Euro periods or	**Original budget, the whole project**	**Remain to the next other actions**

4.7.1. Draft specification and priority list of investments

4 505,00	6 996,00	2 491,00 €

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 €*

5.3.1. Training course on dispersion modelling and methods for validation and for scenario making

801,00	4 730,00	3 929,00 €

5.3.2. Develop training course materials

801,00	4 730,00	3 929,00 €

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

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
Activity no. [Project co-ordination - 2nd steering committee meeting]										
Mission of expert **[Harri Pietarila]**	12/12/2006-15/12/2006			**ARRIVAL 12nd Dec 2006 13:25 in Skopje AND DEPARTURE 15th Dec 2006 14:00 from Skopje]**						
Fees	12/12/2006-15/12/2006	70002	31.1.2007	**[3 X 250,00]**			750,00			
Flat rate compensation	12/12/2006-15/12/2006	55060	28.2.2007	**1,5*750,00**			1 125,00			
Per diem	12/12/2006-15/12/2006	29056, 24546	31.12.2006	**[3]** x 176,00			528,00			
Air ticket **[PLACE OF DEPARTURE Helsinki -DESTINATION Skopje]**	12/12/2006-15/12/2006	35006	15.12.2006	**[2. CLASS]**			359,97			
Local travel to location				**Taxi**						
Total							**2 762,97**			
Activity no. [Comp 3 1st mission: 3.1.1. Analyses and review of the outcomes of CARDS 2004 project]	15/01/2006-19/01/2006									
Mission of expert **Harri Pietarila**	15/01/2006-19/01/2006			**ARRIVAL 15th Jan 2007 14:35 in Skopje AND DEPARTURE 19th Jan 2007 15:20 from Skopje]**						
Fees	15/01/2006-19/01/2006	70003	15.2.2007	**[4 X 250,00]**			1 000,00			
Flat rate compensation	15/01/2006-19/01/2006	55060	28.2.2007	**1,5*1000,00**			1 500,00			
Per diem	15/01/2006-19/01/2006	29031	25.1.2007	**[4]** x 167,00			668,00			
Helsinki - Skopje Air ticket	15/01/2006-19/01/2006	55015	31.1.2007	**[2. CLASS]**			329,54			
Local travel (Taxi) to location Helsinki Airport - home	19.1.2007	11402	15.2.2007	**Taxi**			22,59			
Total							**3 520,13**			
Activity no. [2.1.1, 2.2.1., 2.2.2.]										
Mission of expert **[Kristiina Saarinen]**	22/01/2006-26/01/2006			**ARRIVAL 21st Jan 2007 17.00 in Skopje AND DEPARTURE 26th Jan 2007 13:20 from Skopje]**						
Fees	22/01/2006-26/01/2006	11702	27.2.2007	**[5 X 350,00]**			1 750,00			
Flat rate compensation	22/01/2006-26/01/2006	11702, IL 55060	27.2.2007	**1,5*1750,00**			2 625,00			
Per diem	22/01/2006-26/01/2006	11702	27.2.2007	**[5]** x 167,00			835,00			
Air ticket **[PLACE OF DEPARTURE Helsinki -DESTINATION Skopje]**	22/01/2006-26/01/2006	11702	27.2.2007	**[2. CLASS]**			536,32			
Local travel to location Home-Airport	21.1.2007	11702	27.2.2007				51,2			
Local travel to location Airport-Home	27.1.2007	11702	27.2.2007				48,33			
Total							5 845,85			

