

# Malé Declaration

on Control and Prevention of Air Pollution  
and its Likely Transboundary Effect for South Asia



**Sixth Regional Stakeholders cum Coordination Meeting**  
28-29 June 2011, Delhi, India

## REPORT OF THE MEETING

### I. INTRODUCTION

1. The Sixth Regional Stakeholders cum Coordination Meeting (RSC6) of the Malé Declaration on Control and Prevention of Air Pollution and its Likely Transboundary Effects for South Asia (Malé Declaration) was held in Delhi, India on 28-29 June 2011.
2. The meeting was attended by the Malé Declaration National Focal Points (NFPs) and National Implementing Agencies (NIAs) of the participating countries which include: Bangladesh, Bhutan, India, Iran, Maldives, Nepal, Pakistan, and Sri Lanka. Experts from South Asia Cooperative Environment Programme (SACEP), Stockholm Environment Institute (SEI), United Nations Environment Programme (UNEP), UNEP Regional Resource Centre for Asia and the Pacific (UNEP RRC.AP), a resource person from Murdoch University Australia, expert from Swedish Environmental Research Institute Ltd (IVL), Technical Committee Member of the Malé Declaration and an independent facilitator also attended in the meeting. Stakeholders from the participating countries of Malé Declaration also participated in the meeting. The list of the participants is enclosed as Attachment I.
3. Mr. R. Rajamani, former Secretary of the Ministry of Environment and Forests, Government of India chaired the meeting as the Regional Facilitator.

### II. SESSION 1: MALÉ DECLARATION AND RELATED PROGRAMMES

#### Malé Declaration and its Implementation

4. Ms. Adelaida B. Roman, UNEP RRC.AP presented the progress on the implementation of the Malé Declaration. The presentation focused on the progress during 2008-2009. Major activities include: completion of the Phase III implementation phase of the Malé Declaration; prioritization of activities under the Phase IV implementation; publication of all reports under Phase III; and implementation of the Task Force on Future Development of Male Declaration (TFFD). The Phase IV implementation activities according to the six objectives were highlighted.

#### Overview of the National Level Implementation of the Malé Declaration

5. The NIAs of the Malé Declaration presented the progress during the Phase IV implementation in their respective countries. Presentations focused on the institutional arrangement under the

Malé Declaration, monitoring activities, impact assessment activities, recent measures to control air pollution emissions in the country and the plan for the next 2 years.

6. Mr. Q. S. I. Hashmi of Bangladesh presented the status of implementation of the Malé Declaration in Bangladesh. Summary of the presentation include:
  - Monitoring activities include the analysis of the concentration of air pollutants (dry deposition), rain water analysis (wet deposition); and data collection of meteorological parameters
  - Concentration analysis of air pollutants by high volume samplers (HVS) and diffusive samplers and rain water analysis have been carried out; Metrological parameters have been collected; the data obtained through the activities were interpreted and presented;
  - Study on the effects of tropospheric ozone on cereal and legume crops (mung bean and wheat) is being conducted using ethyl diurea (EDU).
  - Recent measures to control emissions in the country include: a) preparing a roadmap to reduce sulfur from diesel to 50 ppm by 2015; b) initiating less polluting and energy efficient brick manufacturing technology; c) government is working on mass rapid transit (MRT), Bus Rapid Transit (BRT) and other options to reduce traffic congestion in Dhaka city; and d) imposing emission tax.
  - Plan for the implementation of the Malé Declaration in the next two years was briefed: all parameters will be monitored as usual; emission inventory will be updated using 2005 data; crop impact assessment will be finalised; participation in the inter-laboratory comparison programme, and country specific technical, fiscal and policy measures for emission reduction are being studied.
  
