



Photo by: Sophie Punte

Policy Brief

15 July 2010

Clean Air for Healthy Life

IN SUMMARY

- Air pollution - indoor, outdoor and transboundary - is an increasing concern in the Asian Region.
- Until now, only a handful of Asian cities have pollution levels that meet World Health Organization (WHO) guidelines
- The health of many people specially women, children and the elderly are particularly at risk.
- The TWG on air quality under the Regional Forum on Environment and Health continues the effort towards better air quality in the region.
- Governments need to recognize the importance of integrated strategies and regulations in addressing the environmental health impacts of indoor, urban and transboundary air pollution.
- Regional efforts at improving air quality must be coupled with national policies and local efforts toward reducing the health burdens of air pollution.

Overview

A growing body of scientific research has shown that air pollution has increasingly become a regional, hemispheric and even global phenomenon that can cross boundaries and hemispheres and increase the level of background pollution around the world(1). As it is in many other countries, air pollution is a major environmental and health issue in Asia and the Pacific. The rapid growth of cities, together with associated expansion of industry and transport systems, has contributed to an increase in emissions making nations and leaders in the region more concerned.

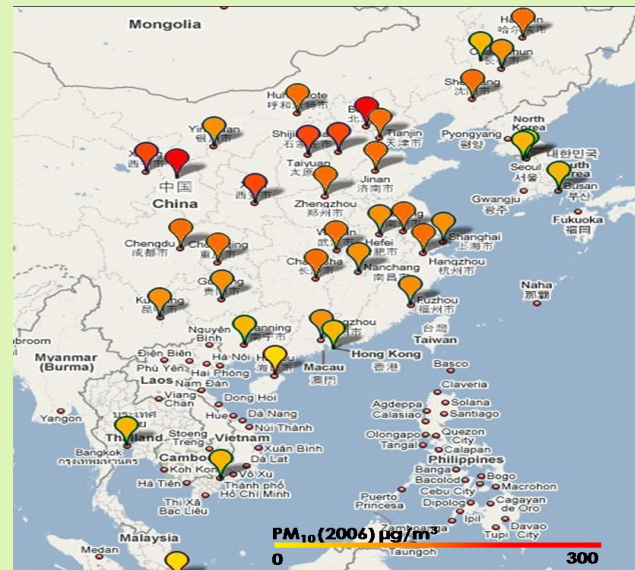


Figure 1. Status of Particulated Matter (PM) in Asia
Source: Clean Air Initiative Asia (CAI-Asia)

Clean air is critical to life. In order to cope with the environmental health risks that include those posed by the current air quality, the Regional Forum on Environment and Health in Southeast and East Asian Countries was established. The Charter of the Regional Forum identifies the health implications of air quality as one of the regional priorities for 2007-2010, and created a Thematic Working Group (TWG) on air quality. The TWG developed and implemented a workplan to address the air pollution-related issues categorized under the three major types of air pollution, indoor, urban and transboundary.

This policy brief informs the policy makers on the status of air quality and health as well as the initiatives and the way forward to cleaner air in cities and communities. Air pollution is responsible for over a million premature deaths each year worldwide(2). Outdoor air pollution is causing over half a million premature deaths per year in Asia and millions more suffer from respiratory illnesses, especially children and the elderly. The poor are also particularly at risk, having fewer opportunities to avoid exposure to damaging pollutants(3). In poor developing countries for instance, health impacts of indoor air pollution from household energy rank as the fourth leading health risk. Widespread use of traditional biomass results in the premature deaths of an estimated 1.5 million a year(4). The resulting health costs and productivity losses wipe out 2-4% of gross domestic product (GDP) in Asian cities, while tackling the issue **continued in page 2...Overview**

Overview(..cont')

would often only cost a fraction of this(5).

