

Seventh Regional Stakeholders cum Coordination Meeting

REPORT OF THE MEETING

I. INTRODUCTION

1. The Seventh Regional Stakeholders cum Coordination Meeting (RSC7) of the Malé Declaration on Control and Prevention of Air Pollution and its Likely Transboundary Effects for South Asia (Malé Declaration) was held in Dhaka, Bangladesh on 18-19 May 2013.
2. The meeting was attended by the Malé Declaration (MD) National Focal Points (NFPs) and National Implementing Agencies (NIAs) of the participating countries which included: Bangladesh, Bhutan, India, Iran, Maldives, Nepal, Pakistan, and Sri Lanka. Some international organizations, namely, Stockholm Environment Institute (SEI), United Nations Environment Program (UNEP) Headquarters, South Asia Cooperative Environment Programme (SACEP), and the Regional Resource Centre for Asia and the Pacific (RRC.AP) were represented. A number of international and local resource persons, and some local stakeholders were also present at the meeting. The list of participants is enclosed as Annex I.

II. INAUGURAL SESSION

3. Mr. Aparup Chowdhury, Additional Secretary, Ministry of Environment and Forests Bangladesh, delivered a Welcome Address. He acknowledged all guests and warmly welcomed and participants at the meeting. He highlighted the achievements of Bangladesh at each phase of implementation of the Male Declaration. He also mentioned the current initiatives undertaken by the MOEF to combat air pollution in the country, including the introduction of cleaner technology and fuels, among others. He mentioned that the meeting created opportunities for developing greater awareness on health and other risks caused by air pollution, implementation of effective policies, and close monitoring of the status of air pollution. He added that the meeting would enhance the network among various institutes and organizations towards the reduction of air pollution.
4. Ms. Adelaida B. Roman, Head, Network Support Component, RRCAP, gave the introduction and overview of the meeting. She gave a briefing on the achievements of Malé Declaration from Phase I until Phase IV. She mentioned that MD had been instrumental in the establishment of air quality monitoring stations of member countries and enhanced the capacity to monitor the transboundary effects of air pollution which has impact on crops, health, corrosion and other impacts on environment. She recognized the importance of convening these meetings (RSC7 and IG13) so countries could share the progress of the monitoring and other activities and trace the issues and challenges, to better plan for the next phase. She pointed out the cessation of the Swedish International Development Cooperation Agency (Sida) funds in December 2012, with currently committed funds; hence contributions

from the member countries are crucial in continuing the work for the proposed Phase V. She also provided a brief overview on the agenda of the two meetings.

5. Dr. Jonathan Shaw, Deputy Director, RRC.AP, delivered the Opening Remarks on behalf of the Malé Declaration Secretariat. He mentioned that owing to the increase in industrial activity, and exponential growth in number of vehicles and population, environmental degradation remains a challenge in the Malé Declaration member countries. He affirmed, however, that since its inception in 1998, MD had made considerable progress in building the required capacity and linkages in South Asia to assess air pollution impacts and prevention and control options. He highlighted the achievements of MD in areas such as emission inventory preparation, air pollution monitoring and modeling, health, crop, ecosystem and corrosion impact assessments, integrated assessment modeling, development of policy responses and awareness raising activities. He also noted and acknowledged the financial contributions made by India and Maldives for the implementation of activities in the MD, and thanked the other countries which had signified intentions and already in the process of providing contributions.
6. Mr. S.M.D.P. Anura Jayatalake, Director General SACEP delivered the Opening Remarks. He provided a short background of the South Asia Cooperative Environment Programme (SACEP) which was established by the governments in South Asia in 1982 for the protection, management and enhancement of the environment in the region. He informed that the Male Declaration was agreed and established during the 7th Governing Council meeting of SACEP held in Male, Maldives in 1998. He affirmed that MD was the first regional agreement to address the transboundary air pollution issues, and that participation from different stakeholders is vital to the process. He mentioned that the RSC forum was established to obtain participation of stakeholders, to achieve and fulfill the objectives of the Declaration. The meeting is hoped to boost the confidence of stakeholders for the future of MD. He also informed that during the upcoming GC of SACEP in Pakistan later this year, they intend to arrive on direction for the future of MD and its implementation.
7. Dr. Qazi Kholiquzzaman Ahmad, Chairman PKSF, gave an Address. He recognized that MD is a regional initiative of the countries which shared common problems and had agreed to address those problems. He noted that Bangladesh is seriously concern about air pollution and climate change. Increase in emission has been inevitable with the increasing population, and expansion of development, all activities of which is related to the use of energy. He emphasized a need to promote the use of clean energy in the region. Further, he pointed out that efficiency in energy use is something to focus on. He also mentioned about the increasing concern on vehicular pollution. He suggested some measures including awareness and involvement of different stakeholders, i.e schools, etc., to make contributions in the process of reducing pollution. He emphasized that MD is an excellent example of South-South cooperation within the framework of the global process in promoting sustainable development.