7. Mr. Dorji Tshewang, National Environment Commission, Bhutan presented the status of implementation of the Malé Declaration in the country during its first year of activities under the Phase IV implementation phase. Summary of the presentation include:
  - Policies and strategies include the National Environment Protection Act 2007; the need to monitor any changes in air quality being reported to parliament; air quality management strategy being adopted; include all activities to control air pollution; air quality, vehicle and industrial emission standards are set; fiscal instruments adopted by the government.
  - Monitoring air pollution is on-going following the common methodology of the Malé Declaration. Bhutan is also conducting a study to assess the impacts of air pollution on crops and considers doing a study on the impacts of air pollution on human health.
  - Future activities include: number of monitoring sites will be increased; additional pollutants will be monitored, especially SO<sub>x</sub> and NO<sub>x</sub>; emission inventory will be updated; and source apportionment study will be conducted.
  
8. Dr. Dipankar Saha and Ms. Shaveta Kohli, Central Pollution Control Board presented the progress in India. Summary of the presentation include:
  - Details of the NIA and institutional arrangement for the implementation of the Malé Declaration were highlighted.
  - Monitoring activities including the ambient air quality and wet deposition monitoring are on-going.

- Impact assessment studies on health, crop and materials as well as emission inventory have been carried out.
  - Other activities being carried out by CPCB and the major initiatives undertaken in air quality management include: national ambient air quality monitoring program; vehicular and industrial pollution control; expansion of monitoring networks and dissemination of data; as well as the phase-wise establishment of the “regional centre on dry and wet deposition monitoring” and regional centre for corrosion impact assessment”.
9. Mr. Masood Zandi presented the status of implementation of the Malé Declaration in Iran. Summary of the presentation include:
- The source of air pollution in Iran and sand dust was indicated as an emerging air pollution issue in the country.
  - Monitoring data was presented and policies related to the improvement of air quality was mentioned including a) implementation of comprehensive plan on air pollution reduction in process of industries; b) improvement of fuel quality; c) updating existing vehicle standards; d) promoting use of clean energies and setting of required laws and regulation
  - Plan for the next 2 years include: a)strengthening and developing air pollution monitoring specially in west of Iran; b) implementing the desertification in sandy area of Iraq and Iran; c) enhancing the impact assessment capacity of the national institution; d)assisting Iraq, Syria and Turkish for reduction of air pollution; e) continue to assist with the secretariat MD and sending the samples of old and new station; f) enhancing public awareness for future action on air pollution; g) strengthening the crop and health assessment capacities on issues of air pollution
10. Mr. Ibrahim Mohamed Environmental Protection Agency (EPA) presented the status of the implementation of the Malé Declaration in Maldives. Summary of the presentation include:
- Status of Malé Declaration activities: a) EPA has started the establishment of the system for air quality monitoring in Malé and will begin monitoring in September 2011; b) monitoring will be conducted using the HVS which was installed recently, under assistance from Malé Declaration; c) Parameters to be monitored include PM, SOx, NOx and Ozone; d) There is no Pollutant Standards Index established in the country and US, EPA standards will be followed.
  - Challenges and opportunities include: a) The government is keen on monitoring ambient air quality and seeking various avenues for such activities; b) The Strategic Action Plan-2009 of the government has included air pollution as one key focus area under environmental quality; c) Lack of resources, especially human resources and financial resources as well as lack of technical expertise were mentioned; d) There is need to increase awareness among general public regarding the importance of monitoring air quality
11. Ms. Bidya Pradhan, ICIMOD Nepal presented the status of implementation of the Malé Declaration in Nepal. Summary of the presentation include:
- Introduction on the monitoring station, monitoring data and the data portal by ICIMOD was made.

