Stockholm Environment Institute's (SEI) Atmospheric Environment Programme Air Quality Management Activities

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Introduction

The aim of the Atmospheric Environment (AE) Programme (visit: www.sei.se) within SEI is to contribute to the goal of reducing the local, regional and global impacts of emissions of pollutants to the atmosphere. We aim to achieve this goal by actively shaping our activities, including our high-quality scientific research, to address specific policy issues. We do this in five different ways by:

- developing and communicating the scientific knowledge and understanding required by the policy process;
- active engagement with the process of developing policy;
- analysis of the effectiveness of different policy interventions;
- active involvement in the effective implementation of agreed policies; and
- building the capacity to identify air pollution problems and to identify and implement policies to reduce these impacts.

Part of our work has a strong focus on the use of urban air quality management to provide a framework for assessing the benefits of different policies to improve urban air quality and reduce impacts on human health. Activities are focussed on three main areas:

- Air Quality Management (AQM) capacity enhancement (e.g. training courses and training materials);

- Collation of best practice and AQM data (e.g. development of an AQM information database) and the benchmarking of current air quality management capacity in Asian cities;

- Promotion of the Strategic Framework for AQM (e.g. assisting city authorities to develop more strategic approaches and clean air implementation plans).

The programme has been actively engaged in developing urban air quality management (AQM), especially in Asia, through the Air Pollution in the Megacities of Asia (APMA) project. As part of the APMA project, SEI has been involved in undertaking an exercise to benchmark AQM in 20 Asian cities and to determine the gaps and to provide recommendations for improvements of AQM (Urban Air Pollution in Asian Cities (2006) published by Earthscan).

The programme aims to increase capacity in the field by the development of AQM training material and the organisation of regional training workshops. Current work aims to analyse how policies to improve air quality in Asian megacities can at the same time contribute to climate change mitigation and other priority areas: poverty alleviation and improving health conditions. The specific objective of the project is to enhance the knowledge basis, the quality of policy design, and the project portfolio in the field of Clean Development

Mechanism and air pollution in four cities in Asia, so as to create a Clean Air Development Mechanism.

Guiding Principles of Air Quality Management

Guiding principles related to AQM ensure the protection of human health and environment from air pollution (see Box 1). However, a number of economic, institutional and political constraints may hamper the full implementation of these principles.

Box 1: The Guiding Principles of AQM

Access to Environmental Information: all stakeholders should have access to information regarding air quality

Awareness: Provision of information to all stakeholders

Best practice: application of state–of-the-art technology

Coherence: orientation of the efforts of all stakeholders including different neighbouring jurisdictions towards a common objective.

Concerted effort: discussion and co-operation among all stakeholders involved

Compatibility: development of AQM compatible with regional, national and local needs

Continual Improvement: to promote the continual improvement of AQM as well as air quality itself

Cost-effectiveness: AQM measured at least cost and highest effectiveness

Decentralization: implementation of decentralized AQM with regional, national and local components with due consideration to local capacity

Equity: fair and equal protection of all people from air pollution and consideration of individual vulnerability

Market: Apply market mechanisms as far as possible

Integrated approach: development of integrated AQM (prevention, monitoring of adverse impacts, control of sources and education)

Opportunity: sound solutions to air quality problems at the most suitable moment

Participation: active participation of the population in the development and implementation of the plans to minimise air pollution and prevent the deterioration of air quality

Polluter Pays Principle: individuals responsible for pollution should bare the cost of its consequential impacts

Precautionary Principle: where there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing cost effective measures to prevent environmental degradation

Stakeholder: Commitment of all stakeholders to air quality management

Sustainability: development of economically, socially and environmentally compatible AQM which is sustainable over the long term and future generations

Stepwise approach: AQM following a target and milestone approach

Universality: comprehensive AQM including human health and environment

Recommendations: Policies, Standards and Regulations

- A good overall environment policy, supported by all responsible ministries in the government, can lead to sound and rational Air Quality Management (AQM).

