

### Acidification and eutrophication of developing country ecosystems

The present project is a part of the 2001-2004 phase of the Sida-funded Programme on Regional Air Pollution in Developing Countries (RAPIDC) which is co-ordinated by the Stockholm Environment Institute (SEI). The project is led by the Swedish University of Agricultural Sciences (SLU).

to long-range transport of pollutants. There is a need to consolidate the knowledge in the region related to these impacts.

Decision-makers and scientists in Asia often express concern over the potential for acidification. 'Acid Rain' is

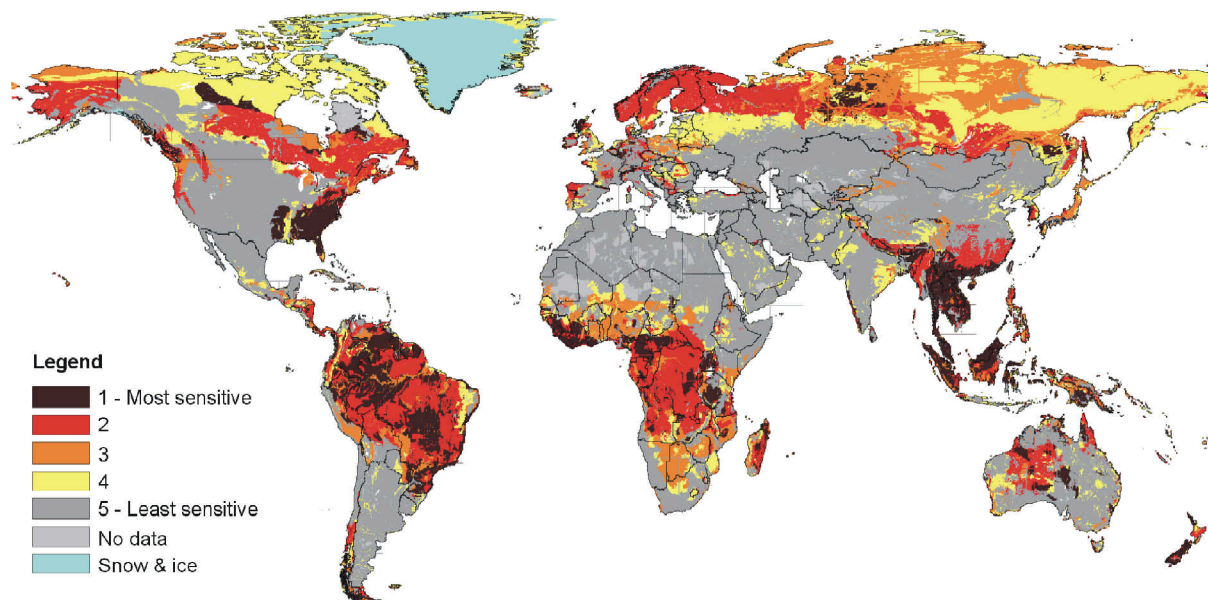


Figure: SEI Global Assessment of Ecosystem Sensitivity to Acidic Deposition (Kuylenstierna *et al.* 2001)

#### Aims

To promote understanding of acidification in South Asia through an analysis of ecosystems at risk, to undertake a detailed analysis from a regional perspective and to create links within Asia.

#### Overview

Acidification is the subject of much research in China, Japan, Korea and other countries in Asia, and has been the impact focused upon in international studies in the region. This is due to the fact that the deposition of sulphur and nitrogen, with associated impacts of acidification and eutrophication, have traditionally represented the main transboundary impacts related

often quoted as the most likely cause for observed forest damage. Concern about acidification is often poorly specified with regard to the stock at risk and the type of damage that may occur. This is particularly true in South Asia, where acidification is a relatively new concept in the region. It is proposed that information be gathered about specific receptors and stock at risk from a regional perspective and that there be transfer of information on acidification between Asian regions. This will help to evaluate the meaning of 'risk' and 'sensitivity' maps that have been produced in previous RAPIDC Programme periods (for an example see figure). Such maps are a necessary prerequisite for soil monitoring at a regional

scale. A background document for a workshop will be produced that illustrates different aspects of acidification in Asia. The document will explain risks in detail using case studies from different parts of Asia. Links with Chinese activities will be achieved through collaboration with the Integrated Monitoring Program on Acidification of Chinese Terrestrial Systems (IMPACTS). IMPACTS is financed by the State Environment Protection Agency (SEPA) of China and the Norwegian Agency for Development Co-operation (NORAD).

The project is being developed in two phases. The tasks below outline Phase I activities.

### Tasks

- Develop links with South Asian soil/ecosystem experts to develop South Asian expertise in acidification;
- Compile case studies for different vegetation/soil types and aquatic ecosystems in Asia, using the links with Chinese researchers as appropriate;
- Develop a background document using authors from Asia, edited together with information and experience from Sweden and other parts of Europe.

In Phase II it is the intention to hold a workshop on impacts of acidification in Asia and promote understanding in South Asia, including guidance for monitoring and assessment of stock at risk.

### Collaborators

This activity is led by The Swedish University of Agricultural Sciences (SLU) who will liaise with collaborating institutions from China and South Asia, to be identified from existing contacts and the National Implementing Agencies of the Malé Declaration in South Asia.

### References

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- Kuylenstierna, J.C.I., Rodhe, H., Cinderby, S., Hicks, K. 2001. Acidification in developing countries: Ecosystem sensitivity and the critical load approach on a global scale. *Ambio* **30** (1): 20-28.

### Regional Air Pollution In Developing Countries

RAPIDC is a Programme funded by the Department of Infrastructure and Economic Cooperation (INEC) of Sida, the Swedish International Development Cooperation Agency. It is co-ordinated by SEI and carried out in collaboration with Swedish universities and research organisations together with inter-governmental agencies and research organisations in Asia and Africa. The aim of RAPIDC is to facilitate the development of agreements/protocols to implement measures which prevent and control air pollution. Projects are carried out that facilitate international co-operation on air pollution issues and develop relevant knowledge to support decision making. Activities are carried out in Asia (mainly South Asia) and in Southern Africa.



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