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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	**Activity no. [5.2.1. and 5.1.1.]**										
	Mission of expert **[Varjoranta]**	19/02/2007-23/02/2007			**ARRIVAL 19th February 2007 13:00 in Skopje AND DEPARTURE 23rd February 2007 16:20 from Skopje]**						
	Fees	19/02/2007-23/02/2007	70004	28.2.2007	**[5 X 250,00]**			1 250,00			
	Flat rate compensation	19/02/2007-23/02/2007	55060	28.2.2007	**1,5 x 1250,00**			1 875,00			
	Per diem	19/02/2007-23/02/2007	29038	26.2.2007	**[5]** x 167,00			835,00			
	Air ticket **[PLACE OF DEPARTURE Helsinki -DESTINATION Skopje]**	19/02/2007-23/02/2007	55063	28.2.2007	**[2. CLASS]**			455,44			
	Local travel to location Hki Vantaa Airport-home		29038	26.2.2007	**Taxi**			33,33			
	Total							**4 448,77**			
xx	**Activity no. [1.Guidelines and secondary laws 1.2.2.Drafting of sub legislation]**	25/02/2007-1/3/2007									
	Study visit to [Vienna, Austria]	25/02/2007-1/3/2007			**ARRIVAL 25th Feb 2007 in Vienna AND DEPARTURE 1st March 2007 from Vienna]**						
	Per diem for participants	25/02/2007-1/3/2007	55041, 55042, 55043, 55044, 55045	26.2.2007	**[NO OF PARTICIPANTS: 5] x [NUMBER OF NIGHTS: 4] x [PER DIEM: 225,00]**			4 500,00			
	Air ticket [PLACE OF DEPARTURE: Skopje - DESTINATION: Vienna]	25/02/2007-1/3/2007	55056	28.2.2007	**[2. CLASS, 5 x 428,79 eur]**			2 143,95			
	Total							**6 643,95**			
xx	**Resident Twinning Adviser [Tiina Harju]**								(3 months)		
	Gross salary	31.12.06, 31.1.2007 and 28.2.2007	70024, 70002, 70004	31.12.06, 31.1.2007 and 28.2.2007	3 x **[MONTHLY SALARY 3553,20]**			10 659,60	10 659,60		
	Non wage labour costs	31.12.06, 31.1.2007 and 28.2.2007	70024, 70002, 70004 and 55060	31.12.06, 31.1.2007 and 28.2.2007	3 x 2025,80			6 077,40	6 077,40		
	6%of sal+non wage	28.2.2007	55060	28.2.2007	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**	29.12.2006, 31.1.2007, 23.2.2007	22.12.2006 29047, 31.1.2007 29033, 26.2.2007 29037	22.12.2006, 31.1.2007, 26.2.2007	22.12.06 477,30 €, 31.1.07 454,55 € and 26.2.07 454,55 €			1 386,40	1 500,00		
	Total							**1 386,40**	**1 500,00**		
xx	**Activity no. [5.Project Co-ordination Visiability costs]**	16.1.2007	29033	31.1.2007	Business cards for RTA (100) and RTA assistent (50)	750 MKD	61,3	**12,25**	**3 000,00**		

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Section 3: Expenditures

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xx	**Activity no. [Project co-ordination - 2nd steering committee meeting, Visiability costs]**										
	Mission of expert **[Harri Pietarila, and visiability costs]**	12/12/2006-15/12/2006									
	Fees				**[3 X 250,00]**			750,00			
	Flat rate compensation				**1,5*750,00**			1 125,00			
	Per diem				**[3]** x 176,00			528,00			
	Air ticket **[PLACE OF DEPARTURE Helsinki -DESTINATION Skopje]**				**[2. CLASS]**			359,97			
	Local travel to location				**Taxi**						
	Visiability costs				Business cards for RTA (100) and RTA assistent (50)	750 MKD	61,3	**12,25**	**3 000,00**		
	Total							**2 775,22**	**38 398,48**		
xx	**Activity no. [1.2.2. Drafting of sub legislation]**										
	Mission: Study visit to Vienna, Austria	25/2/2007-1/3/2007									
	Fees										
	Flat rate compensation										
	Per diem				**[5]** x 4 x 225,00 = 4500,00			4 500,00			
	Skopje - Vienna Air ticket				**[2. CLASS]**			2143,95			
	Total							**6 643,95**	**23 175,00**		
xx	**Activity no. [2.1.1. Identify and appoint stakeholders]**										
	Mission of expert **[Kristiina Saarinen]**	22/01/2006-26/01/2006									
	Fees				**[2 X 350,00]**			700,00			
	Flat rate compensation				**1,5*700,00**			1 050,00			
	Per diem				**[2]** x 167,00			334,00			
	Air ticket **[PLACE OF DEPARTURE Helsinki -DESTINATION Skopje]**				**[2. CLASS]**			536,32			
	Local travel to location Home-Airport	21.1.2007						51,2			
	Local travel to location Home-Airport	27.1.2007						48,33			
	Total							2 719,85	3 286,05		

