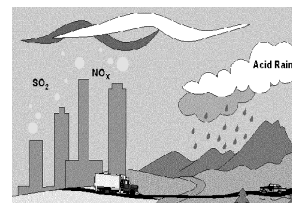


# ACID RAIN IN ASIA

## NEWSLETTER



Bi-monthly reports on Acid Rain and Emissions Reduction in Asia Project by UNEP/EAP-AP, Bangkok in close collaboration with ADB, Ma-

APRIL - MAY 1998

Volume 1, Issue 2

### First Regional Seminar on Acid Rain and Emissions Reduction in Asia



Fig. Participants of First Regional Seminar

First Regional Seminar on Acid Rain and Emissions Reduction in Asia  
16-18 March 1998  
Asian Institute of Technology (AIT)  
Bangkok, Thailand

As part of the RETA 5702: Acid Rain and Emissions Reduction in Asia Project, the first regional seminar on acid rain and emissions reduction in Asia was sponsored by Asian Development Bank and organized by UNEP Environment Assessment Programme for Asia and the Pacific. High-level policy makers and senior technical experts from the region as well as international consultants participated in the seminar. Also, the representatives of ADB, World Bank, UN agencies and academic institutes attended the seminar. **The following are some of the major issues discussed during the seminar:**

- Ownership of the model by the countries in the region.
- The need for a Regional Hub to build expertise and the institutional base in the region with assistance when needed from experts in

Europe and North America.

- At the National level, there is a clear need for: (i) Regular update of the base; (ii) model validation with higher resolution data (selection of sites); (iii) Better documentation for the model, including the technical reference manual and access to the program code; (iv) Inclusion of soil/agricultural aspects; (v) Building a decentralized national level network of experts, data etc.; and (vi) Consideration of NO<sub>2</sub>/Ammonia.
- Coordination with other interested agencies would help make the project more effective.
- The Work-plan for Phase II should be clearly laid out.

#### **Specifically regarding the RAINS-Asia model:**

- The model needs to be expanded to include areas such as human and ecosystem health and the economic costs of Acid Rain.
- It is important that changes to the model be balanced between the scientific needs and the engineering solutions.
- Technology Transfer is also an important because many countries in the region are still developing.

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- Updating the model to operate in a windows environment and possibly combining the 2 modules into one package was suggested.
- Very importantly, the model must be adapted to take into account the conditions in Asia. Specifically this includes: different weather patterns, high oxygen concentration and high particulate levels in the atmosphere. This could be facilitated by a comparison of all existing models and tailoring the model to specific conditions in Asia, and perhaps even sub-regionally at a later stage.
- Modification of the model; preparation of work plan; coordination between different organizations/institutions within the country is needed.
- Involvement of Asian country experts in the World Bank supported Phase II was not significant.

#### **Proposed Network for Acid Rain in Asia:**

##### Background:

The participants at the first regional seminar on Acid Rain and

## *Participating Organizations/Institutes in the seminar*

Emissions Reduction in Asia discussed the need for a regional center and network in the region. It was suggested the guiding principles for such a network would include: building an existing expertise and institutional base in the region; develop capacity in the region for modelling with expertise from Europe and North America.

The network is proposed be at three levels: national; sub-regional; and regional. *The sections below provide brief details of the three levels:*

### A. National Level:

The participants emphasized the need to have better communications between policy and science community. It is proposed that an environment agency might coordinate a network of policy makers. An identified institute with expertise might coordinate the network of scientists in the country.

The tasks for the national level network would include: a data base of experts and institutes; regular update of data bases required for modelling; model verification with better resolution data; provide regular awareness type experts for policy level and scientific reports.

### B. Sub-Regional Level:

The Asian region has intergovernmental groupings such as ASEAN, GMS, NOWAPAP, SAARC, SACEP. It is proposed that the project might have strategic partnerships to build awareness and discuss possible transboundary issues.

Thus topic for discussions at this level might include: aggregated national reports utilizing scientific reports to build awareness; presentation of facts/figures as well as predictions; discussions on need of transboundary agreements as and when needed.

### C. Regional Level:

The meeting discussed the need for a regional hub/technical resource center. It is expected that the center would have expertise and technical resource to provide the required service to the regions.