This loss estimate does not include the damage caused by air pollution to agricultural productivity and forests, the negative impact on tourism potential of cities and countries, and the corrosion of buildings and heritage structures(6). An air quality management (AQM) survey of Asia conducted by the Clean Air Initiatives for Asian cities (CAI-Asia) showed that past efforts have contributed to a slow but steady reduction of sulfur dioxide (SO₂) concentrations over the last 15 years, While the average of annual average in about 200 Asian cities for PM10 and NO₂ have generally remained the same, the annual average of NO₂ in most Asian cities comply with the WHO Annual Quality Guideline of 40µg/m³, while for PM10, a significant percentage of Asian cities have annual average concentrations ex-

ceeding the WHO air quality guideline. In 2008, for instance, 58% of the 230 Asian cities had annual average PM10 concentrations above the WHO Interim-Target I (70µg/m³). Unfortunately, until now, only a handful of Asian cities have pollution levels that meet World Health Organization (WHO) guidelines(7). Without adequate air quality management initiatives, urban air pollution is likely to worsen in the future due to such factors as i) rapid urbanization; ii) continuous rise in GDP, fuelled by rapid industrial growth; and iii) rapid growth of vehicle ownership(8). Bigger and more cities put more pressure on available resources including clean air. All these emphasize the need for air pollution control and management for better air quality. But while studies have proven the significant health and environmental benefits of controlling air pollution, there has been little success in finding cheap and simple solutions to the problem.

In addition, a large fraction of aerosol particles that make up atmospheric brown clouds (ABCs) originate from emissions at the earth's surface caused by the incomplete combustion of fossil fuels and biofuels. Humans are exposed to these particles both indoor and outdoor. The most serious impacts of the particles associated with ABC include cardiovascular and pulmonary effects leading to chronic respiratory problems, hospital admissions and deaths⁵. In recent decades, a growing body of scientific research has shown that air pollution has increasingly become a regional, hemispheric and even global phenomenon, it can cross national boundaries, hemispheres and increase the level of background pollution around the world⁶.

The Air Quality Thematic Working Group

The TWG on air quality (list of members presented in page 4) was established to work on the critical air pollution issues on indoor, urban and transboundary.

The TWG on air quality has prepared a workplan having three objectives; (i) reducing health burden imposed by deteriorating air quality; (ii) strengthening the cooperation at the national and regional levels; and (iii) capacity building of researchers and scientists focusing on air quality and health effects. Activities are based on the major issues and the necessity of the region. The activities are planned by three dimensions including: (i) the objectives, (ii) types of air pollu-

tion (urban, indoor, and transboundary), and (iii) categories: knowledge management and technical support, progress reporting to the Regional Forum, coordination and advocacy as well as resource mobilization.

The following is the summary of key activities/outputs during 2008 and 2009: overview of air quality standards; recommendations on air quality standards and monitoring protocols; policy guidance on integrating poverty in the design and implementation of air quality management policies, researches on air pollution and impacts to human health; documented methodology on studying the linkages between pov-

erty, health air quality and green house gases (GHGs) reduction; training courses for air quality professionals; and developing guidelines and methodologies for monitoring air pollutants especially PM & ozone.

Air pollution has increasingly become a regional, hemispheric and even global phenomenon.