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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. [2.2.1. Identify data gaps for compliance with EU-based national air emission system and reporting**										
	Mission of expert **[Kristiina Saarinen]**	22/1/2007-26/01/2007									
	Fees				**[2 X 350,00]**			700,00			
	Flat rate compensation				**1,5*700,00**			1 050,00			
	Per diem				**[2]** x 167,00			334,00			
	Air ticket **[PLACE OF DEPARTURE Helsinki -DESTINATION Skopje]**				**[2. CLASS]**						
	Local travel to location										
	Total							**2 084,00**	**1 323,00**		
xx	**Activity no. [2.2.2. Preparing a Draft list of priorities for recommended improvements]**										
	Mission of expert Kristiina Saarinen	22/1/2007-26/01/2007									
	Fees				**[1 X 350,00]**			350,00			
	Flat rate compensation				**1,5*350,00**			525,00			
	Per diem				**[1]** x 167,00			167,00			
	Helsinki - Skopje Air ticket				**[2. CLASS]**						
	Local travel (Taxi) to location Helsinki Airport - home										
	Total							**1 042,00**	**3 356,00**		
xx	**Activity no. [3.1.1. Analyses and review of the outcomes of CARDS 2004 project]**										
	Mission of expert Harri Pietarila	15/01/2007-19/01/2007									
	Fees				**[4 X 250,00]**			1 000,00			
	Flat rate compensation				**1,5*1000,00**			1 500,00			
	Per diem				**[4]** x 167,00			668,00			
	Air ticket **[PLACE OF DEPARTURE Helsinki -DESTINATION Skopje]**				**[2. CLASS]**			329,54			
	Local travel to location Home-Airport				**Taxi**			22,59			
	Local travel to location Home-Airport										
	Total							**3 820,13**	**4 730,00**		

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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. [5.1.1. Specification and procurement of an appropriate system for AQ modelling on local scale]**										
	Mission of expert **[Varjoranta]**	19/02/2007-23/02/2007									
	Fees				**[2 X 250,00]**			500,00			
	Flat rate compensation				**1,5 x 500,00**			750,00			
	Per diem				**[2]** x 167,00			334,00			
	Air ticket **[PLACE OF DEPARTURE Helsinki -DESTINATION Skopje]**										
	Local travel to location										
	Total							**1 584,00**	**2 738,06**		
xx	**Activity no. [5.2.1. Investigate meteorological data and develop methods to provide it for dispersion modelling]**										
	Mission of expert **[Varjoranta]**	19/02/2007-23/02/2007									
	Fees				**[3 X 250,00]**			750,00			
	Flat rate compensation				**1,5 x 750,00**			1 125,00			
	Per diem				**[3]** x 167,00			501,00			
	Air ticket **[PLACE OF DEPARTURE Helsinki -DESTINATION Skopje]**				**[2. CLASS]**			455,44			
	Local travel to location				**Taxi**			33,33			
	Total							**2 864,77**	**3 929,00**		
xx	**Resident Twinning Adviser [Tiina Harju]**								(3 months)		
	Gross salary	31.12.06, 31.1.2007 and 28.2.2007	70024, 70002, 70004	31.12.06, 31.1.2007 and 28.2.2007	3 x **[MONTHLY SALARY 3553,20]**			10 659,60	10 659,60		
	Non wage labour costs	31.12.06, 31.1.2007 and 28.2.2007	70024, 70002, 70004 and 55060	31.12.06, 31.1.2007 and 28.2.2007	3 x 2025,80			6 077,40	6 077,40		
	6%of sal+non wage	28.2.2007	55060	28.2.2007	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**	29.12.2006, 31.1.2007, 23.2.2007	22.12.2006 29047, 31.1.2007 29033, 26.2.2007 29037	22.12.2006, 31.1.2007, 26.2.2007	22.12.06 477,30 €, 31.1.07 454,55 € and 26.2.07 454,55 €			1 386,40	1 500,00		
	Total							**1 386,40**	**1 500,00**		

REPORT OF RTA COSTS IN DECEMBER 2006

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] 1.11.-31.12.2006	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	Quotation No.	Quotation date	[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
Taxi 7:00-22:00	15.12.2006		15.12.2006	Transfer from the airport, Helsinki- home, Espoo 43.2 € - VAT	40,00	
Accommodation	from [date] to [date] 1.12.2006-31.12.2006	No. of receipt FMI: 55405	Date of receipt FMI paid 18.12.2006.	[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					**4788,50**	