Functions suggested for such a center include: develop/build expertise on modelling, methodology, and standards; develop/provide technical expertise to sub-regional and national levels; develop and disseminate training modules at different levels from policy to technical; collection of national/sub-regional level data for regional aggregation and dissemination assistance to share experience from both the national levels and for outside the regions; assist with identification and dis-

National Environment Commission, <b>Bhutan</b>
Electricite Du Cambodge, <b>Cambodia</b>
Research Center for Eco-Environmental Sciences, <b>PR of China</b>
China National Environment Protection Agency, <b>PR of China</b>
Tata Energy Research Institute, <b>India</b>
Ministry of Environment and Forest, <b>India</b>
Center for Energy Research –ITB, <b>Indonesia</b>
Environment Management Center – BAPEDAL, <b>Indonesia</b>
Kyoto University, <b>Japan</b>
Science Technology and Environment Organization, <b>Lao, PDR</b>
Malaysian Meteorological Service, <b>Malaysia</b>
Ministry for Nature and the Environment, <b>Mongolia</b>
Ministry of Energy, <b>Myanmar</b>
Ministry of Population and Environment, <b>Nepal</b>
Pakistan Environmental Protection Agency, <b>Pakistan</b>
Department of Environment and Natural Resources, <b>Philippines</b>
Ministry of the Environment, <b>Singapore</b>
Ministry of Forestry and Environment, <b>Sri Lanka</b>
National Taiwan University, <b>Taipei, China</b>
Ministry of Public Health, <b>Thailand</b>
Electricity Generating Authority, <b>Thailand</b>
National Energy Policy Office, <b>Thailand</b>
King Mongkut's University of Technology, <b>Thailand</b>
Royal Forest Department, <b>Thailand</b>
Institute of Energy, <b>Vietnam</b>
Ministry of Science Technology and Environment, <b>Thailand</b>
South Asia Co-operative Environment Program, <b>Sri Lanka</b>
Asian Development Bank, <b>Philippines</b>
UNEP Environment Assessment Programme for Asia the Pacific, <b>Thailand</b>
Asian Institute of Technology, <b>Thailand</b>
International Institute for Applied Systems Analysis, <b>Austria</b>
Resource Management Associates, <b>USA</b>
The World Bank, <b>USA</b>
UN Economic and Social Commission for Asia and the Pacific, <b>Thailand</b>

### ***Upcoming First National Workshop on Acid Rain in Asia***

The purpose of first national workshop under Acid Rain project is to introduce the RAINS-ASIA model as a policy tool for analyzing acid rain implication of energy use and initiate alternative mitigation strategies to reduce acid rain causing emissions. Suggested tentative dates for the workshop in three executing agencies/countries are:

- 22-23 June 1998: Beijing, PR of China
- 25-26 June 1998: New Delhi, India
- 29-30 June 1998: Jakarta, Indonesia

Suggested tentative agenda for the workshop:

#### **Day One**

- |                    |   |
|--------------------|---|
| Morning Session:   | Opening ceremony<br>Brief outline/background by National Coordinator on national Workshop |
| Afternoon Session: | Training on the RAINS-ASIA model  |

#### **Day Two**

- |                    |   |
|--------------------|---|
| Morning Session:   | Training Continued...   |
| Afternoon Session: | Modification of the model for local conditions (such as technology forecasting and policies and strategies to reduce ARCEs) |

## **Technological and Policy Options to Reduce ARCEs in Asia**

Primary energy consumption and associated Acid Rain Causing Emissions (ARCEs) have been increasing rather rapidly in Asia. The trend is expected to continue in the future causing serious environmental impacts if no effective remedial measures are undertaken urgently.

The industrial processes and electricity generation in Asia has low conversion efficiencies compared to developed countries. There is an urgent need to promote industrial energy efficiency in the region and adoption of advanced technologies for reducing ARCEs from the industrial sector. Improving efficiency of existing power plants, reducing T & D losses and adoption of advanced technologies are important options for reducing ARCEs from electricity generation.

One of the major steps in terms of regional collaborative response to curb acid rain is to have sulfur and NO<sub>x</sub> protocols which are presently lacking in Asia. Lessons learned from European experience could serve as a valuable guide in that endeavor. Like in the second sulfur protocol of Europe, an effect oriented approach could be adopted to set emission reduction targets based on vulnerability of natural eco-systems to acid rain.

