THE MALÉ DECLARATION: REGIONAL COOPERATION ASSESSING AND TACKLING AIR POLLUTION IN SOUTH ASIA

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ABSTRACT
The UN-ECE Convention on LTRTAP has shown that regional collaboration by countries sharing air pollution problems has been a crucial part in tackling Europe's air pollution problems. The South Asian region has also realised that it needs to tackle its air pollution through regional cooperation and therefore eight countries have agreed to collaborate through the 'Malé Declaration on the Control and Prevention of Air Pollution in South Asia and its Likely Transboundary Effects' which was agreed in 1998. Implementation of the Malé Declaration has been on-going, building up the scientific activities required for an assessment of the regional air pollution problems. This includes the monitoring of regional air pollution at one site in each country and the preparation of common manuals for monitoring, emission inventories and impact assessment. This paper will review progress and outline the challenges facing the region.

1. INTRODUCTION
In Asia, the rapid growth of cities, together with associated industry and transport system has made the region increasingly concerned with emissions of air pollutants. Some of the pollutants such as sulphur oxides, nitrogen oxides, and persistent organic pollutants (POPs) can travel thousands of kilometers away from the source and cause environmental degradations such as acidification of water, soil and defoliation of crops. Intervening weather pattern in Asia facilitate the transboundary transport of air pollutants from land to sea in the winter and reverse in the summer. Pollutants can thus be carried from country to country in the region and it is not possible for countries to solve the problem alone.

There are four major sub-regions or political groupings in Asia: Central Asia, South Asia, the ASEAN grouping and the East Asia. Sub-regional agreements have been formulated at sub-region level. Regional Environment Action Plan for Central Asia, Malé Declaration on Control and Prevention of Air Pollution and Its' Likely transboundary Effects for South Asia (Malé Declaration), the ASEAN haze action plan, and East Asian Network on Acid Deposition are the sub-regional level intergovernmental initiatives in Asia. This paper outlines the history and implementation of Malé Declaration which is being implemented by the South Asian Governments at the national level. At the regional level, the implementation is being facilitated by United Nations Environment Programme (UNEP) in collaboration with South Asia Cooperative Environment Programme (SACEP) and Stockholm Environment Institute (SEI) with the financial support from Sida, the Swedish International Development Agency.

2. DECLARATION
On 19 th and 20 th of March 1998 a round-table policy dialogue regarding the rapidly increasing problem of regional air pollution, with a focus on South Asia, was organized at the Asian Institute of Technology (AIT), Bangkok,Thailand. The Meeting was organized by the

UNEP Regional Resource Center for Asia and the Pacific in collaboration with the SEI. The meeting was attended by a distinguished groups of senior level environment ministry officials from South Asian countries, analysts and policy influencers, and representatives from key environmental organizations in the area. The meeting agreed on the need for action. The meeting, noting the experience of Europe decided to work on a draft declaration. The meeting approved the draft declaration in principle and decided to submit to the Seventh Governing Council of SACEP for adoption.

The Seventh meeting of the Governing Council of SACEP, held in April 1998 in Malé, the Republic of Maldives, adopted the declaration naming it the "Malé Declaration on Control and Prevention of Air Pollution and its likely Transboundary Effects for South Asia ". The Malé Declaration stated the need for countries to carry forward, or initiate, studies and programmes on air pollution in each country of South Asia. In Addition to the Declaration the countries also nominated National Implementing Agencies (NIAs) for its implementation. NIAs include: Department of Environment, Bangladesh; National Environment Commission, Bhutan; Central Pollution Control Board, India; Department of Environment, Iran; Ministry of Home Affairs and Environment, Maldives; Ministry of Population and Environment and International Center for Integrated Mountain Development, Nepal; Pakistan Environment Protection Agency, Pakistan; and Central Environment Authority, Sri Lanka.

3. NEED ASSESSMENT

The first stage in the implementation process is to document current knowledge and information/ institutional capacity in each nation relevant to air pollution issues. To this end it was agreed that baseline studies would be developed. Gaps in the current status of knowledge and capacity would become apparent and national action plans to fill these gaps could then be implemented, creating a solid scientific basis for the policy process. Implementation of the action plan will put in place expertise, equipment and information for quantitative monitoring, analysis and policy recommendations for eventual prevention of air pollution.

The first network meeting held in February1999 approved the implementation plan for the need assessment as part of Phase I implementation. Phase I saw the establishment of a network of organizations to implement the declaration and compilation of baseline information on air quality monitoring and management in the participating countries. Baseline studies provided valuable information on tackling the transboundary air pollution in the participating countries and clearly identified the gaps in the existing monitoring systems. Action plans provide the national priorities in implementing the Malé Declaration. The second network meeting held in March 2000 adopted the baseline studies and action plans which paved the way for the capacity building activities.

4. CAPACITY BUILDING

Malé Declaration aims to build regional cooperation as well as national capacities in addressing the issue of transboundary air pollution in the participating countries. Capacity building activities was initiated in 2002 as part of phase II implementation which aim to put in place the expertise, equipment and information needed for the quantitative monitoring, analysis and policy recommendations for the eventual prevention/control of air pollution. Strengthening the monitoring capacities based on common methodologies and standards at the national level was major task for the capacity building activities. Common manuals based

on the agreed methodologies were developed and trained technical staff based on the common methodologies.

