



IV COMPONENT – AIR QUALITY MEASUREMENTS AND LABORATORY WORK

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Twinning project - Air Quality Improvement

An EU-funded project managed by the European Agency for Reconstruction

Project Overall Objective

- To improve air quality in the country

Project purpose: Component IV

- Enhance the basis for a comprehensive ambient air monitoring system following the provisions of the EU Air Quality Framework Directive 96/62/EC (AQFD) and Daughter Directives

RECOMMENDATIONS IV: Overall

- In this project the EU practices on the air quality and emission measurement, analysis of the samples, information and data management has been brought to knowledge of the country – It is vital important that the BC will reserve human and financial resources to increase the expertise of the personnel and to bring the practices in daily routine work. In order to do this short term, middle term and long term recommendations are made

RECOMMENDATIONS comp. IV – Short term (1 – 2 year):

Organization and improvement of the expertise of air quality measurement

- The BC should evaluate the task and the duties on the different air quality networks and the laboratories.
- MEPP should organize the calibration laboratory into a clear unit with the task according to Framework directive (96/62/EC) with the head of the laboratory and competent technical personnel.
- To found the measurement team for emission measurements
- Provide permanent job vacancies to the key persons (calibration laboratory, maintenance of the instruments and the air quality measurements sites, emission laboratory, chemical laboratory, data management and quality manager).

RECOMMENDATIONS comp. IV – Short term (1 – 2 years)

Organization and improvement of the expertise of air quality measurement

- The BC experts should continue the training process by working hard and consistently in their expertise area: **Learning by doing is the key to become an expert.**
- To establish the traceability chain from the Calibration laboratory to the field measurements by frequent calibration of the field analyzers: Static injection method → (Dynamic Dilution method →) transfer calibrator → (site calibrator→) site analyzer.
- New software for data acquisition system at the measurement stations and for data analysis, validation and reporting

RECOMMENDATIONS comp. IV – medium term 2 – 5 years

Further improvement of the expertise of the personnel and the QA/QC-system for air quality measurement

- All the work associated with improving the air quality in the country is an expert work and the country should have expertise to cover all the tasks laid down by the directives. To solve the problem more intensive hands on training should be arranged either at the expert laboratory abroad or by the MS-experts at the country.
- The SOPs (Standard Operating Procedures) concerning all the relevant activities of the Calibration laboratory should be in use.
- Adapt the QA/QC plan in full operation. All the actions that are made at the laboratory and at the sites need to be proceeded according to the QA/QC plan (calibration of the instruments, filling the logbooks, calculation of the calibration results, handling and maintaining the analyzers, etc)
- Build up the uncertainty budget for the air quality measurements (ISO-GUM)

RECOMMENDATIONS comp. IV – medium term 2 – 5 years

Further improvement of the expertise of the personnel and the QA/QC-system for air quality measurement

- Define the specific responsibility for each of the staff member. The chart of the responsibilities of each of the person should be included at the QA/QC-system.
- Real time publishing of monitoring results in web should be arranged and new kind of statistics should be included into the daily, monthly and annual reports.
- To build up the back up system for all primary and validated air quality monitoring data.
- To study if the files of ISO-7168 could at the beginning be used for the data source of real time data delivery in web. This requires that sufficient filtration rules for invalid values can be defined.
- Put more efforts on PM measurements (continuous analyzers, PM_{2.5}).
- Participate the intercomparison exercises organized by EC/JRC and by WHO (air quality and emission measurements)

RECOMMENDATIONS comp. IV – long term 3 – 10 years

The air quality measurements are in line with the EU practices

- Prepare the accreditation to the Calibration laboratory. As an accredited laboratory the Calibration laboratory should be a compact unit where the management hierarchy is clear, have competent and large enough personnel for the task and the responsibilities of laboratory personnel are defined.
- Join the work to the Network of the National Reference Laboratories (AQUILA)
- Join the standardization work at CEN
- Backup analyzers should be available for each of the compounds at the laboratory

Recommendations for future actions

- Specified hands on training on the use of the static injection system
 - Differences on the use of the syringe, and certified reference gas standard in preparation of the gas mixtures
 - Different techniques in preparation of the gas mixtures (single preparation, sequential dilution and continuous dilution)
 - Preparing the uncertainty budget to the static injection system
- Hands on training on gas phase titration method: converter efficiency of the NO_x analyzer and calibration of the ozone analyzer
- Calculation of the uncertainty of the measurements (in the laboratory and in the field)
- Calibration of the dynamic dilution method with the flow measurement device
- To build a road map to accreditation of the Calibration laborator

Conclusion

- EU practises on the air quality and emission measurement, analysis of the samples, information and data management has been brought to knowledge of the country
- A great number of experts have been visiting in Skopje to bring their expertise in use of the BC
- Process of sharing expertise is a two way road: you learn by training and learn by hearing
- To reach the thorough knowledge you need thorough training
- At the end: Learning by doing is the key to become an expert
- You also need commitments from the government: Permanent vacancies, clear organization, funding

... and the experts wants to
thank You

- All the hospitality, kindness and fun
- Good discussions
- Ideas that you have brought to us
- Do not hesitate to contact us twinning partners
- Looking forward to co-operation colleagues

... and memories





...good bye and see you