- Results of the training workshop on the assessment of the health impact of air pollution and updates on the study to be conducted in Kathmandu, Nepal were presented.
  - Government initiatives include the following: a) Banned less than twenty micron polyethylene bags and other polyethylene materials inside the Singh durbar area since 5 June 2011; b) The Ambient Air Quality Monitoring System of Kathmandu valley is planned to revive from July 17 2011; c) Ban on Moving Bull Trench Kilns in Nepal from 27 November 2011; d) Standards for Brick kiln was mentioned.
12. Mr. Asad Ullah Faiz, Pakistan Environment Protection Agency, presented the status of implementation of the Malé Declaration in the country. Summary of the presentation include:
- The institutional arrangement in Pakistan for the Malé Declaration, sources of air pollution in Pakistan, air quality monitoring network and the monitoring station under the Malé Declaration, on-site monitoring activities and trainings, the monitoring data and the inter-laboratory comparison activities and results were presented.
  - Status of emission inventory, crop impact assessment studies that has been conducted and the health impact assessment being initiated; information on corrosion and soil impact assessment studies being conducted
  - Recent measures on control and prevention being done include: a) Pakistan Clean Air Programme approved by Pakistan Environmental Protection Council envisaging 10 components; b) Euro II standards implemented; c) Vehicular Emission Testing Programme launched on regular Basis; d) Introduction of Zig Zag Technology for Brick Kilns availing CDM; e) Introduction of On-line Dust Monitoring System in Steel Industry; f) Strengthening EIA and IEE Mechanism; g) Strengthening of Legislative Framework; h) Enhancement of enforcement Mechanism; i) Revision and up-gradation of National Environmental quality Standards; j) Introduction of CNG Buses; k) Awareness Raising
  - Planned activities for the next two years include: emission inventory preparation; corrosion impact assessment; crop forests and vegetation impact assessment; health impact assessment study; and assessment of impacts of wet and dry deposition monitoring and pollution prevention/control measures and strategies
13. Mr. R.M. Kulasena, Central Environmental Authority presented the status of implementation of the Malé Declaration in Sri Lanka. Summary of the presentation include:
- Institutional arrangement on air pollution issues in Sri Lanka was highlighted.
  - On-going monitoring activities under the Malé Declaration and the results were presented, which include the monitoring of SO<sub>2</sub>, NO<sub>2</sub> and also the wet deposition monitoring of these pollutants in regular basis. Problems encountered during the monitoring were highlighted which include non-durability of plastic material of the lid and the funnel holder of wet only collector under Sri Lanka's climatic condition and the materials became brittle. The need for spare lids for every 6 months as well as the issue on the wet-only-collector being out of order due to damage of gear box and not in a repairable condition was raised.
  - The activities on crop impact assessment and the status were also presented.
  - Proposed activities for the next three years were presented. These include setting up of monitoring station in Jaffna/Mannar; capacity building and technical enhancement on

modelling, trend analysis and source identification; inclusion of relevant Malé Declaration activities into the national air quality management action plan 2015; preparation of emission inventory based on 2007 data; complete awareness program on air pollution through school awareness program; disseminate brochure designed to address air pollution currently under printing stage.

### **Health Impact Assessment Studies**

14. Frank Murray, Murdoch University, Australia presented the progress of health impact assessment studies under the Malé Declaration. The presentation focused on studies conducted in Dhaka city and also the study plans for Nepal and Pakistan. Summary of his presentation are as follows:
- The presentation started from basic introduction on the particulate matter's impact to the health of schoolchildren, especially in South Asia and also an overview of Children's Health Study in South California. Particulate matter is the major air quality problem in Dhaka. The study which was conducted in Dhaka shows that there is a relationship between Peak Expiratory Flow Rate (PEFR - a measure of lung function) in both asthmatic and non-asthmatic children and PM<sub>10</sub> and PM<sub>2.5</sub> concentrations. The study done in Dhaka is consistent with studies in Mexico City, the Netherlands, Bangkok and studies in the USA. It is concluded that if ambient concentrations of PM<sub>10</sub> and PM<sub>2.5</sub> in Dhaka and similar cities could be reduced, the harmful impacts on the respiratory health of children could be substantially decreased.
  - The same study will be conducted in Nepal and Pakistan during the Phase IV implementation of the Malé Declaration. Methodology of the experiment was presented.