Training programmes were organized at national as well as regional levels. While national training programmes focused on providing instruction and hands on experience in sampling and analysis of transboundary air pollutants, regional trainings concentrated on quality assurance and quality control (QA/QC) and data reporting. Monitoring stations were also established together with the national training programmes in each of the participating countries (Table 1). Currently, NIAs are operating the monitoring stations with the objective of obtaining long-term data on transboundary air pollution.

Country: Bhutan; **Station**: Gelephu **Latitude and longitude:** approx 27 degree 0 min N; 90 degree 30 min E **Altitude**: ~ 350m **Site type:** Remote site close to Jigme Singye Wangchuk National Park and Manas National park **Monitoring parameters:** Air quality: Respirable Suspended Particulate Matter (RSPM) or PM_{10} (particulate matter having a diameter <10µm), Total Suspended Particulate Matter (TSPM), Sulphur dioxide (SO_2) and Nitrogen dioxide (NO_2). Wet deposition: pH, and Electric Conductivity (EC)	**Country**: Bangladesh; **Station**: Kulna **Latitude and longitude:** N22º 18.975; E89º 02.607 **Site type:** Rural site, located about 30 km North of the Sundarbans forest. **Monitoring parameters:** Air quality: Respirable Suspended Particulate Matter (RSPM) or PM_{10} (particulate matter having a diameter <10µm), Total Suspended Particulate Matter (TSPM), Sulphur dioxide (SO_2) and Nitrogen dioxide (NO_2). Wet deposition: pH, and Electric Conductivity (EC)
Country: Iran; **Station**: Chamsari **Latitude and longitude:** N 32º 24' 6" E 47º 31' 16.4" **Site type:** Rural site, is 40 km south of the town Dehlaran and about 200 km south of Ilam, the headquarter of the province. **Monitoring parameters:** Air quality: Respirable Suspended Particulate Matter (RSPM) or PM_{10} (particulate matter having a diameter <10µm), Total Suspended Particulate Matter (TSPM), Sulphur dioxide (SO_2) and Nitrogen dioxide (NO_2). Wet deposition: pH, and Electric Conductivity (EC)	**Country**: India; **Station**: Port Canning **Average annual rainfall:** 1750 – 1800 mm **Dominant wind direction:** N to NE during winter and S to SW in summer **Site type:** Rural site, closet to Synder bans. **Monitoring parameters:** Air quality: Respirable Suspended Particulate Matter (RSPM) or PM_{10} (particulate matter having a diameter <10µm), Total Suspended Particulate Matter (TSPM), Sulphur dioxide (SO_2) and Nitrogen dioxide (NO_2). Wet deposition: pH, and Electric Conductivity (EC)
Country: Maldives; **Station**: Hanimaadhu **Latitude and longitude:** **Altitude**: ~2 m **Site type:** Remote site, in the northern most atoll of Maldives located about 400 km north of the country's capital, Malé. **Monitoring parameters:** Air quality:, Sulphur dioxide (SO_2) and Nitrogen dioxide (NO_2).	**Country**: Nepal; **Station**: Rampur **Latitude and longitude:** N 27 38 52.8; E 84 20 47.73 **Altitude**: 164.95 m **Site type:** Rural site, located about 15 km south of the Royal Chitawan national park. **Monitoring parameters:** Air quality: Respirable Suspended Particulate Matter (RSPM) or PM_{10} (particulate matter having a diameter <10µm), Total Suspended Particulate Matter (TSPM), Sulphur dioxide (SO_2) and Nitrogen dioxide (NO_2). Wet deposition: pH, and Electric Conductivity (EC)
Country: Pakistan; **Station**: Narewal **Site type:** Rural site, in the north-eastern part of Pakistan **Monitoring parameters:** Air quality: Respirable Suspended Particulate Matter (RSPM) or PM_{10} (particulate matter having a diameter <10µm), Total Suspended Particulate Matter (TSPM), Sulphur dioxide (SO_2) and Nitrogen dioxide (NO_2). Wet deposition: pH, Electric Conductivity	**Country**: Sri Lanka; **Station**: Dutuwewa **Latitude and longitude:** N 08 20.952; E 80 45.751 **Altitude**: ~ 100m **Site type:** Remote site, in a forest in the north-central part of Sri Lanka **Monitoring parameters:** Air quality: Respirable Suspended Particulate Matter (RSPM) or PM_{10} (particulate matter having a diameter <10µm), Total Suspended Particulate Matter (TSPM), Sulphur dioxide (SO_2) and Nitrogen dioxide (NO_2). Wet deposition: pH, Electric Conductivity (EC), Na+, K+

Table 1: Details of monitoring stations of Malé Declaration

After the review of national advisory committee, monitoring results are being stored at the national database based on the standardized reporting format. National databases are housed at the NIAs as part of their database management system. NIAs also report the data to UNEP Regional Resource Center for Asia and the Pacific where the regional database is located. An expert team, call monitoring committee review the data before entering into the regional database. Apart from monitoring, the capacity building activities also initiated the development of common methodology for reporting emission inventories and impact assessment.

