

## **The Second Regional Stakeholders Meeting**

### **P R O C E E D I N G S**

The Second Regional Stakeholder meeting of Malé Declaration was held at Delhi, on 14 October 2005. The meeting was facilitated by Mr. R. Rajamani, former Secretary of the Ministry of Environment and Forests, Government of India. He made a brief comment on the Malé Declaration project, followed by a round of self introduction.

#### **1. Presentations on the Malé Declaration and RAPIDC**

Mr. Mylvakanam Iyngararasan of UNEP/RRC.AP made the first presentation, starting with the origins of the Malé Declaration project. He detailed the progress made during each phase of the project and the current status. The goals for the next phase were also outlined. The need to go beyond the initial objectives and incorporate pollution prevention activities was stressed. He explained the “Japan Syndrome” that could occur in developing countries in the future and result in insecurity of food, water, and energy. To avoid this situation, reactive policies should be replaced by preventive ones. The prevention initiatives taken by UNEP in eco-housing and eco-transportation were briefly mentioned. Mr. Rajamani commented that urbanization is as much a culprit as industrialization for the Japan Syndrome. The presentation is attached as Attachment III.

Dr. Johan Kuylenstierna of SEI gave a brief presentation on the RAPIDC project. The origins of the project were traced to the European experience with trans-boundary air pollution. It is now being funded by Sida through SEI. A mention was made about the other networks in Asia and Africa that are being supported by the RAPIDC project. RAPIDC is supporting the Malé project in the following areas: atmospheric transport of pollutants, emission inventories, scenario building, rapid urban assessment, and impact assessments. The goals and activities in each of these areas were then mentioned. He concluded by summarizing the main aim of the project as to enable integrated assessments, within the limited resources available. The presentation is attached as Attachment IV.

A presentation on emission inventories was given by Mr. Harry Vallack of SEI. He explained the need for, and the definition of, an emission inventory. A brief introduction to the methodology used for compiling emission inventories was made and the pollutants being targeted by the Malé project mentioned including the intention to incorporate CO and NMVOCs (to enable O<sub>3</sub> modelling) into the manual during Phase III. He stressed the need to make the inventory output compatible with the needs of the Integrated Assessment Model (IAM) giving the example of how countries have to be divided into emission regions for this purpose. The kind of training that is being planned for enabling the preparation of the emission inventories was presented. The presentation is attached as Attachment V.

The plans for the scenario building activity of the Malé Declaration were presented by Dr. Philip Peck of the International Institute for Industrial Environment Economics (IIIEE), University of Lund, Sweden. The preparatory activities being planned for the Scenario Building activity include the preparation of a manual and developing of test cases. The sources that are normally used for scenario building are secondary sources, and any primary data available would help in the process. For this there is an urgent need to know what kind of knowledge and data are currently available in the region. The needs and concerns of the potential users of the scenarios should be ascertained. The scenarios should ultimately help in decision making and lead to prevention activities. Along with the modeling activity, review of successful cases of air pollution reduction in the region will be presented. The presentation is attached as Attachment VI.

## 2. Country Presentations

Country presentations were made by the representatives from Bangladesh, Bhutan, India, Iran, Maldives, Nepal and Sri Lanka. They described the achievements to date and the plans for the future. The challenges and difficulties faced by them were highlighted. The presentations are attached as Attachment VII.

**Bangladesh:** Mr. Quazi Sarwar Imtiaz Hashmi gave a presentation of the progress made in Bangladesh. The highlights of the presentation were:

- A temporary site with passive sampler and rainwater collector has been operational since 19 July 2004. Now, the permanent site has been established.
- The next 3 years plan include: making the permanent monitoring station fully functional; developing the laboratory under Khulna Divisional Office of DoE ; the formation of a local level Monitoring Committee; and establishing a new station, if funds are available.
- The following institutions were suggested for the impact assessment studies: National Institute of Social & Prevention Medicine (NIPSOM), Mohakhali, Dhaka for health impact studies; BSMR Agriculture University, Shalna, Gazipur for crop impact studies; Department of Chemical Engineering, Bangladesh University of Engineering & Technology (BUET), Dhaka for corrosion impact studies; and Soil Research Development Institute (SRDI), Savar for acidification studies

**Bhutan:** Mr. Nedup Tshering presented the status of implementation of the Malé Declaration in Bhutan. Summary of the presentation include:

- Monitoring station has been established at Gelephu since December 2003.
- The next 3 years plan include: Decentralization of responsibilities; improve monitoring methods and data management; developing an emission inventory and model; developing the facility to carry out speciation and biological monitoring system in new stations
- The following institutions were suggested for the impact assessment studies: MOH for health impact studies; MOA for crop impact and acidification studies. There has to be a coordination meeting before finalizing the studies to be carried out.