### **Overview of the Crop Impact Assessment Studies**

15. Mr. Kevin Hicks, SEI-York University, presented an overview of the studies on the impacts of air pollution on agricultural crops in South Asia.

### **Youth Awareness Raising and Education on Transboundary Air Pollution**

16. Ms. Madhavi Joshi, South Asian Youth Environment Network (SAYEN) delivered a presentation on the youth awareness and education being conducted in collaboration with the Malé Declaration. Highlights of the presentation are as follows:
- Brief introduction of SAYEN, its members, partners and supporters as well as its vision and goals were presented.
  - Their activities include networking and information servicing, capacity building, documentation, awareness raising and developing resource materials.
  - The publication on "Youth for Clean Air" was also presented. The publication was composed by youth groups in collaboration with the Malé Declaration Secretariat. The awareness CD that was published was also mentioned.

### **Future Development of the Malé Declaration**

17. Mr. J.S. Kamyotra, Chairman, Task Force on Future Development of the Malé Declaration (TFFD) presented the Report of the TFFD for the information of the Stakeholders. The presentation covered the reports prepared by the TFFD including the Draft Resolutions for the consideration of the Ministerial Level Meeting; the Report on the Sustainable Financial Mechanism; the Feasibility Report on the Establishment of Regional Centres; and the Feasibility Report on Strengthening the Regional Framework on Air Pollution Reduction in South Asia. All these reports will be submitted to the Twelfth Session of the Intergovernmental Meeting for proper guidance or adoption, and for submission to the Ministerial Level Meeting for its endorsement.

### III. SESSION 2: INITIATIVES ON AIR POLLUTION IN SOUTH ASIA

18. Mr. Alipour, Tehran Vehicle Technical Inspection Bureau, presented the “Most important activities carried out in Iran about climate change by focusing on Tehran Metropolis Urban management issues”. Summary of his presentation are as follows:
- Measures taken with regards to addressing the issue of climate change include research activities; enforcement of policy measures and other activities
  - Research activities include preparation of a) a report on national circumstances heading the development programmes, objectives and priorities, and their adaptability to issues of climate change and sustainable development; b) report on national greenhouse gases inventory; study on methods of reducing emissions and its subsequent implementation
  - Enforcement of policy measures specifically in the industry and transport sector. If the policy measures will be carried out, the amount of greenhouse gas emissions in the country will decrease from 700 million tons in the BAU scenario to 550 million tons carbon dioxide equivalent in 2010, which indicates a 20% reduction in the greenhouse gases emission.
  - Activities to reduce greenhouse gases include traffic management; public transportation development; reduction of fuel consumption; waste management; energy management in buildings and household consumption; using new and renewable energy sources; educational and special activities
19. Mr. Mohammad Sadegh Sekhavatjou presented the duststorms and environmental challenges in Southwest Iran. Summary of his presentation are as follows:
- Introduction of dust storm, the sources and areas impacted. He discussed the study conducted, the area of study, the major aims of conducting the study, how they conducted measurements of dust, analysis of trends and the impacts to the area.
  - Some of the effects of the dust storm in Southwest Iran include a) increase in cardiovascular attacks; b) decrease of photosynthesis rate in plants; c) enhanced desertification in the area; d) increase in flight cancellation thereby affecting the economic sector; e) migration of specialist and businessman to other places with better weather condition.
20. Mr. Manjeet Dhakal, Clean Air Network Nepal (CANN) delivered a presentation entitled “sharing experiences of CANN in clean air”. Summary of the presentation is as follows:
- Introduced CANN, a non-government organization established with a vision of creating sustainable Nepal where right to clean environment is ensured for all. CANN also serves

as Secretariat of Nepalese youth for climate action (NYCA), climate action network South Asia (CANSAs) and climate change network Nepal (CCNN).