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REPORT OF RTA COSTS IN JANUARY 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] 1.1.-31.1.2007	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	Quotation No.	Quotation date	[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
Taxi 7:00-22:00	15.11.2006		15.11.2006	Transfer from the airport, Helsinki- home, Helsinki 43.6 €-VAT	40,37	
Taxi 7:00-22:00	20.1.2007		20.1.2007	Transfer from the airport, Helsinki- home, Espoo 43.4 €-VAT	40.19	
Accommodation	from [date] to [date] 1.1.2007-31.1.2007	No. of receipt FMI: 55007	Date of receipt FMI paid 31.1.2007.	[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					**4829,06**	

REPORT OF RTA COSTS IN FEBRUARY 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.-28.2.2007	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] 28 days* 93.5 €/day	2618.00	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	Quotation No.	Quotation date	[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
Taxi Flight 7:00-22:00	14.2.2007		14.2.2007	Transfer from the airport, Helsinki- home, Helsinki 44.0 €-VAT	40.74	
Taxi Flight 7:00-22:00	18.2.2007		18.2.2007	Transfer from the airport, Skopje-home, Skopje (1000 MKD/61,3 MKD/€ = 16,31 €)	16.31	
Accommodation	from [date] to [date] 1.2.2007-28.2.2007	No. of receipt FMI: 55036	Date of receipt FMI paid 9.2.2007	[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					**4525,05**	

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APPENDICES

- **Programme of study tour in Austria**
- **Modified programme for Wednesday 28th February 2007**
- **Plan and specification for procurement of new data management system**
- **MS Experts' mission reports**
- **Study tour report prepared by the BC Experts**
- **Presentations during study tour in Austria**

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ANNEX

STUDY TOUR PROGRAMME

Monday, February 26th			**Meeting room**
8:30 – 8:45	Welcome, Introduction to the study tour programme	Jürgen Schneider Lorenz Moosmann	IHG 3
8:45 – 9:15	Introduction to Umweltbundesamt and to the Department of Air Quality Control	Jürgen Schneider	IHG 3
9:15 – 10:00	Legislation and air quality monitoring in the Republic of Macedonia	Aleksandra Nestorovska Krsteska	IHG 3
10:00 – 10:15	Coffee break		
10:15 – 12:00	EU legal requirements and their transposition in Austrian legislation	Wolfgang Spangl	IHG 1
Lunch Break			
13:15 – 16:30	Monitoring – overview of EU legal requirements and the Austrian monitoring network	Wolfgang Spangl	IHG 3

Tuesday, February 27th			
8:30 – 10:15	Reporting - examples and requirements for rulebook	Wolfgang Spangl	IHG 3
10:15 – 10:30	Coffee break		
10:30 – 11:15	Meeting with the Managing Director of Umweltbundesamt	Georg Rebernig	Mr. Rebernig's office
11:15 – 11:45	Reporting and information of the public	Wolfgang Spangl	IHG 3
11:45 – 12:00	Information of the public: IT services	Günter Pfaff	IHG 3
Lunch Break			
13:15 –	PAH monitoring, quality control,	Marina Fröhlich	IHG 3 /

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15:00	introduction to and short visit of the air quality laboratory				laboratory
15:00 – 15:15	Coffee break				
15:15 – 16:30	Plans and programmes	Christian Nagl, Lorenz Moosmann	Extended visit of air quality laboratory	Marina Fröhlich, Andreas Wolf	IHG 1 / laboratory

Wednesday, February 28th			
8:30 – 10:00	Zoning in Austria and in various EU countries	Wolfgang Spangl	IHG 1
10:00 – 10:15	Information on "EURAD" air quality modelling within the PROMOTE project	Robert Höller	IHG 1
10:15 – 10:30	Coffee break		
10:30 – 12:00	Health Impact Assessment; plans and programmes from the European perspective	Lorenz Moosmann	IHG 1
Lunch Break			
13:15 – 15:00	Additional questions and final discussion	Wolfgang Spangl, Lorenz Moosmann	IHG 3
15:00 – 17:00	Visit of waste incineration plant at Vienna-Spittelau	Lorenz Moosmann	