**Sri Lanka:** The status of the project in Sri Lanka was presented by Mr. C. K. Amaratunga. The highlights are:

- Passive sampling is being done for SO<sub>2</sub> & NO<sub>2</sub>, and wet only & bulk sampling for pH & conductivity.
- The plans for the next 3 years would be finalized, once the details of funding are available. However a site has been found for PM<sub>10</sub> monitoring and this would commence from 2006.

**Iran:** The progress made by Iran was presented by Dr. Vahid Esfahanian. The major issues presented and discussed include:

- The monitoring site at Chamsari in Ilam province was formally inaugurated in August 2005. The total cost was around \$ 50,000 for the construction, power supply and water supply, most of it being contributed by the Local Government. The data of dry deposition and wet deposition is being monitored now. This was presented in the meeting.
- The plans for the future include: to start monitoring additional parameters such as O<sub>3</sub>, VOC, UVB etc, the need for new stations, initiation of a Strategic Environmental Assessment (SEA) Project and a corrosion assessment project.

**Maldives:** Mr. Ahmed Muslim presented the status of activities in Maldives. The major issues presented and discussed include:

- Earlier the Ministry of Environment was the NFP and the NIA. Now the Ministry remains as the NFP, but the Department of Meteorology has become the NIA.
- The monitoring station has been set up at Haanimaadhoo climate observatory, in the north.
- The plan for the next 3 years include: setting up a new station in the southern island of Gan, need to install some of the instruments for the Malé project that are already with them, and establishing vehicle emission monitoring stations in densely populated islands.

**Nepal:** The project in Nepal and its progress was presented by Dr. Chhewang Namgel Lama. The highlights include:

- The Ministry of Population and Environment which was the National Focal Point, has been restructured into the Ministry of Environment, Science and Technology (MOEST).
- Monitoring site has been established at Rampur, Chitwan. The data have been continuously monitored from the passive sampler from 2003 onwards.
- Future plans include the establishment of two new stations at Birjung and Pokhara, development of emission inventories, conducting modelling and impact assessment studies.
- The following institutions were proposed for the impact assessment studies: ICIMOD for emission inventory and modelling, IAAS for agricultural, health and acidification impact studies, and IOE for corrosion impact studies.

**India:** The progress of the project in India was presented by Mr. J. S. Kamyotra. The main points include:

- The site has been established at Port Canning in the Sunderbans, close to the Bangladesh border. It has the advantage of being installed in the campus of the Central Soil and Salinity Research Institute under ICAR and hence lot of basic infrastructure is available, including a permanent meteorological station of the Regional Meteorological Centre, Pune. It can also use the services of resident scholars for continuous monitoring.
- The plans for the next 3 years include stakeholders meeting, training programme on wet deposition monitoring and Advisory Committee meetings. The background stations being established as a part of the CPCB network, could also be used for the Malé network. In the future, CPCB is planning to use modeling studies for site selection.

### **3. Presentations on Impacts of Air Pollution**

Dr. S Razi Abbas Shamsi of the Department of Botany, University of Punjab, Lahore, Pakistan made a presentation on the impacts of ground level ozone on crops in rural areas. This was based on a long term research carried out in Lahore. Dr. Shamsi and his team used all four of the standard methods normally used for testing the impacts on crops: monitoring, open-top chamber, EDU method and fumigation. Correlations were made with the level of pollutants and the crop yields and vegetative growth, after filtering all possible confounding factors. Overall it was found that there was a drastic reduction of 30-50 % in crop yields as well as considerable decreases in vegetative growth. Dr. Shamsi recommended that more extensive studies be conducted in the region. His presentation is attached as Attachment VIII.

