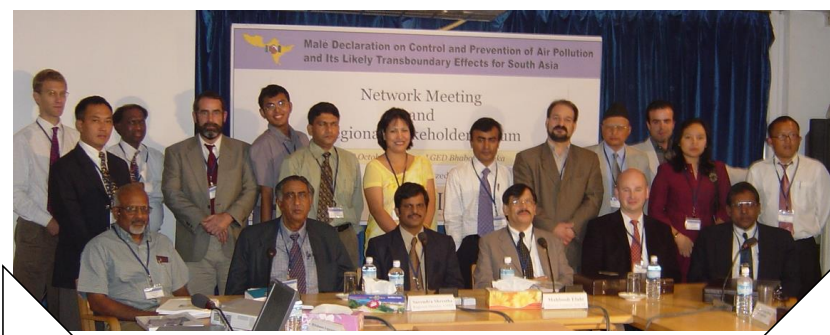




**Malé Declaration on Control and Prevention of Air Pollution
and Its Likely Transboundary Effects for South Asia**



Proceedings of the Annual Network Meeting 2003
6-7 October 2003
Dhaka, Bangladesh

PROCEEDINGS

ANNUAL NETWORK MEETING ON MALÉ DECLARATION

6-7 October 2003, Dhaka, Bangladesh

C O N T E N T S

List of Acronyms

Proceedings

Attachment I: List of Participants

Attachment II: Presentation on Progress science network meeting 2002

Attachment III: Preparation of national implementation plan by Bangladesh

Attachment IV: Preparation of national implementation plan by Bhutan

Attachment V: Preparation of national implementation plan by India

Attachment VI: Preparation of national implementation plan by Iran

Attachment VII: Preparation of national implementation plan by Nepal

Attachment VIII: Preparation of national implementation plan by Sri Lanka

Attachment IX: Presentation on parallel activities on emission inventory and modeling

LIST OF ACRONYMS

EANET	East Asia Network on Acid Deposition
DoE	Department of Environment
MoEF	Ministry of Environment and Forest
MoC	Monitoring Committee
NFP	National Focal Point
NIA	National Implementing Agency
RAPIDC	Regional Air Pollution in Developing Countries
SACEP	South Asia Co-operative Environment Programme
SEI	Stockholm Environment Institute
Sida	Swedish International Cooperative Development Agency
UNEP/RRC.AP	United Nations Environment Programme / Regional Resource Center for Asia and the Pacific
UNEP/ ROAP	UNEP Regional Office for Asia and the Pacific

PROCEEDINGS

The network meeting 2003 on the Malé Declaration on 'Control and Prevention of Air Pollution and its Likely Transboundary Effects for South Asia' was held in Dhaka on 6-7 October 2003. The meeting follows a continuation of the process, which began in Bangkok in March 1998 where a policy dialogue concerning regional air pollution in South Asia was initiated. The first network meeting after the adoption of Malé Declaration was held in Kathmandu during 22-23 February, 1999 and the network meeting 2001 was held in Colombo on 29 June. The network meeting for the year 2002 was held in Kathmandu during 18-19 July. Each participating country in South Asia nominated the National Implementing Agency (NIA) and National Focal Points (NFP) to follow-up activities and implementation of the Malé Declaration. Phase I activities on baseline studies and national action plans to monitor air pollution and its transboundary effects were successfully completed with active participation of countries. Phase II activities were initiated in March 2002 aimed at building capacity in each participating country for generating dry and wet deposition data in order to carry out the assessment of transboundary air pollution. The network meeting 2003 was organised in order to review the progress made since the last network meeting, and to chart out the future plan of action.

The meeting was attended by the Ministries of Environment and National Implementing Agencies (NIA) of the participating countries, members of Monitoring Committee (MoC), SACEP, SEI, UNEP, some experts and an independent facilitator. A list of the participants is enclosed in Attachment 1.