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Participants

Marijonka Vilarova, Chief of the division Environmental Information System within the Ministry of Environment and Physical Planning

Aleksandra Nestorovska Krsteska, advisor within the Ministry of Environment and Physical Planning

Arminda Rushiti, junior associate within the Ministry of Environment and Physical Planning

Biljana Stavrevska, junior associate, division for approximation and international legislation, Sector for standardization and regulation, within the Ministry of Environment and Physical Planning

Mihail Kochubovski, Senior Environmental Health Officer, Chief of the Department of Waters and Communal Hygiene Republic Institute for Health Protection

Tiina Harju, Resident Twinning Advisor

Georg Rebernig, Managing Director of Umweltbundesamt

Jürgen Schneider, Program Director Economy & Impact, Umweltbundesamt

Marina Fröhlich, Deputy Head of the Department of Air Quality Control, Umweltbundesamt

Wolfgang Spangl, Department of Air Quality Control, Umweltbundesamt

Lorenz Moosmann, Department of Air Quality Control, Umweltbundesamt

Christian Nagl, Department of Air Quality Control, Umweltbundesamt

Andreas Wolf, Department of Air Quality Control, Umweltbundesamt

Günther Pfaff, IT and Data Management, Umweltbundesamt

Robert Höller, Department of Nature Conservation, Umweltbundesamt

Area map

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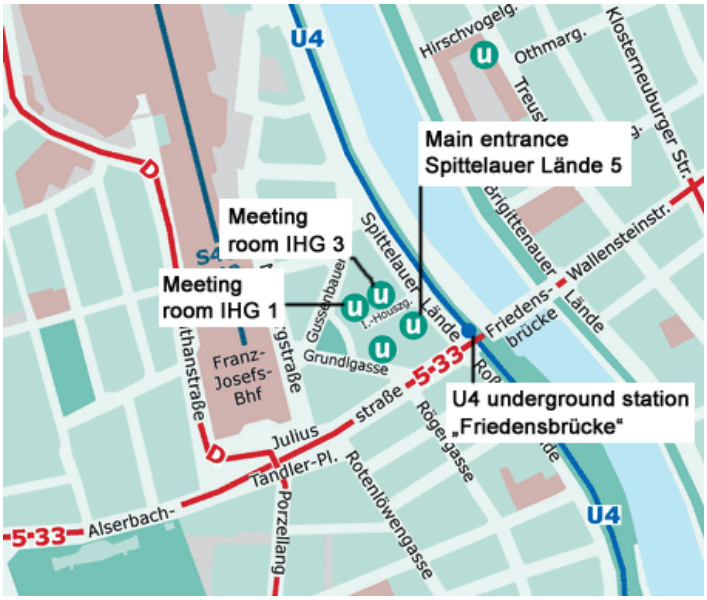

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И ПРОСТОРНО ПЛАНИРАЊЕ

Today‘s Programme

9:00 – 10:00	Discussion/Questions Plans and Programmes from the European perspective	Lorenz Moosmann	IHG 1
10:00 – 10:15	Information on “EURAD” air quality modelling within the PROMOTE project	Robert Höller	IHG 1
10:15 – 10:30	Coffee break		
10:30 – 11:15 11:15 – 11:30 11:30 – 12:00	Health Impact Assessment Online data check PAH monitoring techniques	Lorenz Moosmann Ingrid Garo-Stach	IHG 1
Lunch Break			
13:30 – 14:00 14:00 – 15:00	Further cooperation Final discussion: Mission etc.	Johannes Mayer Lorenz Moosmann	IHG 3
15:00 – 17:00	Visit of waste incineration plant at Vienna-Spittelau	Lorenz Moosmann	

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ANNEX

Twinning project – Makedonia

Project Title: Air Quality Improvement

Timo Salmi and Helena Saari

Date: 15th January 2007

Activity 4.4.3 Plan and specification for procurement of new data management system

Here are specifications on a quite common level for the air quality management system. This is not complete specification but what we were able to produce until now. For some specifications more information about national reporting requirements or common data system plans are needed.