5. STAKEHOLDERS PARTICIPATION

Air pollution stakeholders range from pedestrians to manufacturers of automobiles to governments. All with different interests and varying degrees of influence. However, when it comes to transboundary air pollution the stakeholder situation complicates further as air pollution spreading over wide geographical areas can affect crops, forests, lakes and animal life as well as property. Thus, transboundary air pollution increases the complexity and diversity of the stakeholders; subsequently complicating the identification of solutions.

Stakeholders forums are important in assisting this process. By identifying the different stakeholders and their respective requirements for improved awareness on air pollution matters, best results in terms of policies and actions can arise. Realizing this in addition to the intergovernmental cooperation, Malé Declaration also calls for the participation of stakeholders in tackling transboundary air pollution. Regular stakeholders forums now review the implementation of the Declaration at both national and regional level. The first regional stakeholders forum held in October 2003 committed to join together to spread awareness about the problem of air pollution and its likely transboundary effects among all the people of the region.

Apart from the stakeholders forums, governments also meet annually, network meeting, to review the progress and provide guidance for the further implementation of the Declaration.

6. CONCLUSION

The long-term objective of the Malé Declaration is to control/prevent the impact of transboundary air pollution by providing meaningful information to the policy makers and promoting the policy cycle in South Asia. Towards the long-term goal, the implementation so far has played a significant role by developing the institutional structure and local capacities in monitoring transboundary air pollution. A common methodology, trained technical staff, strengthened monitoring stations, established scientific and stakeholder networks are evidence for the contribution towards long-term objectives. These achievements are the first step toward building the scientific base to support the intergovernmental cooperation. Continuation of this initiative through building the capacity at the national level is vital to obtain long-term trends on transboundary air pollution.

The Declaration also needs to be supported by the provision of preventive measures. Traditionally we have invested much of the resources for mitigation and rehabilitation of environmental issues such as air pollution. Currently almost 99% of environment resources are targeted at mitigation. Further implementation of the Declaration will also need to be focused on introducing cleaner technologies and renewables.

Attachment I: Malé Declaration on Control and Prevention of Air Pollution and Its likely Transboundary Effects for South Asia

Recognizing the potential for increase in air pollution and consequential phenomena due to concentration of pollutant gases, acid rain or acid deposition as well as the impacts on the health of humans and other living organisms in all our countries due to man made and natural causes; and also

Recognizing the potential for increase in transboundary air pollution as a corollary of air pollution in each country; and

Realising that the potential for air pollution increase and its transboundary effects will accumulate in the absence of national measures to abate and prevent such potential; and

Reiterating in this context Principle 21 of the UN declaration on the Human Environment in 1972 which stated that States have, in accordance with the charter of the United Nations and the principle of international laws, the sovereign right to exploit their own resources pursuant to their own environmental policies, and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other states or of areas beyond the limits of national jurisdiction;

Keeping in mind that need for constant study and monitoring of the trends in air pollution with a view to understand the extent of our potential for damage to the environment and health in the member countries and taking consequential measures to strengthen and build capacity for such activities;

Stressing the need for development and economic growth that will help build up the quality of life and incomes of all the people of all the region, in particular the poorer sections of the population, having due regard to the need to have a clean and healthy environment;

Emphasising that air pollution issues have to be analysed and managed in the wider framework of human and sustainable development within each country and within the region; and

Drawing from the experience of co-operation in the region in matters like cultural exchange and also from the experience in other regions like Europe and sub-regions of Asia like ASEAN and East Asia.

We declare that countries of this region will initiate and/or carry forward programmes in each country to

1. Assess and analyse the origin and causes, nature, extent and effects of local and regional air pollution, using the in-house in identified institutions, universities, colleges etc., building up or enhancing capacities in them where required;
2. Develop and/or adopt strategies to prevent and minimise air pollution;

3. Work in co-operation with each other to set up monitoring arrangements beginning with the study of sulphur and nitrogen and volatile organic compounds emissions, concentrations and deposition;
4. Co-operate in building up standardised methodologies to monitor phenomena like acid depositions and analyse their impacts without prejudice to the national activities in such fields;
5. Take up the aforesaid programmes and training programmes which involves then transfer of financial resources and technology and work towards securing incremental assistance from bilateral and multilateral sources;
6. Encourage economic analysis that will help arriving at optimal results
7. Engage other key stakeholders for example industry, academic institutions, NGOs, communities and media etc. in the effort and activities.

We also declare that we shall constantly endeavor to improve national reporting systems and strengthen scientific and academic effort in the understanding and tackling of air pollution issues.

We further declare that we shall continue this process in stages with mutual consultation to draw up and implement national and regional action plans and protocols based on a fuller understanding of transboundary air pollution issues.

We declare that in pursuit of the above, we shall evolve, as appropriate, institutional structures at the national level, including networking, both for the purposes of policy and the technical requirements, and we shall use the good offices of regional, international bilateral and multilateral agencies in this, as appropriate.