- Air pollution issues in Nepal were discussed. Pollution is slowly rising due to increase in diesel fueled vehicles.
- Activities to help address the issue of climate change include a)the regional blue skies exchange programme, with partner countries easier for knowledge sharing and coordination; b)building national and local capacity; c)developing air pollution toolkits for raising awareness in the education sector for children; d)conducting walkability survey; e)indoor and outdoor air quality study in six monitoring stations in Kathmandu; f)online discussions and webinar on environmentally sustainable transport; g)radio program; h)clean air summit.

21. Prof. Mukesh Khare, Indian Institute of Technology (IIT), Delhi, made a presentation on “sustainable urban built environment (UBE) in Indian cities: Indoor air quality (IAQ)”.

Highlights of his presentation are presented below:

- Sustainable development meets the needs of the present without compromising the ability of future generations to meet their own needs. Environmental protection and economic development are complementary rather than antagonistic processes.
- Sustainability is measured through: urban land and resources management; determination of growth boundaries; identification of indicators and sustainability coefficients; simulative modelling techniques to predict the developmental profile of the city depending upon the priority of indicators.
- The status of indoor air pollution in India was presented. Enclosed spaces inhabited by humans produce following effects: reduction in oxygen level of spaces; increase in CO<sub>2</sub> level; increase in temperature; increase in humidity; and increase in Bioaerosols and odor
- Strategies for investigating IAQ problem, the need of assessing IAQ in India and the IAQ studies conducted at IIT were presented.

22. Dr. Zia Wadud, Bangladesh University of Engineering and Technology, made a presentation on “Bangladesh perspective on air pollution control strategy/policy. Highlights of the presentation include the following:

- An introduction on the air quality management system and the part for the policies/strategy was presented.
- In developing an air pollution reduction strategy for Bangladesh, the following will be conducted: a)analysis of the current status on the air monitoring data; b)look at emissions inventory which is currently being prepared by the Department of Environment Bangladesh; c)identification of key pollutants; d)review of existing strategies, laws, and standards; e)future growth and strategies; f)literature review on control strategies and policies and their effectiveness and efficiency; g)review evidence of the effects of enforcing policy measures in reducing air pollution in Bangladesh; h)identification of key control strategies and potential policies based on previous work steps; i)preparation of draft report; j)review/feedback from stakeholders
- Foreseen uncertainties on the process of identifying the air pollution control strategy are on the a)data on air quality, vehicle activity, scrappage, fuel economy, emission factors of existing and CNG converted vehicles, numbers of vehicles converted, number of brick

factories, brick emissions rate, industries, industrial technologies, industrial emission rates, biomass burning, and indoor air pollution; b)emission inventories; c)control cost estimates; d)economic benefit estimates; and e)co-benefit estimates