1 Introduction

2 Description of the current monitoring network

3 Data acquisition

3.1 Data acquisition from automatic stations

Current data acquisition software of automatic stations is ENVItech version 8.1 (http://www.envitech-bohemia.cz/eng/page.php?p=1). In the central database 10 min raw data are stored in Envibase 2.1 files.

The content of specification depends on weather the data acquisition system from automatic stations will be renewed or kept.

3.2 Data import of manual measurements

3.3 Import of meteorological data

Import of meteorological hourly data from external sources, like from the national climate database, should be possible, if all the needed data are not monitored in the air quality stations. The most commonly needed parameters are ambient temperature and pressure, wind speed and direction, relative humidity and amount of precipitation. These data are needed in data analysis. Temperature and pressure are needed in

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calculating the particle concentrations into ambient conditions, if this correction is not included in the software of monitoring equipment.

3.4 Import of the old data

The validated data of previous at least five years should available in the preliminary assessments for the air quality directives. Trend analyses require even longer data series. For these purposes the validated data from current data management system should be able to import into the new data management system.

4 Central database for air quality data

It shall be decided whether the new national central database for air quality monitoring data shall be common with some other environmental information or could it be separate database for this purpose. Specification for central database depends on this principal decision.

5 Management of meta information

It is desirable that meta information needed in monitoring, real time data delivery and reports are managed with the same data management system than the monitoring results and statistics so that the meta information can flexible be used with data for example in report generation.

6 Calculations and validation of monitoring results

Data visualization is needed for validation. At least time series graphs with user defined periods of original raw data, hourly averages and 24 hour averages are needed.

Near real time follow up of data and preliminary validation shall be possible.

Original raw data should be kept unchanged. Changes in status or calculated values should be saved into separate data "table" or as a new version of data.

The ability to approve/reject the data values or change data status (flag) should be supported.

Basic calculation with data values should be possible. For example

- calculation of NO2=NOx-NO into new "channel"
- temperature and pressure correction of particle results
- unit conversions

Linear correction of values according to the calibration results as well as zero corrections should be possible over longer time period. The correction formula is:

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Corrected value = C*(uncorrected value – Z),

where C is linearly interpolated correction factor and Z is linearly interpolated measured zero between successive multipoint calibrations.

7 Data reporting

7.1 General properties

- Different time periods should be supported (weekly, monthly, annually, user defined) in all calculations and presentations

- Calculation of pollutant exceeding reports.

- Calculation and presentation of wind roses and pollution roses
- Diurnal (separately for weekdays and weekends) and weekly averages
- Tabular presentations of data
- Ability to save graphs and tables to the file formats needed for the other reporting tools, for example for web pages, spreadsheet software and word processor software.

7.2 Statistical calculations

Criteria for aggregating data and calculating statistical parameters

The following criteria are to be used for checking validity when aggregating data and calculating statistical parameters:

Pollutant	Statistical parameter	Required proportion of valid data	Reference
All	1 hour mean	75 % (i.e. 45 minutes)	2001/752/EC 2002/3/EC
All	24 hour mean	At least 13 one-hour values available, not more than six successive one-hour values missing.	2001/752/EC
O_3, CO	8 hour mean	75 % of values (i.e. 6 hours)	2000/69/EC 2002/3/EC
O_3, CO	Maximum daily 8 hours mean from hourly running 8	75 % of the hourly running 8 hours averages (i.e. 18 8 hours averages per day)	2000/69/EC 2002/3/EC

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	hour averages		
O_3	AOT40	90 % of the 1 hour values over the time period defined for calculating the AOT40 value (a)	2002/3/EC
O_3	Annual mean	75 % of the 1 hour values over summer (April to September) and winter (January to March, October to December) seasons separately	2002/3/EC
Other than O_3	Annual mean	50 %, the ratio between the number of valid data for the two seasons of the year considered cannot be greater than 2, the two seasons being winter (from January to March inclusive and from October to December inclusive) and summer (from April to September inclusive).	2001/752/EC
O_3	Number of exceedances and maximum values per year	five out of six months over the summer season (April to September)	2002/3/EC
SO_2	Winter mean		

For ozone: AOT40 (expressed in (µg/m³)·hours) means the sum of the difference between hourly concentrations greater than 80 µg/m³ (= 40 parts per billion) and 80 µg/m³ over a given period using only the 1 hour values measured between 8:00 and 20:00 Central European Time each day.