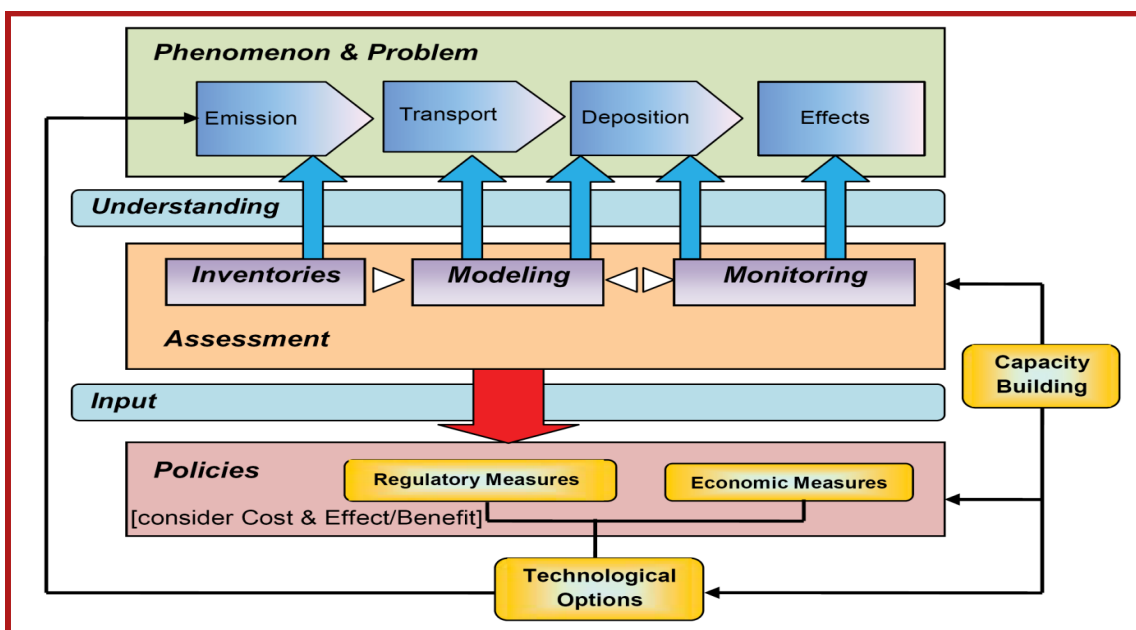


Figure 2. Integrated Approach for Air Quality Management
Source: EANET Second Report for Policy Makers (available at: www.eanet.cc/product.html)

The Results

The following are the activities and outputs made by the TWG on air quality, categorized under the three major types of air pollution :

Indoor Air Pollution: The Korea Society of Indoor Environment (KOSIE) conducted several of Korea's Ministry of Environment (KMOE) research projects on updating the guide-lines and standards for indoor air quality (IAQ). KOSIE worked toward the preparation of guidelines for asbestos management and of monitoring protocols, in collaboration with the Inter-Governmental Committee on Asbestos. In relation, the Asia Center for Indoor Environment and Health (ACIEH) launched its work since the 25th of November 2008 in Han-yang University, Korea. ACIEH started joint research of indoor air monitoring in Asian countries in 2009. The education program for IAQ professionals was done twice in 2008.

Urban Air Pollution: CAI-Asia Center in Manila and Health Effects Institute (HEI) promoted several activities such as providing presentations that cover a compilation of air quality standards in Asia. CAI-Asia collected information of air quality status and standards in Asia and recently published in "Air Quality in Asia: Status and Trends 2010 Edition" (as present in Figure 3)(9). New results from the studies of local researchers under the Public Health and Air Pollution in Asia (PAPA) Program are released in journal (Environmental Health Perspectives Volume 116, Number 9, September 2008). HEI is also developing final report for the Project on the Air Pollution, Poverty and Health Effects in Ho Chi Minh City (APPH).

Transboundary Air Pollution: The Acid Deposition Monitoring Network in East Asia (EANET) was established as a regional cooperative initiative to promote efforts for environ-