8. Dr. Hasan Mahmud, MP, Honorable Minister, Ministry of Environment and Forests Bangladesh, delivered his Address. He expressed great pleasure in hosting the RSC7 and IG13 meetings, affirming that the gesture reflected the country's strong commitment to the MD. He confirmed that Bangladesh has the highest population density in the world. Due to the affluence of the people, vehicular pollution has also worsened. He mentioned that although air pollution sources might be local but the impact could be regional. He presented some major sources of urban outdoor air pollution in Bangladesh, including, motor transport, small-scale manufactures and other industries, burning of biomass and coal for cooking and heating, etc. He also mentioned the current initiatives undertaken by the government to combat air pollution with limited resource, including among others, introduction of lead-free gasoline, CNG-driven vehicles, clean cooking stove initiative, vehicular monitoring, the use of coal-fire power plants, regulating brick kiln industry and introduction of MRT, etc. He was delighted to inform that the government of Bangladesh has recently received a certificate from Ozone section of UNEP in recognition for the successful implementation of Montreal Protocol which reflected that Bangladesh has been serious for the protection of environment, improvement of air quality and for the protection of people who had been affected by climate change. In closing, he put forward a suggestion on the promotion of hybrid vehicles, and request that member countries could look into finding effective ways to promote the technology.
9. Mr. Md. Shafiqur Rahman Patwari, Secretary, Ministry of Environment and Forests Bangladesh, delivered his Address. He expressed great pleasure for the opportunity to host these important meetings of MD and warmly welcomed all participants. He gave a brief account on the air pollution issues in the region and how the MD initiative has been instrumental to combat the problem. He also briefly mentioned about the local situation in Bangladesh and the measures undertaken by the government to address them.

III. RSC7 HIGHLIGHTS

10. Mr. Mr. Aparup Chowdhury, MOEF, Bangladesh, Mr. Md. Shahjahan, Additional Director General, DOE, Bangladesh, and Mr. Mr. J.S. Kamyotra, Member Secretary, Central Pollution Control Board, India co-chaired the RSC7.

Malé Declaration and its Implementation

11. Ms. Adelaida B. Roman, RRC.AP presented the progress on the implementation of the Malé Declaration in 2010-2012. Major activities undertaken during Phase IV were highlighted according to the six objectives. It was reported that important meetings (IG12, RSC6 and TFFD3) were successfully convened; regional and national trainings on emission inventory, and a refresher training on monitoring transboundary air pollution were conducted; and health and crop impact studies had been concluded. Draft reports of the studies has been prepared and some publications and newsletters were published.