The meeting was organized by UNEP/RRC.AP, in collaboration with DoE, Bangladesh, SACEP and SEI. The meeting was funded by Sida as a part of the Programme on Regional Air Pollution in Developing Countries (RAPIDC).

1. Opening session

The network meeting 2003 for Malé Declaration was inaugurated on 06 October 2003. The inaugural session was addressed by H.E. Shajahan Siraj, Hon. Minister of Environment and Forest (MoEF), Sabihuddin Ahmed, Secretary of MoEF, Omar Faruque Khan, Director General, DoE, Mahboob Elahi, Director General, SACEP, Johan Kuylenstierna, Director, SEI-Y and Surendra Shrestha, Regional Director, UNEP ROAP / RRC.AP.

Dr. Omar welcomed the participants and outlined the accomplishments of phase I implementation of Malé Declaration in Bangladesh. He informed that the monitoring station under the Malé declaration will be soon established in Bangladesh for monitoring the transboundary air pollution as part of the phase II activities.

Mr. Shrestha called for a proactive approach and briefly elaborated the achievements of the Malé Declaration. He informed that the current phase (phase II) is focusing on

capacity building for monitoring transboundary air pollution and in the future there is a need to provide our policy makers with mitigation options. He also provided an update on the similar initiatives in East Asia (EANET) and ASEAN countries (ASEAN Protocol on Transboundary Haze). Lastly, he thanked all the participating countries and agencies for their commitments and active cooperation with regard to the implementation of Malé Declaration and Sida for its financial support.

Mr. Elahi in his opening remark emphasized the significance of transboundary air pollution and said that the Malé Declaration provides a framework to allow countries to work together on transboundary air pollution.

Dr. Johan Kuylenstierna in his speech informed that SEI is providing technical support to the implementation of Malé Declaration and expressed satisfaction on the progress thus far. He explained that some of the scientific activities of the RAPIDC programme can be helpful to the Malé Declaration.

In an opening speech, H.E. Mr. Shajahan Siraj expressed that air pollution as an emerging environmental issue is becoming a matter of great concern for Asia. He informed that the Government of Bangladesh has taken various steps to control air pollution and these actions have resulted in significant improvement in the air quality of Dhaka. He mentioned that Bangladesh has been undertaking phase-wise activities toward implementation of the Malé Declaration.

Mr. Sabihuddin Ahmed touched on the national level implementation of the Malé declaration in Bangladesh. He also mentioned that holding the Malé declaration meeting in Dhaka will pave the way to undertaking further initiative in controlling air pollution at national level as well as undertaking studies to assess and combat transboundary impacts of air pollution at regional level. He thanked UNEP, SACEP and SEI for the initiative.

2. Review on progress made

Mr. R. Rajamani, former Secretary of Ministry of Environment and Forests, Government of India was invited to facilitate the proceedings. In his introductory remarks, Mr. Rajamani briefly elaborated the objectives of the meeting and requested participating countries to put forward issues of concerns that could be the discussed in detail at the meeting.

Mr. M. Iyngararasan of UNEP-RRC.AP presented the progress made since the last network meeting held in June 2002. The various activities carried out in the period included: Development of training manuals; formal contracts with equipment venders; development of in-country training programmes; holding the in-country training programs and installation of equipments in 5 countries; organizing of a technical training program at regional level for wet deposition monitoring; a national level stakeholders meeting in India; and information exchange through a newsletter and news groups at

www.rrcap.uneo.org/md/webboard for information exchange. He also outlined the proposed activities to be developed for phase III, which include: monitoring and science/capacity building; (ii) impact studies; (iii) policy setting (see Attachment II).