In order to develop an efficient emission protocol, a sound information base on critical loads of and likely impacts of acidic deposition in various geographical regions would be crucially important. Studies to generate such information would constitute an important basis in the formulation of the protocols. Scientific studies to establish the relationship between damage cost and ARCEs would also be important in the formulation of abatement policies and strategies.

Standard policy options for ARCEs abatement include command and control measures (e.g. emission standards) and economic instruments (i.e., emission taxes and tradable emission permits). Choice of the efficient instrument will, however, depend upon abatement target to be achieved and its relative cost effectiveness.

Policies to promote efficient utilization of energy (Demand-Side Management) would not only reduce the cost of energy production and use but they could also yield significant environmental benefits including reductions of ARCEs. Thus, it is highly desirable that energy sector development take into considerations both energy supply- and demand-side options.

A wide range of technical options are available for reducing energy consumption and ARCEs. Reform of energy pricing and tax system on energy technologies could be considered as an indirect option for ARCEs abatement given their potential to reduce energy demand and promote efficient use of energy. There are also options that would require regional collaborative efforts in developing facilities for cleaner energy sources e.g. regional natural gas pipeline network and hydro power.

A combination of abatement options may have to be considered for meeting the ARCEs abatement targets. Such a combination may vary from country to country.

*(Quoted from the report submitted by RM Shrestha and SC Bhattacharya to*

## **Technology Forecasting for Reducing ARCEs**

There is a paradigm shift in technology forecasting from the traditional methods to one which is evaluative. Environmental control technologies are not longer foreseeable into the not-too-distant future based on historical trend, expert judgement, or by associating them with trends of other factors. Rather, a technology must be able to satisfy market or user preferences. This necessitates the use of methodologies which can evaluate the various technologies from a multi-attribute perspective.

Desulfurization and denitrification technologies are of increasing demand in Thailand and the rest of Southeast Asia as the sulfur dioxide and NO<sub>x</sub> emissions have increased and seemingly continuing to increase. This being the expected scenario, countries of the region must be aware of the various control technologies available and select those which suit well with the individual country's state of development and needs.

*(Quoted from the report submitted to UNEP/EAP-AP by MT Tabucanon on Technology Forecasting for Re-*

### **Rising Pollution**

New Delhi – Air Pollution in southern Asia is more than three times the world average, said a report published quoting an environmentalist with the Asian Development Bank (ADB). Kazi Jalal, chief of the ADB's environment division, said that while the world average of suspended particle matter was 125 micrograms per cubic meter, in southern Asia it was 430.

*(Quoted from The Bangkok Post, Thailand's Daily English Newspaper, Saturday, April 4, 1998, page 5).*

### **China Acts to Combat Acid Rain**

China has declared war on acid rain by establishing two special control zones and enforcing charges on enterprises that discharge sulfur dioxide, the main pollutant responsible. The control zones, located in southern and central parts of the country, cover 11.4 per cent of the national territory, but they discharge 60 per cent of the sulfur dioxide in China. The establishment of the two zones is in line with the special requirements of the revised Law on Air Pollution Prevention and Control passed in August 1995. The aim is to curb the deteriorating trend of acid rain and sulfur dioxide pollution in these areas by 2000. Industrial pollution sources lo-

cated there are to achieve State standards in treating sulfur dioxide before discharge by the turn of the century.

Xie Zhenhua, director of the National Environmental Protection Agency (NEPA), disclosed recently that no new mines for high sulfur coal – whose sulfur content exceeds 3 per cent – will be dug in these two zones. Production of such coal in existing mines is also to be restricted. Xie said about 90 per cent of the sulfur dioxide discharged comes from the consumption of high sulfur coal.

China discharged 23.7 million tons of sulfur dioxide in

1995, the largest total on earth. The figure is predicted to reach 27.3 million tons in 2000, Xie said. In 1995, economic losses arising from acid rain damage to crops, forests, and human health amounted to more than US dollar 13.25 billion, approximately 2 per cent of that year's gross product. It is estimated that coal-fired plants will have a total capacity of 220 million kilowatts by 2000, and will account for half of the country's sulfur dioxide pollution.