23. Dr. S.P. Singal, former Head Acoustics National Physical Laboratory, New Delhi made a presentation on air quality control/management strategy in India. Summary of his presentation is as follows:
- A rational approach to develop an air quality control strategy can be based on the following steps: a)clear identification and delineation of poor air quality with time and location; b)identify the most likely sources and/or mechanisms and pin-point source apportioning; c)technical appraisal of the identified critical sources/mechanisms to look for viable options
  - Intensive monitoring and data collection throughout the length and breadth of the country is the only solution. About 25 years back India launched a nation-wide air pollution monitoring programme (NAMP) where 342 monitoring stations have been set up in 127 cities/towns in 26 States and 4 Union Territories covering all big cities and industrial areas. Criteria Pollutants including SPM, RSPM, and Oxides of Sulphur and Nitrogen are being monitored applying appropriate technology & instruments.
  - Quality control mechanisms include formulation of standards, abatement of vehicular pollution, social/community response and responsibility.
  - Financial resources required and the possible sources were also mentioned.
24. Professor Manju Mohan, IIT, Delhi, India made a presentation on “air pollution and its impact: case studies on Indian urban scenario”. Highlights of the presentation include:
- Air pollution in urban areas is being aggravated by factors largely of anthropogenic nature including emission of air pollutants, heat emissions, rapidly changing land use/ land cover (LULC), all of which are interdependent complex relationship. The urban LULC change impacts on local warming in India was also presented.
  - Urban air quality management research initiatives presented include: a)a case study: urban heat island hotspots in Delhi including greenhouse gas emissions and ozone in Delhi; b)atmospheric chemical modelling in Delhi covering the health impacts of air pollution and urban climate; and c)application of air dispersion modelling for exposure assessment from PM pollution in Delhi considering the urban warming issues
  - Conclusions from the research initiatives are as follows: a)The direct contributions of urban warming to global climates appears small. However, the greenhouse gas emissions from the construction and operation of cities are large and increasing; and with development of more cities, the significance of UHI effect is bound to increase; b)The ultimate challenge is to understand and estimate though modelling efforts the cross-linked influences of global/local warming, urban climate and air quality and associated impacts on human health
25. Dr. D.D.N. Singh, National Metallurgical Laboratory (NML), India made a presentation on the “Impacts of air pollution on corrosion of metals and materials”. Highlights of his presentation are as follows:



- Background of the results of combinations of pollutants with water and carbon dioxide to the corrosion of materials was mentioned. Air pollutants synergistically accelerate corrosion rate.
  - Impacts of air pollution on corrosion of metals include tremendous economic losses, health hazards, accidents-loss of lives, monuments/heritage deterioration.
  - Research studies that were conducted include pollution creating havoc to metallic and non-metallic structures; spalding and fading of marbles of Taj Mahal, and observations on corrosion of metals in Taj Mahal.
  - The objectives of NML and CPCB collaborative projects are to a)identify principal components of air pollutants in some selected urban and rural areas of the country; b)study kinetics and mechanisms of degradation of metallic and non-metallic materials caused by air pollutants; c)study the role of combined effects of pollutants on corrosion; and d)bring out an exhaustive report incorporating present scenarios and future impacts of air pollution on corrosion of important structures.
26. Dr. Krishna Aryal, Nepal Health Research Council (NHRC) presented the air pollution control and prevention: initiatives for mitigating health impacts in Nepal. Summary of his presentation include the following:
- The responsibility of NHRC is to promote and coordinate health research for improvement of the health status of the people in Nepal. NHRC regulates malpractices on health research in the country.
  - Air pollution is one of the major environmental health issues in Nepal. The situation of air quality in Nepal is not available except for Kathmandu Valley where current and updated data are not available as the monitoring stations are not functioning since March 2009. However, existing monitoring stations are being renovated and will be functional soon.
  - Initiatives by NHRC include researches on quantified health effects using exposure-response model based on time series data; determination of national standards for ambient and indoor air quality in 2003 and 2009; research on lead pollutants in the environment and its effects on health status of inhabitants of Kirtipur Municipality (2001); determination of health risk effects of PM<sub>10</sub> on residents in major urban areas, specifically women and children (2001); provides grants for researches on air pollution.
27. Dr. Dr. Madhoolika Agrawal, Banaras Hindu University, India made a presentation on “tropospheric ozone: a threat to food production in India”. Highlights of the presentation include:
- Effects of ozone in plants include damage to tissues of leaves, flowers and fruits; increase in oxidative stress; inhibition of photosynthesis and alteration in metabolism; alteration in photosynthate allocation; suppression of growth and development; accelerate senescence; increase susceptibility to diseases and climatic variables; and reduction in crop yield and quality
  - Research studies on the effects of ozone to crops such as wheat, corn, mustard, and potatoes as well as the effects of using ethyl diurea (EDU) on growing plants were presented. Conclusions drawn from the research studies include: a)high temperature, long sunshine hours and low humidity led to higher ozone concentrations during warmer months; sensitivity of crops differed among species and cultivars; b)meteorological