Formatted

3. Country presentations

Bangladesh: Mr. Hashmi presented the progress in Bangladesh (Attachment IV). Summary of the presentation and major discussions include:

- Selection of monitoring station and land procurement are completed. The construction of monitoring site will start in one month time at Shamnagar in the Sathkhira district.
- Equipment has been received and the in-country training program will be held during 19 –23 October 2003.
- Linkages with relevant programs/institutions in Bangladesh have also been made.
- A ten member national advisory committee has been established.
- Sample analysis will be carried out at the laboratory at Kulna and the national database will be located at the DoE.
- DoE are finalizing an air quality index for Dhaka
- A National stakeholders meeting will be held during phase II

Bhutan: Mr. Nedup presented the current status of monitoring station in Bhutan (Attachment V). Summary of the presentation and major discussions include:

- The monitoring site is operational since mid-June.
- NEC is working to include the data to the national environment information system.
- Sample analysis will be conducted at RNR laboratory and the national level database will be located at NEC.
- Identified electricity, security and communications as the major obstacles in operating the site. It is expected a permanent power supply line will be established to minimize the power failure.
- Further training was requested for the improvement of data quality.

Iran: Dr. Saeed Motesadi presented the progress in setting up the monitoring station in Iran (Attachment VI). Summary of the presentation and major discussions include:

- 9 potential sites have been identified for the establishment of monitoring stations under the Malé Declaration.
- DoE have purchased the land for the establishment of 1st monitoring site at Chamsari and the constructions have also been initiated. The site will be operational by November 2003 and the first set of data will be available by mid-December.
- National database will be located at DoE in Tehran.
- Delays due to the war situation in the neighbouring countries are identified as a major constraint.

- More financial support, regional data bank through the internet and meteorological studies were suggested for the consideration.
- Iran expressed its interest to host the next network meeting in Tehran.

Nepal: Md. Bidya Banmaly Pradhan presented the progress in the implementation in Nepal (Attachment VII). Summary of the presentation and major discussions include:

- The site established at Rampur is operational and the technical staffs conducting the monitoring are confident with sampling and analysis.
- Monitoring results for the first 4 months together with the site's details were presented.
- The participants observed that the PM10 concentration was relatively high for a rural station like Rampur.
- Requested for an automatic met station and the site for the met station has also been allocated close to the air quality monitoring station.
- Wet deposition monitoring equipment to be installed at Rampur by end of 2003.

Sri Lanka: Mr. C. K. Amarathunga presented the progress in implementing the Malé Declaration in Sri Lanka (Attachment VIII). Summary of the presentation and major discussions include:

- Site selection completed and the passive samplers are already installed at the site.
- The site will be fully operational by the end of October 2003.
- A 7 member advisory committee has already been established which is to meet once every three months.
- The national level database will be located in the CEA.
- A limnology study will be set up in near future, depending on funding.

India: Dr. Sengupta presented the current status of air quality monitoring and the progress in implementing the Malé Declaration in India (Attachment IX). Summary of the presentation and major discussions include:

- Proposed to establish 9 sites for monitoring transboundary air pollution.
- The first site has already been established at Port Caning and it will be further strengthened with the equipments from Malé Declaration.
- Presented preliminary results from the site at Port Caning. The results are currently being reviewed by the national advisory committee and will be submitted to UNEP as soon as it is cleared by the national advisory committee.
- A nine member advisory committee has already been established and will meet every 6 months.
- A terms of reference for the advisory committee has also been developed.
- Recommended inventory of sources; validated air quality models; scientific studies for site selection; study of emissions from neighboring (non participating) countries; and road map for improvement of fuel quality.

4. Further improvement of monitoring network

A discussion on further improvement of monitoring network was held with the aim of strengthening the monitoring network under the Malé Declaration. Major discussion includes:

- Quality of the data needs to be improved through the implementation of QA/QC programs.
- Characteristics of particulate matter could be useful for source characterization.
- The type of analysis (parameters) is important and the ideal is to have fewer high quality sites rather than a larger number of poor sites. The optimum number of monitoring sites required depends on what the data will be used for. Monitoring and modeling need to be closely linked. The monitoring at the first sites established needs to be of the highest quality possible before the establishment of further sites. Some countries requested for more sites to get an idea of transboundary air pollution and in the future this should be considered using advice from modeling approaches.
- Study of local situation is important for the site selection. Although it is difficult to select regional representative site, optimal site should be selected. Site selection criteria have recently been relaxed by MoC.
- Facilities for monitoring meteorological parameters need to be included; if there are no met stations nearby.
- It was informed that the technical details including manuals are already available under the Malé Declaration for monitoring the impacts like soil, aquatic environment and vegetation monitoring. NIAs are encouraged to initiate the impact monitoring, after getting data on work already done by networked agencies in fields like agriculture, health etc.