- The acknowledgement of AQM as an objective for sustainable development and the implementation of a sound and rational AQM within the overall policy framework as well as in specific policies such as land-use planning, energy, transport and industrial development, will reduce the adverse impacts of air pollution on health and the environment.

- Increased commitment to AQM and its enforcement from all stakeholders, strengthening the legal basis of AQM in national laws and regulations, and strengthening the capacity of responsible agencies to effectively enforce AQM policies will lead to a healthier and better environment.

- Adoption in legislation and implementation of existing international and regional guidelines, conventions and treaties related to AQM, transboundary air pollution and global climate change will reduce the threats emerging from air pollution (e.g. the adoption of WHO air quality guidelines as a long-term goal and interim ambient standards based on local conditions, experience and capabilities).

- A participatory approach in setting standards which involves stakeholders (e.g. industry, local authorities, non-governmental organizations, media and the general public) assures - as far as possible - social equity or fairness to all the parties involved.

- In setting standards and averaging times advocated in the WHO Air Quality Guidleines may be used. The criteria for the derivation of air quality guidelines set by WHO are also valid for setting standards. Experience from developed countries (e.g. Germany, UK and US) may be used to collect information on the number of exceeding values not leading to adverse effects.

- The provision of sufficient information and transparency in standard setting procedures ensures stakeholders understand the environmental, health and socio-economic impacts of such standards.

- Regulations on emission standards for mobile and stationary sources, air quality standards, viable dispersion models and reliable monitoring procedures will ensure rational and sound AQM. The adoption of emissions standards based on developed countries' experience, where appropriate, and of best available control technology avoids the problem of inequities among countries and prevents "social dumping".

- Strengthening regional co-operation and sharing information on all aspects of air quality will help to solve both national and supranational problems.

- Setting targets for air quality and establishing indicators for acceptable air quality can improve air quality and reduce impacts on human health and the environment.

- A regular review of AQM policies and legislation such as updating emission and air quality standards and assessing the success and efficiency of AQM measures. The establishment of an accredited body for evaluation of the efficiency of programmes related to AQM can help in this assessment.

- Regulations on the regular reporting of policy enforcement of AQM will give politicians and implementation managers the necessary information to define the next steps in AQM.

- Establishing a lead agency for the implementation of good environment goals, policies, and strategies helps to consolidate responsibilities and avoid duplication of work.

- Collaboration and information sharing in AQM issues among all responsible agencies is the best means to achieve the AQM goals at minimal cost.

- Establishing national and regional accredited agencies for verification of data on emissions, dispersion models and their outputs, air quality concentrations, and health and environmental parameters lead to a better and known quality of data and reliability of information.

- Developing and/or strengthening programmes to monitor and address the impacts of indoor and outdoor air pollution on human health and environment will elucidate the main sources of human and environmental exposure.

- An integral AQM process can inform, educate, and train all stakeholders and strengthens stakeholder participation in all aspects related to air quality e.g. adverse health and environmental impacts, prevention and reduction of air pollution.

- Strengthening the commitment and role of the media can assist in identifying air quality-related problems at an early stage and communicating this information and necessary action to be taken to the general public.

- Addressing noise as a related urban problem and reducing levels can also prevent noise-related health impacts.

Overcoming the Challenges

SEI has overseen the development of a Strategic Framework (SF) approach to AQM that has been developed with a view to assisting countries and cities to overcome barriers to development such as:

- lack of sufficient political will;
- inadequate infrastructure, training and resources;

- lack of good quality air monitoring data;
- lack of necessary emission factors and emission inventories;
- poor monitoring of the health impacts of air pollution;
- need for the document to be translated into different languages.

These barriers can be overcome by:

- gaining ministerial support in the country for the SF;
- gaining support from international agencies especially with regard to technical and financial support;
- undertaking cost-benefit analysis and health impact studies;
- translation of the document into different regional languages.