Overview of the National Level Implementation of the Malé Declaration

12. The NIAs of the Malé Declaration presented the progress during the Phase IV implementation in their respective countries. The presentations were focused on the institutional arrangements, monitoring activities, impact assessment and awareness activities, and the plan for the future.
13. Mr. Q. S. I. Hashmi and Mr. Syed Ahmmad Kamir presented the status of implementation of the Malé Declaration in Bangladesh. He provided updates on the monitoring activities, including the analysis of the concentration of air pollutants (dry deposition), rain water analysis (wet deposition); and data collection of meteorological parameters, and presented the result. He also reported that emission inventory & modelling had been initiated but they encountered difficulties in the availability and accuracy of data from all sectors. He informed that health and crop impact assessment studies were successfully conducted and awareness materials in printed and electronic forms were developed and published. The future plan includes continuous monitoring of all parameters, PM_{2.5} may be measured and a second monitoring station may be setup, depending on the availability of funds.
14. Mr. Sonam Dagay, National Environment Commission, Bhutan presented the status of implementation of the Malé Declaration in the country during the Phase IV implementation phase. He briefly summarized the activities undertaken and updated on the establishment of a station at Bhur, Gelephu as a monitoring site for MD. He mentioned that support from MD had been instrumental to start the air quality monitoring in the country. He also reported that regular passive sampling is continuing and that the network of air quality monitoring stations had been setup. He reported completion of crop impact assessment by the Sherubtse College. Upcoming activity will be the update of the emission inventory.
15. Mr. J.S. Kamyotra, Member Secretary, Central Pollution Control Board, India presented the progress in India. He provided details of the activities being carried out at Phase IV, including, among others, (i) continued monitoring on ambient air quality and wet deposition; (ii) initiated discussion to setup monitoring stations in bordering areas in addition to the 6 transboundary monitoring stations in operation; (iii) corrosion and health impact studies completed; (iv) completed and regularly updated the national emission inventory; (v) organized regional and local meetings and training programmes for the successful implementation of MD activities; and (vi) maintained a dynamic website for raising awareness. He also mentioned about the emission trading pilot study being initiated. The present programme is focused on formulating future development plans for sustainability. For the upcoming phase, it is planned to develop and/or upgrade air quality standards, to consider new parameters, i.e other health-related parameters like PM_{2.5}, benzene, benzo(a) pyrene; and signature metal analyses like nickel, arsenic & lead. He also mentioned a current agreement with the Royal Government of Bhutan for capacity building, demonstration & training, adding that similar initiative could also be signed with other countries, if needed. On the request for submission of monitoring of data to the Secretariat, he committed to submit the data soonest.

16. Mr. Masood Zandi presented the status of implementation of the Malé Declaration in Iran. He mentioned some major sources of air pollution in Iran, including large and small industrial processes, power refinery and petrochemical industries, and the emerging dust storm phenomena. He updated on some policies being setup for the improvement of air quality, including, industrial improvement of fuel quality; improvement of vehicles standards; setting of required laws and regulations; and formulating plans to minimize effect of the dust storm phenomena. Specific measures mentioned, include among others, improvement and development of public transportation; increasing green spaces; expanding parameters for air quality monitoring; and improvement of traffic management in mega cities; and installing on-line monitoring system for industries. He also highlighted in his presentation the dust storm phenomenon which had been an emerging air pollution issue in the country. Activities initiated and planned to abate this problem included, the establishment of regional secretariat on dust and sandstorm management; and formulating action plans to combat drought and desertification in collaboratin with the neighbouring countries, i.e Iraq, Turkey and Syria, and with likely assistance from international organizations.
17. Mr. Ibrahim Mohamed, Environmental Protection Agency (EPA), briefly presented the status of the implementation of the Malé Declaration in Maldives. He mentioned that the primary source of air pollution in the country is vehicular emissions. He reported that monitoring air quality data started in December 2011 but mentioned difficulty of obtaining complete set of data, due to the lack of laboratory facilities and trained personnel. Only PM10 has been monitored.
18. Mr. Teekra Ram Pokharel, Department of Environment, Nepal, presented the status of implementation of the Malé Declaration in the country. He updated on the achievements during 2010-2012, including, completion of the rapid urban assessment, as well as the health and crop impact assessment studies, with the successful publication and wide dissemination of the reports. He also updated on the existing legal framework on air quality, new standards have been formulated, and environmental policy drafted. In the coming year, they plan to establish six more air quality monitoring stations and expand measurement to other parameters related to air quality. He also accounted the factors contributing to air pollution in the country which included rapid urbanization, brick kilns operation, increased numbers of vehicles, traffic congestion and increasing demand of fossil fuel, and industrialization.
19. Mr. Dilshad Ahmad Babar, Ministry of Climate Change, Pakistan, presented the status of implementation of the Malé Declaration in the country. He highlighted the activities undertaken at each of the four phases of implementation of MD, from baseline information & awareness-raising during phase I; capacity-building in phase II; tackling air pollution problems at phase III and enhancing regional cooperation in phase IV. At the last two phases, specific achievements included, among others, establishment of continuous air quality monitoring systems at federal and provincial capitals; conduct and completion of impact assessment

programmes, including, crop, health, and corrosion impacts. At the last phase, the government had initiated new partnerships and collaborations with other air-pollution networks to promote better air quality management.