5. Further improvement of technical manual

The technical manual has been updated with the comments made in the network meeting 2002 and the experiences in conducting the monitoring thus far. Mr. Sagar Dhara of the MoC presented the technical manuals. Major discussions on technical manual included:

- Guidelines for HVS roof design need to be included in the manual.
- If flow rate of HVS becomes low during sampling period and is not adjusted then sample should be disregarded.
- Installations of wire mesh cover was recommended to protect the samplers from wild animals. For HVS and passive sampler the cage will not affect the sampling.
- In order to minimize the moisture differences, filter papers should be kept in the same condition (desiccator at room temperature) and timing before and after the sampling.
- In order to avoid overflow of wet only collector a bigger collection bottle (10 l) was suggested. MISU now have a recommended design for modification to increase capacity to 10 litres or more.
- The technical manual should provide alternative methods for sample analysis.
- Preservation of filter papers for further analysis could be included in the manual.
- To improve sensitivity of active SO₂ and NO₂ sampling can have two impingers in parallel.

The manual will be updated based on the comments and suggestions from the meeting.

6. Parallel activities on emission inventory and integrated modeling

Mr. Mylvakanam Iyngararasan and Mr. Rohana of UNEP RRC.AP and Dr. Johan Kuylenstierna and Mr. Harry Vallack of Stockholm Environment Institute (SEI) presented (Attachment X) the parallel activities on emission inventory and integrated assessment modelling (IAM) that has been initiated under Malé Declaration for assessment of transboundary air pollution. In addition to the emission inventory, a preliminary version of IAM was also demonstrated. Major discussions include:

- The main objective is to have an IAM tailored to regional needs and all decisions on structure etc to include consultations with NIAs (e.g. similar to the process of deriving emission regions)
- Local emission factors should be used wherever possible.
- Emission factors for small industries should also be considered in the inventory.
- PM_{2.5} could be included in the inventory in the future.
- The IAM, which is a graphical tool to link emissions with mitigation options, includes an atmospheric transfer model (MATCH) which takes the best internationally available emissions inventory and calculates deposition values that can then be compared to some indicator of impacts. The MATCH atmospheric transfer model was developed for European conditions but has now been adapted for Asian conditions and includes all major topography (on 40 by 40km grid so not so accurate for complex terrain). SMHI has reasonable confidence in the model performance but this needs to be backed up by validation with Malé monitoring results and the results can only be considered to be preliminary until countries have produced their own emission inventories and have satisfied themselves with the performance of the MATCH model in South Asian conditions.
- A main menu with well-defined input and output facilities should be developed for running the model.

7. Other issues

Means of data sharing was discussed during this session. Major discussions include:

- NIAs will maintain the data at their national database.
- NIAs will send the data to UNEP on a monthly basis and UNEP will verify the data with the expert team before inputting into the regional database. The National Advisory Committee will give their advice on the data in parallel.
- Regional database will be made available for the network through the Intranet.
- E-mails and web based discussion forums will be utilised as much as possible for the information exchange among the network members.
- The network will always be consulted regarding analysis and publication of monitoring data.

8. Closing session

Mr. Rajamani, facilitator, summed up. In his summary, he expressed that the presentations and discussions were in high standard and it shows the development of the network with the establishment of the monitoring network. He expressed the hope that study of impacts and mitigation options will be worked out by NIA's. The involvement of all stakeholders was important. Requested the NIAs to try and get national support for more efforts, do not wait for external support. The meeting ended with the representatives from SACEP, SEI and UNEP thanking the facilitator, participants and organizers.