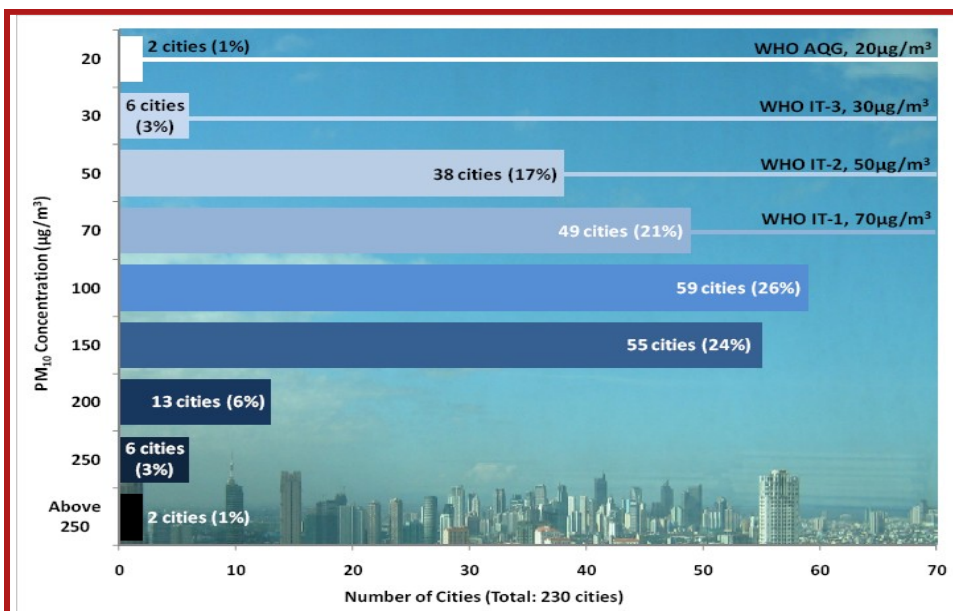


Figure 3. Distribution of Asian Cities relative to 2008 PM₁₀ concentration

Source: Clean Air Initiatives for Asian Cities (CAI-Asia)

mental sustainability and protection of human health in the East Asian region. One of the network's recent publication is the Second Report for Policy Makers which highlighted the integrated approach to air quality management. Similarly, UNEP compiled information on atmospheric brown clouds (ABCs)(10) including the Assessment Reports on the Impacts of ABCs on Human Health (available at: <http://www.rrcap.unep.org/abc/impact/index.cfm>). On the other hand, the National Institute of Environmental Research (NIER), Korea published the Assessment Reports on the Impacts of Dust and Sandstorm on Human Health. The ASEAN Agreement on Transboundary Haze Pollution is the primary mechanism in dealing with transboundary haze pollution for the ASEAN member countries. Thailand hosted the Regional Training Workshop on Transboundary Haze Pollution Con-

trol in December 2009. The training workshop aims to increase the capacity of the ASEAN Members State officials in fire and haze control including the topic of transboundary haze and health impact.

During the implementation of 2007-2009 workplan, the co-chairs of TWG organized a workshop on Air Quality and Health in Asia before the Better Air Quality 2008 in Bangkok. The workshop offered an opportunity for the professional exchange of knowledge and skills in the area of air quality in Asia. Particularly, one of the objectives is to bring together members of TWG on Air Quality and discuss about their research and management activities.

Conclusions

The following conclusions are drawn up:

- While some improvements in air quality have been achieved, levels of PM₁₀ and SO₂ continue to exceed World Health Organization (WHO) air quality guidelines (AQG). (9)
- Deteriorating urban air quality is a serious concern in Asia where about 500,000 people die prematurely each year.
- Public concerns on the health impacts of indoor air quality in Asia have also increased.
- In addition to the issues of urban and indoor air pollution, there is increasing evidence of transboundary air pollution resulting from long-range transport of air pollutants.
- The increase in emissions is attributable to the combined effects of population growth, urbanization, motorization and increased energy use.
- The health of a large part of the population, particularly women, children and the elderly, continues to be at risk.
- The economic loss resulting from health costs and productivity losses wipe out 2-4% of gross domestic product (GDP) in Asian Cities.
- The most serious health impacts of particles associated with the ABC include cardiovascular and pulmonary effects leading to chronic respiratory problems, hospital admissions and deaths. (11)
- It is important to fully optimize the potential

linkages between efforts to reduce health problems and improve air quality at the local, national and regional levels.

- The TWG on air quality aims to address the issues of indoor, urban and transboundary air pollution through knowledge and information-sharing as well as capacity-building, among others.

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Recommendations

- Governments need to enhance their efforts toward addressing indoor, urban and transboundary air pollution problems.
- There is a need to integrate health and environmental strategies at the local, national and regional levels.
- Governments must also consider air pollution trends and thereby align their mitigation and adaptation strategies to address those trends (e.g., attention needs to be given to the control of fine particulate matter, air toxics and heavy metals, which are growing concerns in many Asian cities).
- While specific strategies and actions need to be adapted to local conditions and needs, the sharing of good practice information and experience must be continued so that countries continue to learn and enhance their respective plans and/or approaches.
- Regional information on various programs and projects that address indoor, urban and transboundary air pollution need to be consolidated to prevent duplication and to facilitate easy access to a wealth of information on various research initiatives and projects throughout the Asian region.
- The sharing of best available/appropriate technology must also be emphasized and made possible in order for developing countries to cut down their emissions with cost-effective ways and means.
- Public participation and public relations should be strengthened and promoted for better understanding of air pollution and health impact issues.
- Policy maker should play important role in rendering their leadership support for establishment of appropriate measures in controlling and monitoring air pollution problem and health effect..