For ozone (and CO): The maximum daily 8-hour mean concentration shall be selected by examining 8-hour running averages, calculated from hourly data and updated each hour. Each 8-hour average so calculated shall be assigned to the day on which it ends. i.e. the first calculation period for any one day will be the period from 17:00 on the previous day to 01:00 on that day; the last calculation period for any one day will be the period from 16:00 to 24:00 on the day. The time is to be specified in Central European Time.

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The following statistical parameters shall be able to apply into valid hourly mean, moving 8 hour mean, daily 8 hour max and 24 hour mean values:

- y^{th} percentile, where the y can be defined at least with the accuracy of one decimal. The y^{th} percentile should be selected from the values actually measured. All the values should be listed in increasing order. The yth percentile is the concentration X_k, where the value of k is calculated as follows: $k = (q \times N)$ with q being equal to y/100 and N the number of values actually measured. The value of $(q \times N)$ should be rounded off to the nearest whole number.
- N^{th} greatest value in a month/year/user defined period
- Number of values over concentration X in a month/year/user defined period, where concentration X can be defined at least with the accuracy of one decimal.

7.2.1 Type of graphs

Here can be defined specification for graphs more detailed.

7.2.2 Tabular presentations

Here can be defined specification for needed tabular presentations more detailed.

7.3 General specification for data delivery in Web

Description of the general Web data system in the MEIC and its requirements for the air quality data web services should be described here.

Visibility of web pages: Internet/Intranet/Extranet?

7.4 Hourly data delivery

7.4.1 Automatic filtering out of questionable data

For automatic data delivery should be tool for filtering out obviously erroneous data. For example there can be upper and lower limit for acceptable values for every pollutant.

7.4.2 Alert system

System should include automatic alert system for cases when information or alert threshold is exceeded. The message shall be sent by email/sms-message to necessary authorities.

7.4.3 Data delivery into EEA near real time ozone web

To EEA ozone web data are sent with FTP hourly as XML-file (http://www.eea.europa.eu/maps/ozone/welcome). Creation and sending of these files should be possible.

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7.4.4 National hourly data delivery

Public real time data delivery should be possible to publish in Web.

7.5 Daily reports

Daily report specifications for data management system shall be defined according to the national needs.

7.6 Monthly reports

7.6.1 National monthly reports

Monthly report specifications for data management system shall be defined according to the national needs.

7.6.2 Monthly ozone exceedances according to 2002/3/EC

Reporting is described on the page

http://rod.eionet.europa.eu/show.jsv?id=37&mode=A.

7.7 Annual reports

7.7.1 National annual report

Annual report specifications for data management system shall be defined according to the national needs.

7.7.2 EU Commission questionnaire 2004/461/EC

This reporting is described on the page: http://rod.eionet.europa.eu/show.jsv?id=595&mode=S. The report consist of forms as MSExcel data sheets. It is desirable, that the data could be produced directly from the data management system at least for following forms:

Form 11 Individual exceedences of limit values and limit values plus the margin of

tolerance

Form 13 Individual exceedences of ozone thresholds

Form 14 Exceedence of ozone target values

Form 15 Annual statistics of ozone

Form 16 Annual average concentrations of ozone precursor substances

Form 18 Monitoring data on 24hr mean PM2,5 levels

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7.7.3 Airbase/Exchange of information decision 97/101/EC and 2001/752/EC

For this reporting the hourly or daily data shall be able to export in one of the following format

- DEM-format
- ISO-7168:1985, ISO-7168-1: 1999 (extended)and ISO-7168-2:1999
- NASA AMES 1001

These formats are described in the file:

ftp://ftp.mnp.rivm.nl/etcacc/download/dem9/demv9_manual.pdf

7.7.4 Ozone summer report according to 2002/3/EC

Reporting is described on the page

http://rod.eionet.europa.eu/show.jsv?id=37&mode=A.

7.7.5 Annual EMEP data reporting

Specifications for the reporting are on the page:

http://www.nilu.no/projects/ccc/submission.html

7.8 Preliminary assessments

For the preliminary assessment exceedances of upper and lower assessment thresholds and limit values are needed from 5 previous years.

8 Data security

Data security policy and its requirements shall be defined like backup system and the longest allowed break in use of different part of data system.

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