A presentation on the health impacts of asbestos, was presented by Dr.S K Joshi. He introduced the topic by mentioning the history of asbestos use, trade and production details, the sources of asbestos in India, types of asbestos, the characteristics of the different types, their impacts on health, their applications, occupations that have high risk from asbestos poisoning, and prevention options. He highlighted that asbestos has been banned in most developed countries starting from 1975, but still continues to be used in developing countries. The longer life of asbestos make the impacts linger for a period of several decades since its production and use are banned. Hence the impacts of asbestos is still affecting developed countries were it was banned earlier. Most patients in Asia who die due to lung cancer, contract the disease from asbestos exposure, more than from smoking. The challenges that this issue presents in Asia are due to the lack of importance given to health issues and the general lack of awareness. The presentation is attached as Attachment IX.

#### **4. Presentations on Monitoring and Modeling**

Dr. Manju Mohan from the Indian Institute of Technology (IIT), Delhi, gave a presentation on work done on air pollution modeling . She started with a study on air quality assessment of emissions from thermal power plants in Delhi National Capital Region. The SO<sub>x</sub> and NO<sub>x</sub> pollution from coal and gas fired stations near Delhi was studied and the power plants were ranked according to their contribution to the pollution load. Dr. Manju Mohan then described a modeling study on a country level on long range transport of pollutants and acid deposition, which was done as a part of the RAINS-Asia project. SO<sub>2</sub> levels were monitored at different stations throughout the country and three scenarios were developed. The study concluded that the situation in India could be controlled, and urban areas and the North East region were most vulnerable to acidification. Another study detailed the emission estimates made for greenhouse gases, ozone precursors and Particulate Matter for a 10 year period (1990-2000) for Delhi. The presentation is attached as Attachment X.

Dr. A L Aggarwal made a presentation on an ongoing study on ambient air monitoring, emission inventory and source apportionment. The study is designed for urban conditions and aims to assess the impacts of PM<sub>10</sub> and PM<sub>2.5</sub>. He gave the objectives of the project and described the framework of the study. The presentation is attached as Attachment XI.

Ms. Karin Sjoberg, of IVL, Sweden then gave a brief presentation on the application of passive samplers and their applications, with many examples of their use world wide. The presentation is attached as Attachment XII.

Prof. O. A. Ileperuma, Sri Lanka, then made a presentation on a study done on transboundary air pollution carried out in the North-Central province of Sri Lanka. The monitoring site was near Annuradhapura in the north central part of Sri Lanka. This study followed another study conducted in the 1990's which had suggested that acid deposition occurred during the North-East monsoon. A rural site and an urban site, near Anuradhapura were used for monitoring activities. The NO<sub>2</sub> levels were found to be within limits, but the SO<sub>2</sub> level was found to exceed the limits, especially during the North-East monsoon. The presentation is attached as Attachment XIII.

#### **5. Discussions & Closing session**

The presentation on the impact of ground level ozone on crops in rural areas by Dr S. Razi Abbas Shamsi of the Punjab University, Lahore, raised lot of interest and queries during the concluding session. By using 4 methods, a study by Dr. Shamsi had confirmed that there would be considerable reduction in yields and vegetative growth of crops. It was felt that the study results were significant and hence needs to be further strengthened and repackaged, before being presented to decision makers in the region. The experience in other continents was also shared by participants. Though the issue is of significance in Europe, the impact was found to be much smaller in magnitude, which was further diluted by the favourable climatic and socio-economic conditions. Conversely, the impact

was much higher in the USA. A smaller study in Sri Lanka found a 30 to 40 % reduction in vegetative growth. Dr. Shamsi wanted more extensive studies to be carried out in the region, including Dose Response Relationship studies. Other participants opined that the study now has to go beyond the controlled conditions, and historical evidence of crop impacts and the opinions of the farmers needs to be taken into account. If such findings need to be presented to decision makers in a particular country, it was essential to carry out separate studies in that country. The lack of resources and funding, a condition common to developing countries, was limiting the response to such issues.

Mr. Rajamani summed up the important conclusions from the meeting. It was important that the activities under the Malé Declaration and their results be disseminated to a wider audience. Studies on various issues related to the Declaration, like that of Prof. Shamsi, need to be carried out and further corroborated in real life conditions. While doing such studies, there was a need to adapt it to the realities of the end users.