conditions during crop growing season affected ozone concentrations and the consequent magnitude of negative effects on growth and yield of crops; c) yield responses showed direct correlation with the response of other parameters observed at reproductive period than vegetative period; d) the plants which utilized more photosynthates for neutralizing the damaging impact of pollutants could not translocate efficiently to developing ears and hence showed greater reductions in yield; e) slow growing and low yielding cultivars were more resistant than fast growing and high yielding cultivars; f) higher magnitude of protection provided by EDU to yield as compared to growth parameters (high concentration of ozone during synthesis period); g) higher magnitude of protection by EDU more sensitive compared to resistant cultivar.

28. Prof. S. Razi Abbas Shamsi, University of Punjab, Pakistan made a presentation on “ground level ozone and agricultural losses: Pakistan scenario”. Summary of his presentation is presented below:

- Introduction on tropospheric ozone location, formation, sources and emissions, as well as impacts of ozone on crops.
- Research approaches to study the ozone impacts include a) open top chamber system (studies on wheat and rice, soy bean and mung bean); b) bio-monitoring system (studies on tobacco and clover); c) chemical EDU protection system (studies on soy bean, canola sunflower, spinach and mung bean). The result of research studies conducted using these approaches were presented.
- Conclusions and recommendations drawn from the research studies are as follows: a) there is rapid increase in ambient ozone concentration levels with time; b) certain impacts on crop growth and yield was observed; c) there is drastic yield reductions (30-60%) in the staple crops; d) there is little understanding and lack of awareness of adverse impacts amongst agricultural policy makers, thereby needs to be addressed; e) extensive biomonitoring and EDU surveys at more rural locations to monitor tropospheric ozone concentration and ascertain its impacts on a wide range of crops for risk assessment is needed; f) there is a need to establish air quality standards through the use of continuous monitors to understand pollutant concentration build-up; g) additional monitoring of spatial and temporal concentration of ozone and other pollutants in rural areas proximal to major cities and in the remote agricultural areas is also suggested.

#### **IV. SESSION 3: INITIATIVES ON AIR POLLUTION IN ASIA**

29. Ms. Adelaida Roman, UNEP RRC.AP, Acid Deposition Monitoring Network in East Asia (EANET) made a presentation on the progress of EANET. Highlights of the presentation are as follows:

- Major achievements of EANET on monitoring and evaluation of data; strengthening technical capacity, QA/QC activities; capacity building activities; research activities; and public awareness activities were presented
- Recent adoption of the Instrument for Strengthening the EANET was also mentioned including the signing of nine countries of EANET, to date.

- The outputs/outcomes of the concluded and recent Sessions of the Intergovernmental Meeting, Scientific Advisory Committee and the Working Group on Future Development were emphasized.
  - Other future activities of EANET were also pointed out in the presentation.
30. Ms. Adelaida Roman, UNEP RRC.AP made a presentation on Joint Forum on Atmospheric Issues in Asia and the Pacific (Joint Forum). Highlights of the presentation include:
- The background and the need to develop a mechanism to help existing regional networks share experiences and identify opportunities for effective collaboration was emphasized.
  - She mentioned that enhanced coordination among the regional/sub-regional networks will provide win-win situations for all the networks and form a regional force to address atmospheric issues.
  - Outcomes of the two meetings of the Joint Forum on Atmospheric Environment in Asia and the Pacific held in 2009 and 2010 were presented, including the adoption of the “Joint Plan for Joint Activities on Air Pollution in Asia and the Pacific”.
  - The progress, activities and workplan of the Joint Forum were also presented.
31. Mr. Herbert Fabian, Clean Air Initiative for Asian Cities (CAI-Asia), made a presentation on the organization and their activities. Highlight of the presentation include:
- CAI-Asia promotes better air quality and livable cities by translating knowledge to policies and actions that reduce air pollution and greenhouse gas emissions in transport, energy and other sectors. This multi-stakeholder initiative was established in 2001 by the Asian Development Bank, World Bank and USAID, and is part of a global initiative that includes CAI-LAC (Latin American Cities) and CAI-SSA (Sub-Saharan Africa).
  - CAI-Asia Partnership now have 223 member organizations and Local Networks are created in eight countries.
  - Activities include capacity building for effective AQM include individual training, training for trainers and development of training manual; organizing better air quality conferences, dialogues with cities and governments and regional exchange programs. CAI-Asia also works closely with government and stakeholders, and addresses the co-benefits by addressing air pollution and climate change together.
  - Targeted results from CAI-Asia efforts include strengthening and harmonizing regional and national policies/standards; enhancing national and local frameworks for sound policies, programs and urban development; and increasing awareness and access to information, tools and partners.

