



Department of Environment
Dhaka, Bangladesh

Norwegian Institute for
Air Research



Air Quality Management Project, Dhaka, Bangladesh, 2006

Seminar on conclusions from Mission 1 Dhaka 26 January 2006

Bjarne Sivertsen and Herdis Laupsa



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1 Introduction

Our overall assessment of the Air Quality Monitoring Programme in Dhaka was undertaken through a two-week visit to Dhaka (Mission 1), undertaken from 16 to 27 January 2006. Its main purposes were to meet a range of project participants and to gather information about the ongoing activities at AQMP.

The presently operated monitoring and AQM systems, tools and technologies were introduced and discussed during the visits with working level as well as senior/management personnel. The AQMP project design, reports and deliverables were collected and read.

Based on the scope of work described in the ToR the work performed during Mission 1 was divided into 7 tasks:

- Task 1, Monitoring sites and site selection
- Task 2, Database for air quality and meteorological data
- Task 3, Data management, analysis and report preparation
- Task 4, Terms of references for small and medium enterprises
- Task 5, Updating the training plan for AQMP/DoE staff
- Task 6, Emission inventory (EI) database for Dhaka city
- Task 7, Dispersion Modelling for Dhaka

A summary of results and findings during the two week Mission to Dhaka was presented in the seminar held at DoE on 26 January 2006.

The general impression after Mission 1 in Dhaka is that AQMP need a fair amount of support to start the “road to an Air Quality Management System”. The training that has been provided was limited to the operation of a few instruments: The remaining elements of a total air quality assessment and management programme were totally lacking.


We have in this report answered to the tasks and obligations outlined in the Terms of Reference from the World Bank. We feel there is still a long way to go. We have given the AQMP staff some tools to start on this road. However, a sustainable air pollution institution in Bangladesh will also depend on decisions made by the authorities to establish a permanent air quality division within DoE.

The slides presented are shown in the Appendix.

Appendix A

Presentations given at a seminar at the end of Mission 1

Dhaka 26 January 2006





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Air Quality Management in Dhaka


Report from Mission 1

*Bjarne Sivertsen and
Herdis Laupsa, NILU*




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Mission 1: 7 Tasks

- Task 1, Monitoring sites and site selection**
- Task 2, Database for air quality and meteorological data**
- Task 3, Data management, analysis and report preparation**
- Task 4, Terms of references for small and medium sized enterprises**
- Task 5, Updating the training plan for AQMP/DoE staff**
- Task 6, Emission inventory (EI) database for Dhaka city**
- Task 7, Dispersion Modelling for Dhaka**



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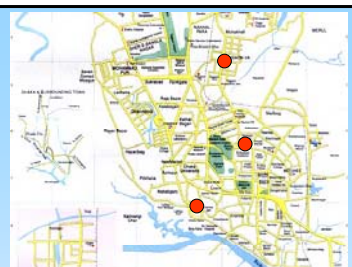
Monitoring sites and site selection

1. The monitoring and reporting system in Dhaka
2. Stations in Dhaka and parameters measured
3. Instruments and monitoring status
4. The sites selected by AQMP
5. Quality assurance and quality control



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Measurement sites

- Sangsad Bhaban (Continuous Air Monitoring Station, CAMS). It is situated in an open, flat area approximately 200-300 meters from two moderately trafficked roads
- Tejgaon (Bitac) (A small industrial area of Dhaka. The instrument should be lifted to about 2 m above roof surface)
- Rajarbag (Urban background station inside the police station in the old town of Dhaka, air intake 2 m above roof surface!)
- Lalbag (Urban/near road site at the roof outside the Lalbag fort)
- Narayangong (Suburban site 40 km south of Dhaka for PM_{10} and $PM_{2.5}$ since 2005)
- Tongi (30 km north, urban backgr./ industrial)



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Air Quality Indicators



The pollutants that are monitored at CAMS since April 2002 are as follows:

- ✓ Particulate Matter (PM₁₀ and PM_{2.5})
- ✓ Carbon monoxide (CO)
- ✓ Oxides of Nitrogen (NO₂ and NO)
- ✓ Sulphur Dioxide (SO₂)
- ✓ Ozone (O₃)
- ✓ Meteorology (ff, dd, ww, T, RH ,p, Rad. Prec)



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Upgraded a.q. monitoring programme for Dhaka



- Monitoring objectives
- Sites and location
- Available equipment
- Automatic monitoring stations (CAMS + Street site!)
- A network of PM samplers
- Screening studies
- VOC sampling



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Database for air quality and meteorological data

- The AQMP data retrieval and data storage
- Data retrieval system
- Data base
- Meteorological data
- Air Quality data and quality assurance
- Data reporting software



Further training using the available tools
An integrated air quality assessment tool ?



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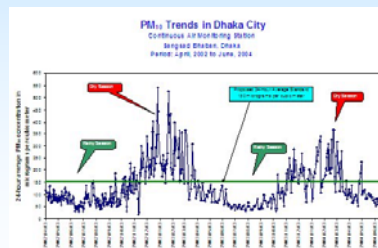
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Data management, analysis and report preparation

- Available reports and reporting procedures
- Daily reports
- Monthly summary reports
- Annual report

AQI value	Color	AQI Category	
		English	Bangali
0-100	GREEN	GOOD	BHALO
101-200	ORANGE	UNHEALTHY	ASHASTHAKAR
201-300	VIOLET	VERY UNHEALTHY	KHUB ASHASTHAKAR
301-500	RED	EXTREMELY UNHEALTHY	ATTADHIK ASHASTHAKAR




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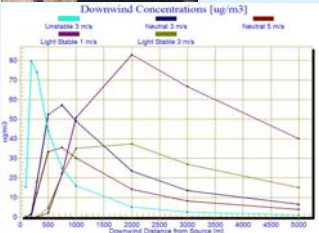
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ToR for small, medium sized enterprises




- ✓ A brick kiln area visited and reported
- ✓ Kiln data
- ✓ Preliminary analysis of the environmental impact of the brick kilns
- ✓ The impact must be evaluated for a multiple of sources
- ✓ Perform simple measurements
- ✓ Model estimates (source and receptor-)



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Training plan for AQMP/DoE staff

Much more training is needed !



- Monitoring and QA/QC
- Databases and data assessment
- Emission inventories
- Screening studies/small industries
- Dispersion models and modelling
- Receptor modelling
- Air Quality Management

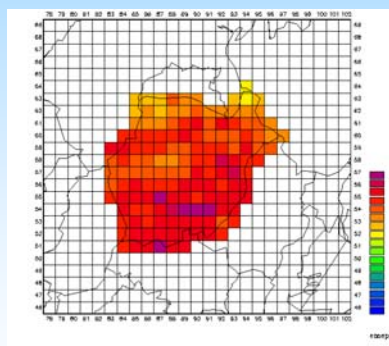
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Emission inventory database for Dhaka city



- ✓ Introduction to an emission inventory
- ✓ Top-down and bottom-up inventories
- ✓ Templates and database in AirQUIS
- ✓ Source Sectors
- ✓ Emission and consumption data
- ✓ The emission inventory templates



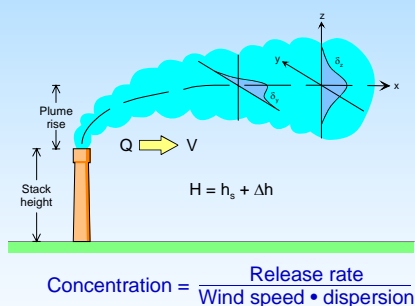
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Training in Emission inventory data collection

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Dispersion Modelling for Dhaka



- Status
- Gaussian dispersion model for point sources
- Actions and future tasks
- Some conclusions from Mission



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That was all
Have a nice weekend!



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