20. Mr. R.M. Kulasena, Central Environmental Authority, presented the overview of the national level implementation of the Malé Declaration in Sri Lanka. He informed of the continuous air quality monitoring activities and presented the data reports. He presented the status of the second crop impact assessment study initiated in collaboration with the Rajarata University. He also updated on the emission inventory programme in Sri Lanka. He reported the conduct of emission inventory training programmes for local stakeholders as well as the international training in 2012. He mentioned that there remained some data gaps due to some contributing factors such as vegetation and forest fires, evaporation of solvents and other products; industrial fugitive emissions and process emissions.

Data Analysis Report

21. Dr. H. K. Pawana presented the draft analysis report. Since information of some countries had been missing, she was not able to provide a thorough synthesis and analysis of data. Hence, in her presentation, she just presented and sought suggestions on the layout of the report. She requested countries to provide at the earliest the required information to the Secretariat, with a copy to her, so the data report could be completed.

Crop Impact Assessment Studies

22. Dr. Kevin Hicks, SEI-York University, presented the final report on crop impact assessment studies conducted in six countries, namely, Bangladesh, Bhutan, India, Nepal, Pakistan and Sri Lanka. He emphasized that the crop impact study has been a success story in the implementation of MD. He gave a brief introduction of the study, its objectives, the methodology, the overview of the sites and crops used, and presented the results. He summarized the achievements of the study which included, (i) new large-scale experimental evidence of effects of O₃ on the yield of important South Asian crops; (ii) widespread evidence of plant-damaging concentrations levels of O₃ during main growing seasons; (iii) development of standardised risk assessment methodologies that have been evaluated for application across SA; (iv) increased awareness of yield-damaging effect of O₃ among policy-makers, scientific community and general public; (v) successful capacity-building and enhanced cooperation within the region on active mutual exchange of knowledge and skills especially among scientists; and (vi) the establishment of a Regional Centre of Crop Impact Assessment in Pakistan to oversee coordination, quality control and reporting of the MD crop impact activities. He also mentioned some data gaps and suggested future steps.

Health Impact Assessment Studies

23. Dr. Frank Murray, Murdoch University, Australia presented the final report of the health impact assessment studies conducted in Dhaka, Islamabad and Kathmandu. He briefly presented the rationale of the project, measuring the effects of air pollution on health of children in large cities of SA. He gave a background on the two components of the studies, namely, (1) the baseline survey and (2) the health impact assessment, mentioning the methodologies applied at each phase. He also presented the results of the studies in the three cities and the analysis report. The studies concluded that if emissions of PM_{2.5} in Dhaka, Islamabad, Kathmandu and similar cities could be reduced, the harmful impacts on the respiratory health of children could be substantially decreased with social and economic benefits. He also suggested as a further step the conduct of a regional study to quantify the health, social and economic costs of ambient health damaging PM_{2.5} particles in MD countries. This initiative is aimed to enable more thorough national assessments of impacts, policy options, costs and health benefits of key options to reduce the burden of disease caused by air pollution.

Updates on air pollution from national stakeholders initiative

24. Dr. Bilkis A Begum, Atomic Energy Centre, Bangladesh, presented a study on the “Identification of haze creating sources from fine particulate matter in Dhaka Aerosol using Carbon Fractions Data”. She highlighted on the impact of air pollution on visibility. She mentioned that reduced visibility is noticeable in Dhaka during winter due to smog. She also confirmed that the most serious pollutant in Dhaka and other cities of Bangladesh is particulate matter (PM). She briefly presented the objectives and methodology of the study, as follows: (1) assessment of ambient air quality particularly PM in Dhaka city; (2) assessment on the impact of various policy interventions, i.e. unleaded gasoline, CNG adaptation, etc.; (3) identification of potential source locations and long range transport; and (4) identification of haze creating sources. She summarized the findings and concluded that to address the air pollution issues locally, some measures, i.e careful monitoring of emissions from motor vehicles; reduction of soil dust including dust from the road; and replacement of existing brick kiln with energy-efficient and environment-friendly brick production technology, have to be undertaken. The study also suggested that it is necessary to address the air pollution issues regionally as the transboundary effects may increase the local air pollution.
25. Dr. Abdus Salam, University of Dhaka, presented on the “Aerosol Optical Depth (AOD) Measurements from a Newly Established NASA-AERONET Station in Dhaka, Bangladesh”. He provided a brief overview of the work of NASA AERONET (AErosol RObotic NETwork) program which is a federation of ground-based remote sensing aerosol networks, two stations of which are located in Bangladesh. He highlighted on the use of Sunphotometer to measure the sun and sky radiances, and of which is also used to monitor AOD measurements, along with the other parameters. He mentioned that aerosol optical depth or optical thickness is the