Footnotes

- (1) UNEP, 2008b. Male Declaration on Control and Prevention of Air Pollution and its Likely Transboundary Effects for South Asia: Past, Present and Future. Available online, <http://www.rrcap.unep.org/male/uploadedfiles/MalePublication.pdf>
- (2) WHO, 2008. Fact sheet No.313 Air Quality and Health. Available online, <http://www.who.int/mediacentre/factsheet/fs313>
- (3) GAPF, 2008. The GAP Forum: Brief Overview. Available online, <http://www.sei.se/gapforum/reports/GAPForumOverview.pdf>
- (4) UNEP and WHO, 2007. The Report of the First Ministerial Regional Forum and the Third High-Level Officials Meeting on Environment and Health in South-east and East Asian Countries: Bangkok, Thailand.
- (5) CAI-Asia, 2008. Strategy 2009-2012. Available online, http://www.cleanairnet.org/caiasia/1412/articles-71771_strategy2009_2012.pdf
- (6) See footnote 4
- (7) See footnote 4
- (8) See footnote 4
- (9) CAI-Asia, 2010. Air Quality in Asia: Status and Trends 2010 Edition. Available online, <http://www.http://cleanairinitiative.org/portal/node/3869>
- (10) UNEP, 2008a. Atmospheric Brown Clouds. Regional Assessment Report with Focus on Asia. Available at UNEP RRC.AP website: <http://www.rrcap.unep.org/abc/impact/index.cfm>
- (11) UNEP, 2008b. Atmospheric Brown Clouds. Regional Assessment Report with Focus on Asia. Available at UNEP RRC.AP website: <http://www.rrcap.unep.org/abc/impact/index.cfm>

Air Quality Thematic Working Group Members

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- Korea Environmental Health Forum, Korea Republic
- Pollution Control Department, Ministry of Natural Resources and Environment Bangkok, Thailand

MEMBERS

- Department of Environment, Parks & Recreation, Ministry of Development, Brunei Darussalam
- Department of Land Transport, Ministry of Communications, Brunei Darussalam
- Ministry of Environment, Cambodia
- Institute of Atmospheric Environment and Department of Environmental Pollution and Health, Chinese research Academy of Environmental Sciences, China
- Institute of Environmental Health and Related Producer Safety, Chinese Center for Disease Control & Prevention, China
- Ministry of Environment, Indonesia
- Ministry of Environment, Japan

MEMBERS (continued)

- Science, Technology and Environment Agency (STEA), Environment Research Institute (ERI), Lao PDR
- Ministry of Natural Resources and Environment, Malaysia
- Ministry of Nature and Environment, Mongolia
- Public Health Institute, Mongolia
- National Commission for Environmental Affairs, Myanmar
- Environmental Management Bureau, Department of Environment and Natural Resources, Philippines
- Ministry of Health, Singapore
- Pollution Control Department, Ministry of Natural Resources and Environment, Thailand
- Department of Health, Ministry of Public Health, Thailand
- Database Division, VEPA, Vietnam
- National Institution of Occupational and Environmental Health (NIOEH)

REGIONAL & INTERNATIONAL

PARTNERS

- Acid Deposition and Oxidant Research Center (ADORC), Japan
- Chulabhorn Research Institute, Thailand
- Clean Air Initiatives for Asian Cities (CAI-Asia) Center
- Health Effects Institute (HEI)
- International Lake Environment Committee Foundation (ILEC)
- United Nations Environment Programme (UNEP)
- World Health Organization (WHO) Collaborating Centre (CC) for Environmental Health Impact Assessment, Curtin University, Perth Western Australia
- WHO CC for Air Quality Management, International Laboratory for Air Quality and Health, Brisbane Australia
- WHO CC for Environmental Epidemiology, Ministry of Health, Singapore
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- WHO