Under the new policies, no coal-fired power plants can be set up close to major cities in the two zones. Existing plants using coal containing more than 1 per cent of sulfur must install facilities for de-sulfurization, according to the government requirements. In another move, China is likely to sub-

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## **Parallel On-going Acid Rain in Asia Related Projects**

### **1. Acid Deposition Monitoring Network in East Asia**

Established: 1993

Implementation of network activities: 1998-99

Target year: 2000

#### *Main Objectives:*

- To create a common understanding of the state of the acid deposition problems among countries of East Asian region,
- To provide useful inputs for decision making at local, national and regional levels aimed at preventing or reducing adverse impacts on human health and the environment due to acid deposition.

#### *Activities:*

First meeting of the working group: 5-7 November 1997

Second meeting of working group: 17-18 March 1998

First Intergovernmental meeting: 19-20 March 1998

### **2. The World Bank funded RAINS-ASIA Phase II**

Implementation of the project: 1998-99

Implementing agency (contracted): Overseas Environmental Cooperation Center (OECC), Tokyo

#### *Main Objectives:*

- Increase awareness and train energy and environment experts/policy makers in Asian countries on the RAINS-ASIA model,
- Maintain and extend the work of the international institutional institutions that developed the model, while further building Asian Ownership,
- Verify methodology and data before Phase III, and
- Provide opportunities to consult with Asian countries and local institutions and obtain international guidance to develop details of Phase III.

### **3. Atmospheric Environment Issues in Developing Countries Program**

First Initiation: 1990 by Sida

Granted: 1992 to Stockholm Environment Institutes (SEI)

Objective of the program:

“To enhance the capacity of developing countries to participate locally and regionally in programs and activities to resolve atmospheric environmental problems and to increase and facilitate the participation and involvement of developing countries in international initiatives and negotiations.

*The program is concerned with three key themes:*

- Acid deposition and effect,
- Phasing out ozone depleting substances: CFC use and control, and
- Global Climate Change: adaptation methodology and control of GHG emissions

#### *Activities:*

Policy Dialogue on Regional Air Pollution Issues in: 19-20 March 1998

Organizers: UNEP EAP.AP and SEI



**Visit Acid Rain in Asia Web site for additional project related research activities and publications at: <http://www.eapap.unep.org/acidrain>**

**To subscribe to the bi-monthly Acid Rain Newsletter electronically, please e-mail at:**

## Policy Dialogue on Regional Air pollution Issues (with a focus on South Asia)

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A round-table policy dialogue regarding the rapidly increasing problem of regional and transboundary air pollution in Asia was organized by the United Nations Environment Programme/ Environment Assessment Programme for Asia and the Pacific (UNEP/EAP-AP) in collaboration with the Stockholm Environment Institute (SEI) and funded by the Swedish International Development Co-operation Agency (Sida). This meeting, with a focus on South Asia, held on 19<sup>th</sup> and 20<sup>th</sup> of March at the AIT, Bangkok, Thailand. The main aims of the policy dialogue are:

- to create a broad dialogue of the air pollution issues in Asia between policy makers, NGOs and the scientific community;
- to promote the policy cycle in South Asia by: (i) reaffirmation that transboundary air pollution is a priority issue for South Asia; (ii) agreeing upon a draft action plan for inter-governmental activities at the policy dialogue.

The meeting was attended by a distinguished group of senior level environmental ministry officials from South Asian countries, analysts and policy influencers and representatives of key environmental organizations in the area. The first day of the meeting focused on the current status and future scenarios of problems related to transboundary air pollution.

The second day of the meeting aimed at producing a draft action plan for regional response in South Asia. The draft declaration was taken up for discussions clause by clause and changes were made in the light of the suggestions made. The declaration was agreed to in principle and the meeting decided to submit to the 7th Government Council of South Asia Cooperative Environment Programme (SACEP) for its consideration and possible adoption. The SACEP countries are Bangladesh, Bhutan, Maldives, Nepal, Pakistan and Sri Lanka. For information on **Male Declaration**, please see page 6.

*Fig. Illustration of emission, transport and deposition of the major acid rain precursors pollutants.*

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### ASEAN COOPERATION PLAN ON TRANSBOUNDARY POLLUTION

The Kuala Lumpur Accord on Environment and Development which was adopted by the ASEAN Ministers for the Environment on 19 June 1990 calls for inter alia efforts leading towards "the harmonization of transboundary pollution prevention and abatement practices".

