Report On

Soil Acidification Training
25-27 March 2008, Pathumthani, Thailand

Malé Declaration

On Control and Prevention of Air Pollution
And it's Likely Trans-boundary Effect for South Asia

C O N T E N T S

LIST OF ACRONYMS

CEC	Cation Exchange Capacity
IPNM	Integrated Plant Nutrient Management
NIAs	National Implementation Agencies
SEI	Stockholm Research Institute
UNEP RRC.AP	United Nations Environment Programme Regional Resource Centre for Asia and the Pacific

MEETING REPORT

I. INTRODUCTION

1. The Malé Declaration: Training on Soil Acidification was held in Pathumtani, Thailand on 25-27 March 2008. The training was jointly organized by the United Nations Environment Programme (UNEP) Regional Resource Centre for Asia and the Pacific (RRC. AP) and the Stockholm Environment Institute (SEI) of York University, the United Kingdom. The workshop was attended by participants from the Malé Declaration member countries including Bangladesh, Bhutan, Iran, Nepal and Sri-Lanka. The list of participants is enclosed in Annex 1, and the workshop agenda is attached in Annex 2.

II. COUNTRY STATUS: CURRENT STATUS OF ACIDIFICATION

2. Mr. MD. Hasan Hasibur Rahman, Department of Environment, Ministry of Environment and Forest, Government of the Peoples' Republic of Bangladesh, provided an overview on Bangladesh's current status of soil acidification. He said that industries and vehicles are the major sources of soil acidification, while waste batteries also contribute significantly to this. It was mentioned that the many of such acid land are located in the southern part of Bangladesh. Mr. Rahman said that the Bangladesh government had been trying hard to reduce sulphur content in coal, despite sulphur-source energy is still proportionally low in Bangladesh

3. Mr. Masood Zandi, Air Pollution Research Bureau-DOE, Iran Environmental Research Centre, briefed the status of acidification in Iran. It is noted that the northern Iran are mostly agriculture fields and forests, while the central and southern Iran are deserts. Vehicles had caused the acidification problem in the cities. Industries such as copper melting factories have also emitted considerable amount of sulphur dioxide.

4. Mr. Zulfiqar Ali, Pakistan Environmental Protection Agency, informed that 8-8.5% of the land in Pakistan is for agricultural use. Sulphur energy makes up 10% of the overall energy source. It is mentioned that most of the wastewater, such as the wastewater from dyeing factories, is not treated and such wastewater is directly discharged to rivers. Mr. Ali also highlighted that Pakistan ranked second in the world in terms of natural gas vehicles adoption.

5. Professor. Rangith B. Mapa, Faculty of Agriculture, University of Peradeniya, Sri Lanka, indicated that acid rain has been a major environmental issue in Sri-Lanka, largely caused by the industries in India, while vehicle emission is another culprit. It was mentioned that the western part of Sri-Lanka are wetland and most of the national incomes for Sri Lanka are generated from there.

6. Mr. Y. G. Khadka, Nepal Agriculture Research Council, presented on Soil Acidification and Fertility Status in Nepal. Mr. Khadka introduced that the most common environment problems in Nepal include land degradation, waste disposal, inland water pollution, air pollution, population growth, land acidification, and low agricultural production. It is showed that the land in Nepal is sensitive to erosion, acidification and has been causing soil fertility depletion. Forest resources are being seriously depleted every year, and soil productivity has declined 20-30 % over the last 25 years. Based on successful experiment such as the SALT experiment, recommendations were made on implementation of soil management practices, such as adoption of soil erosion control measures to minimize nutrient losses from the soil surface (Mg and Ca); combined use of OM and inorganic fertilizers to maintain soil fertility in longer run; best option - integrated plant nutrient management (IPNM) to improve physico-chemical properties for the sustainable agriculture productivity. The presentation is attached in Annex 3.

III. INTRODUCTION TO ASSESSMENT OF ACIDIFICATION AND EXPERIENCE FROM EUROPE, NORTH AMERICA AND SOUTH CHINA

7. Dr. Kevin Hicks from SEI delivered a presentation on introduction to assessment of acidification and experience from Europe, North America and South China, and researches proved the existence of soil acidification in Europe and Southern China. Acidification in water and soil had also resulted species and forestry decline in Europe. Dr. Hicks urged that more studies on acidification in South Asia should be conducted, and there is a need to collate all available studies and data on acidification in South Asia.

8. Dr. Hicks then introduced some characteristics of soils that are susceptible to acidification, and explained the acidification processes and its consequences. SEI terrestrial ecosystem sensitivity to acidic deposition mapping method was described as a methodology that could be used to promote national efforts to assess risk of acidification damage in South Asia. The methodology is to measure the sensitivity of soil by measuring the cation exchange capacity (CEC) and base saturation of the soil. Soil mapping in the region and the world were presented. Dr. Hicks suggested including soil acidification assessment in the future work of Malé Declaration project.

IV. METHODOLOGY FOR MAPPING SENSITIVE SOIL MODELING THE TIME DEVELOPMENT OF DAMAGE IN SOUTH ASIA

9. Dr. Hicks gave a lecture titled as "Potential Risk of Acidification in South Asia". Acidification has been a major trans-boundary issue in Europe since 70s and 80s and is a central theme to the Malé process. Dr. Hicks gave a brief summary on the soil acidification process, and also presented the factors related to acidic soil. Next, Dr. Hicks showed the methods to present sensitivities of soil through sensitivity mapping. The map indicates areas with better buffering capacity, as well as areas with low buffering capacity. He introduced to the audience the "critical load" method. However as environmental factors are always changing, a dynamic model will therefore be needed. Dr. Hicks then showcased examples of dynamic models and parameters considered. Dr. Hicks concluded his presentation by mentioning some future challenges on assessing the effect of acidification in soil. Dr. Hicks presentations are attached as Annex 4 and Annex 5.

V. DISCUSSION

10. The Manual/ Technical Documents for Soil and Vegetation monitoring for Malé Declaration in South Asia were studied and discussed by the participants. It was noted that when participants go back and conduct their researches, site selection criteria (page 6 of the Manual, with reference to figure 2.2 on page 61) should be seriously considered.
11. The idea of having a soil monitoring site which is within 50 km of a male declaration deposition monitoring site was evolved. If it is not feasible, it is still desirable to have site as closed as possible to a meteorology measuring site
12. The selection of soil monitoring site should be accompanied with careful consideration of parameters listed in table 2.1 in page 10 (those marked as mandatory). The optional parameters for exchangeable Al and bulk density should also be measured if it is possible.
13. The feasibility of establishing one or two soil monitoring sites in each male country should be considered, and there should also be recommendation made to the National Implementation Agencies (NIAs) in each country on how it should be carried out. The recommendation letter should be accompanied by a one to two page summary of the cost and logistics needs for setting up the monitoring site.
14. If the recommendation is accepted by the NIAs, the next stage will be incorporating the proposals to the monitoring site in the next Male declaration proposals.