degree of which aerosols prevent the transmission of light by absorption or scattering of light. He presented the graphical data and analysed reports. He briefly summarized the conclusions of the study, as follows: (1) Dhaka AOD is slightly higher than other South Asian locations and much higher than the North American sites; (2) Bimodal size distributions were observed in most cases but coarse particles are dominating during monsoon months; (3) Clear and hazy days can be distinguished from AOD measurements; and (4) AOD measurements showed that Dhaka aerosol has a significant contribution from transboundary pollution.

26. Mr. Golam Soroar, Scientific Officer, delivered a presentation on a Clean Air and Sustainable Environment (CASE) project “A national initiative to reduce air pollution in Bangladesh”. He gave an overview of the CASE project which addresses the issues on air pollution abatement and improved mobility in Dhaka. The project, which is implemented by the Ministry of Environment and Forests, builds on the experiences and lessons from two World Bank projects, namely the Air Quality Management Project (AQMP) and the Dhaka Urban Transport Project (DUTP). It is aimed at: (i) strengthening capacity to plan, monitor, regulate and implement sustainable environmental initiatives in transport and brick sector; (ii) greening the brick making industry; (iii) increasing pedestrian mobility; (iv) reducing congestion by improving traffic flows; and (v) enhancing the institutional capacity of multi-sector players to abate air pollution. Mr. Golam mentioned that there were three sub-components under the environment component, namely, (i) capacity building for air quality management; (ii) brick kilns emission management; and (iii) communication campaign and clean air initiatives facility, and presented the specific measures and activities undertaken at each phase.
27. Dr. Md Anisur Rahman, CASE Project DTCA, presented the Dhaka Bus Network and Regulatory Reform. He mentioned that an affordable and efficient public transport is vital for the development of Dhaka, given the current socio-economic framework. He informed that in Dhaka, the DTCA is undertaking major efforts at bus system, including, (i) infrastructure development, i.e. high capacity BRT system along main corridors and priority bus routes as feeders; (ii) development of management model with public-private partnership; and (iii) building a sustainable business model. He presented the proposed transit network plan, detailing the phase by phase implementation towards the year 2050. He also mentioned that major challenges for the bus reform are the lack of political support and funding, and negotiation with the operators on the routes packages for contract operation.
28. Prof. Ashraf Ali, Civil Engineering Department, Bangladesh University of Engineering & Technology (BUET), Dhaka, presented the report of the National Air Pollution Reduction Strategy for Bangladesh. He mentioned that BUET had been assisting DoE in the development of the air pollution reduction strategy as part of the implementation of MD. He briefly gave an overview on how the work proceeded, detailing the activities undertaken at each phase, leading to the identification of key control strategies and potential policies. He also presented the structure of the report. The study also identified some relevant policy issues, including, regulatory and fiscal reform; awareness and motivation across sectors; further

research and development to address knowledge and information gaps; cooperation and coordination among various stakeholders; capacity-building and knowledge retention; and institutional setup and governance.

Updates from initiatives focusing on air pollution at the regional/sub-regional level

29. Ms. Suwimol Watanawiroon, Programme Officer, RRC.AP, made a presentation on the progress of EANET. She provided an overview on the work of EANET and highlighted the major achievements on acid deposition monitoring and compilation/evaluation of data; strengthening technical capacity, promotion of QA/QC activities; related research and studies; and public awareness activities. Current and future activities of EANET were also pointed out and the on-going discussion on the possible future expansion of the scope of EANET was mentioned.
30. Mr. Mylvakanam Iyngararasan, UNEP Headquarters and Dr. Ram Lal Verma, Programme Officer, RRC.AP presented the progress in the implementation of the ABC programme including the national emission scenarios for Selective South Asian countries and guidelines for national ABC programmes. The draft guidelines will be circulated to the national implementing agencies of the Malé Declaration for their comments.