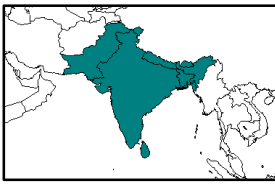
In 1992, the issue of transboundary pollution was addressed by the ASEAN Heads of Government. The Singapore Declaration issued at the conclusion of the Fourth Meeting of the ASEAN Heads of Government held on 27 – 28 January 1992 states that "ASEAN member countries should continue to enhance environmental cooperation, par-

ticularly in issues of transboundary pollution, natural disasters, forest fires and in addressing the anti-tropical timber campaign".

In the Singapore Resolution on Environment issued at the end of the Fifth ASEAN Ministerial Meeting on the Environment held on 17-18 February 1992, the ASEAN Ministers for the Environment agreed to harmonize policy directions and step up operational and technical cooperation on environment matters such as transboundary air and water pollution, natural disasters, forest fires, oil spills and the transboundary movements and disposal of toxic chemicals and hazardous wastes, and undertake joint actions to address the anti-tropical timber campaign; and undertake to de-

*(Continued in page 7)*

## MALE` DECLARATION ON CONTROL AND PREVENTION OF AIR POLLUTION AND ITS LIKELY TRANSBOUNDARY EFFECTS FOR SOUTH ASIA



The Seventh Meeting of the Governing Council of South Asia Co-operative Environment Programme (SACEP) was held on 22 April 1998 at Male`, The Republic of Maldives. The meeting was inaugurated by His Excellency Mr. Maumoon Abdul Gayoom, President of the Republic of Maldives and attended by ministers and high level policy makers from South Asian Environment ministries. A declaration called "Male` Declaration on Control and Prevention of Air Pollution and its Likely Transboundary Effects for South Asia" was agreed on the meeting.

### **Male` 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
- Realizing 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;

Emphasizing that air pollution issues have to be analyzed and managed in the wider frame-work 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 analyze the origin and causes, nature, extent and effects of local and regional air pollution, using the in-house identified institutions, universities, colleges etc., building up or enhancing capacities in them where required;
2. Develop and/or adopt strategies to prevent and minimize air pollution;
3. Work in co-operation with each other to set up monitoring arrangements beginning with the study of sulfur and nitrogen and volatile organic compounds emissions, concentrations and deposition;
4. Co-operate in building up standardized methodologies to monitor phenomena like acid depositions and analyze 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.

# Here is where you can find information related to Acid Rain : An Internet Update

## Information sites

National Acid Precipitation Assessment Program (U.S.)--Tracking and Analysis Framework.

<http://www.lamina.com/taflist/>

National Atmospheric Deposition Program (NADP) "is the only nationwide monitoring network for acid rain. The site has isopleth maps of acidity and the other major ions contained in precipitation."

<http://nadp.nrel.colostate.edu/NADP>

USGS Acid Rain Quality Assurance Project.

<http://btdqs.usgs.gov/manilles/qafactpg.html>

Acid Deposition in Southeastern Brazil. This link can be slow. Research into acid rain in the most highly industrialized section of Brazil.

<http://www.inpe.br/geochem/buquira.html>

State of the Environment Norway-Acid Rain

<http://www.grida.no/soeno95/acidrain>

Acid Rain FAQ, by Environment Canada. Very informative FAQ in a question-and-answer format, and a well-designed site.

<http://www.ns.ec.gc.ca/aeb/ssd/acod/acidfac.html>

Acid Rain Program of the US EPA. General information on acid rain and specific information on EPA programs to reduce and prevent it.

<http://www.epa.gov/docs/acidrain/ardhome.html>

Canadian Coalition on Acid Rain

<http://www.lib.uwaterloo.ca/discipline/speccall/acid>

The Clean Coal Technology Program. "No country comes close to the United

States' Clean Coal Technology Demonstration Program.", and this site tells you why. Despite the hyper-enthusiasm, valuable information on public-private initiatives in this area sponsored by the U.S. Department of Energy (DOE).

<http://www.doe.gov/html/tc/cct.html>

EnvJourn Home Page: Air Pollution, a small but nice set of links to a range of general air pollution resources, including U.S. National Oceanic and Atmospheric Administration (NOAA) and U.S. Environmental Protection Agency (EPA) sites.

[http://www.tribnet.com/environ/env\\_airp.htm](http://www.tribnet.com/environ/env_airp.htm)

Acid Rain & the Dirtiest Power Stations in England and Wales -- part of the Friends of the Earth, England, Wales and Northern Ireland Web site. Includes a nifty map.