## **V. SESSION 4: GLOBAL ATMOSPHERIC ISSUES**

32. Mr. M. Iyngararasan, UNEP HQ presented the progress of the Global Atmospheric Pollution Forum (GAPF). Major highlights include:
- The existing air pollution networks and updates in Asia; Africa; Latin America and the Caribbean; as well as in Europe and North America was mentioned.
  - The linkages of the forum with the Malé network include: sharing of experiences, and transfer and improvement of methodologies.

- The role of GAPF include a) supporting regional networks, promoting sharing of experience and promoting discussions to solve problems among the existing networks.
  - The current programmes and activities of the forum were mentioned.
33. Mr. M. Iyngararasan, UNEP HQ made a presentation on the Project Atmospheric Brown Clouds (ABC). Highlight of the presentation include:
- The atmospheric issues were introduced and the aims of Project ABC are to address the emerging issue of brownish haze caused by air pollution emissions containing aerosol particulates.
  - The project comprises three major programmes: a) Science: a better understanding of the science of ABCs with new findings on regional climate change; b) Observatory: an integrated network of strategically located state-of-the-art surface climate observatories c) impact assessment: assessment of the potential impacts of ABC on agriculture, water, and health using the data from the monitoring stations;
  - Current status of ABC measurements for the last 7 years and the magnitude of climate forcing and the results of major activities including the ABC science team meeting in Asia, updates in Africa and Latin America were mentioned. The status of the mitigation component of project ABC was discussed.
  - Importance of short-lived atmospheric pollutants on sustainable development was highlighted.
34. M. Iyngararasan, UNEP HQ presented Dr. Terry Keating's (co-chair of TF HTAP) presentation on the Task Force on Hemispheric Transport of Air Pollution (HTAP) under the Long Range Transboundary Air Pollution (LRTAP) Convention. Highlights of the presentation include:
- The HTAP report which contains conceptual models, observed spatial & temporal trends, emission inventories and projections, global and regional modelling of pollution transport, impacts to health, ecosystems and climate.
  - Unique contributions of the Task Force HTAP have been the organization of a series of multi-model experiments to quantify intercontinental transport.
  - Results for South Asia suggest that if all 4 regions of the world decreased emissions by 20%, 32% of the change in ozone concentrations in South Asia would be due to decreases in emissions outside South Asia.
  - Future directions of HTAP were also mentioned.

## VI. CONCLUSION OF THE SESSION

35. The RSC6 meeting ended with concluding remarks from Mr. Rajamani. He expressed the appreciation, on behalf of the entire participants of the meeting, to the Ministry of Environment and Forests and CPCB for the hospitality and excellent arrangements, which made the meeting a success.
36. He mentioned that based on years of efforts in the Malé Declaration, the network has achieved remarkable outputs and hope to be able to continue the cooperation and similar meeting be

convened, regularly in the cause of air pollution control and prevention. He also thanked the excellent participation of all the countries and stakeholders.

Attachment 1**List of Participants**

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