Updates on air pollution related activities in the member countries of MD

31. Mr. Ijlal Hussain, Pakistan Environment Protection Agency, presented on the “Air Pollution and Control Activities: Pakistan’s Scenario”. He gave an account of the major pollution issues in Pakistan, including among others, high concentration of PM10 and PM2.5, haze and smog formation in urban centres, increasing concentration of oxides and nitrogen, excessive use of coal in industries; and burning of municipal solid waste. He briefly outlined the major steps undertaken to control air pollution through the Pakistan Clean Air Program (PCAP), as follows: (i) use of clean fuels; (ii) improved technology; (iii) vehicle emission testing centres; (iv) enforcement of standards; and (v) establishment of air quality monitoring system. Major activities and achievements at each step were also mentioned. Some communication and logistical constraints; poor equipment maintenance, unavailability of funds, and weak coordination were mentioned as among the challenges encountered in the course of implementation.
32. Dr. Mohammad Sadegh Sekhvatjou, Islamic Azad University, Iran presented a study on the “Air pollutants concentration changes and exposure risk levels in the most important petrochemical complex zone in Iran”. He mentioned that petrochemical industries are the major emission sources of volatile organic components (VOCs) in the atmosphere and which are toxic and have potential impact on human health. The main goals of the study were to determine the concentration of gases - benzene, hexane, toluene, etc.; particulate matters; heavy metals; Hg and other substances in the petrochemical complex zone (PET zone) in Iran.

The results of which were used to assess the air quality and VOC exposure risk to in the area. He outlined in details the methodology and presented the results which indicated a high exposure risk in the PET zone, hence, it is essential for industrial zones to have comprehensive plan for air pollution control, which considers identification of emission sources, measurement of VOCs and other pollutants, application of air pollution dispersion and emission modelling, and preparing emission reduction methodologies.

IV. SUMMARY AND CONCLUSION OF THE SESSION

33. Mr. Chowdhury, Chairperson summarized the 2-day RSC7 event with the following points:
- The Malé Declaration monitoring network has been strengthened in Phase IV. The countries submission of the data is needed to complete the Data Analysis Report in 2013. Countries, that have not submitted the monitoring data to the Secretariat so far ,shall submit the same, right after the meeting. Lack of information on monitoring sites, limitation or insufficient data and old meteorological data were pointed out. Temperature data is missing in passive samplers. It was suggested, that in case of power failure continuing at the present site, the site should be moved to other location or have some alternative sites for monitoring.
 - It was reminded that sustainable financial contribution is crucial for the implementation of the proposed Phase V due to the ownership of the member countries to Male' Declaration and considering that the Swedish International Development Cooperation Agency (Sida) financial support has been completed.
 - Challenges encountered by few countries of Male Declaration include: inadequate manpower to conduct the monitoring activities, malfunctioning of equipment and erratic power supply. It was suggested that these issues need to be resolved at the national level.
 - On basis of database, it was pointed out that standard and action plans might be developed. The capacity and level of implementation shall be enhanced in the Male' Declaration countries. The gaps and weaknesses shall be covered up.
 - It was informed that the Crop Impact Assessment Studies and Health Impact Assessment Studies will be endorsed at the Thirteenth Session of Intergovernmental Meeting to be held one day after the Regional Stakeholders Meeting, 20 May 2013.
 - Local air pollution related studies, case studies and experiences of regional air pollution networks and programmes together with the activities under the Male' Declaration can contribute in abatement and control of air pollution in the Asia region.
34. Dr. Jonathan Shaw, RRCAP delivered the Closing Remarks. He conveyed his appreciation to all people who contributed to the success of the event. He thanked the participating countries,

the resource persons, RRC.AP colleagues, the chairpersons of the sessions, and most specially the local host, DOE & MOEF, for a job well done. He looked forward to the next phase of implementation of the Male Declaration so that sharing of experiences and expertise on air pollution issues in South Asia will continue, and the network would be further strengthened.

35. The Session was officially closed by the Chairperson.

Annex I

List of Participants

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