<http://www.foe.co.uk/camps/edu/eduproj/acidrain.html>

RAINS-ASIA software

<http://www.iiasa.ac.at/research/tap/docs/rains.html>

## Educational Resources

You Can & Acid Rain. More acid rain info and activities for schoolchildren, courtesy of the science television program "Beakman's World." Written and designed for the young websurfer.

<http://www.nbn.com/youcan/acid/acid.html>

Acid Rain Educational Activities from Newton's Apple, the PBS science show for schoolchildren.

<http://www.ctca.org/newtons/9/acidrain.html>

Acid Rain educational activities with the focus on Europe rather than North America. Thorough information and a great map of effects across Europe.

<http://www.soton.ac.uk/~engenvir/environment/air/acid.home.html>

(Continued from page 5)

velop and implement specific programmes relating to haze caused by forest fires, air and water quality management and protection of marine environment in ASEAN seas.

On 26 April 1994, the ASEAN Ministers for the Environment issued the Bandar Seri Begawan Resolution on Environment and Development which inter alia adopted the ASEAN Strategic Plan of Action on the Environment. One of the objectives of this Action Plan is to respond to specific recommendations of Agenda 21 requiring priority action in ASEAN particularly those pertaining to the protection of the atmosphere, and protection and management of the oceans.

At the Informal ASEAN Ministerial Meeting on the Environment held in Kuching, Malaysia on 21 October 1994, the Ministers agreed to enhance cooperation to manage natural resources and control transboundary pollution within ASEAN, to develop regional early warning and response system, and to improve the capacity of members countries in these areas.

In view of the increasing periodicity and worsening impact of transboundary pollution in the region and recognizing the complexity of the problem, the Ministers agreed to the formulation of an ASEAN Cooperation Plan on Transboundary Pollution. This Plan initially addresses the following three programme areas:

- Transboundary atmospheric pollution;
- Transboundary movement of hazardous wastes; and
- Transboundary shipborne pollution.

In adoption the Plan, the Ministers recognized that for its successful implementation, it would be imperative to secure public commitment and support. Towards this end, effective measures would be undertaken to promote public awareness and education leading to enhancing their capacity in dealing with the pollution problems at source.

(Quoted from ASEAN Cooperation Plan on Transboundary Pollution)

"We have first raised a dust and then complain we cannot see"  
- from the introduction to the Principles to Human Knowledge by

## Participating Countries of Acid Rain in Asia Proj-

### A. Primary Participating Developing Member Countries (DMCs) and Executing Agencies:

1. *People's Republic of China* (State Science and Technology Center)
2. *India* (Central Pollution Control Board)
3. *Indonesia* (Environmental Impact Management Agency)
4. *Thailand* (Pollution Control Department)

### B. Other Participating DMCs/regions:

- |                 |                       |
|-----------------|-----------------------|
| 1. Bangladesh   | 2. Bhutan             |
| 3. Cambodia     | 4. Hong Kong, China   |
| 5. Lao, PDR     | 6. Malaysia           |
| 7. Myanmar      | 8. Nepal              |
| 9. Mongolia     | 10. Pakistan          |
| 11. Philippines | 12. Republic of Korea |
| 13. Singapore   | 14. Taipei, China     |
| 15. Vietnam     |                       |

### C. Participating Non-DMC

Further information on the activities of acid rain in Asia project may be requested from:

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## Upcoming Events

### 1. Japan

- **First National Workshop** on Acid "Rain and Emissions Reduction in Asia" to be held in each of the primary participating countries:

Beijing, People's Republic of China	22-23 June 1998
New Delhi, India	25-26 June 1998
Jakarta, Indonesia	29-30 June 1998

- UNEP/EAP-AP is organizing **Asia-Pacific Regional Consultations** on UNEP's Second Global Environment Outlook (GEO) -2 report in 1998, which will take place in 4 phases with the following schedule:

- South Asia GEO-2	19-20 May Nepal
- South East Asia GEO-2	25-26 May, Thailand
- Greater Mekong Sub-region	27 May Thailand
- Northwest Pacific & East Asia	28 May, Thailand

- UNEP/EAP-AP together with Environment Research Training Center (ERTC), Thailand is organizing **State of the Environment Database and Reporting Training** for 9 ASEAN countries from 29 June - 10

Please send your comments/suggestions to:

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