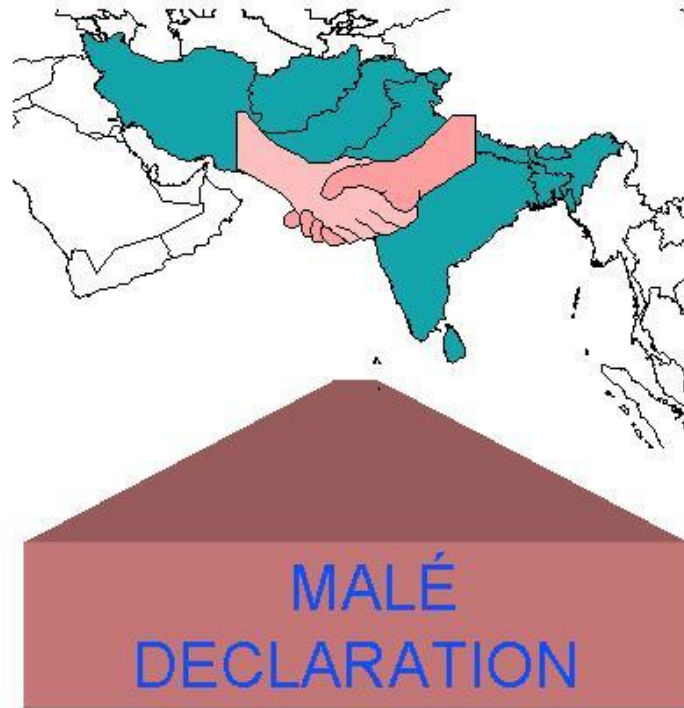


MALÉ DECLARATION

On Control and Prevention of Air Pollution and Its Likely Transboundary effects for South Asia



By

UNEP RRC.AP

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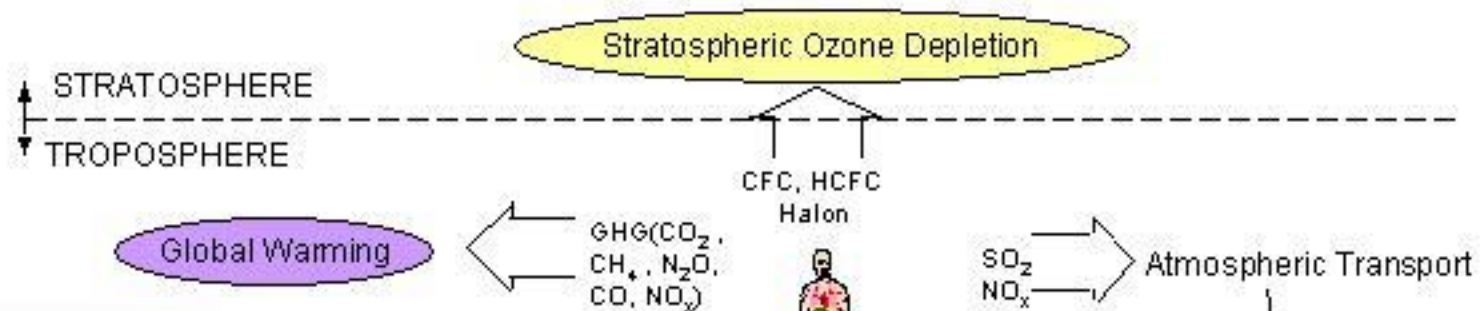
Male' Declaration

Phase I Implementation

Phase II Implementation

This training program

Atmospheric Issues



Aerosol from Transport & Construction

NO_x, CO, HC, Lead, SPM



Domestic Aerosol

CFC, HCFC, Halon, CH₄, CO₂



Industrial Aerosol

SO₂, CO₂, NO₂, H₂SO₄, SPM, HCL, CO, NO



Background Aerosol

sea salt oxidation of sulphur containing gases, some organics

Aerosol from Deforestation & Burning

CO₂, CO, N₂O, NO_x, CH₄



Acid Rain

Unpolluted rainfall has a pH of 5.6

The pH scale is logarithmic

Rainfall with pH 5 is ten times more acidic than pH 6

Rainfall with pH 4 is 100 times more acidic than pH 6

Rainfall with pH 3 is 1000 times more acidic than pH 6.

The pH Scale



Trees and plants affected at pH 3.5 and stronger



Buildings and paint affected at pH 5 and stronger



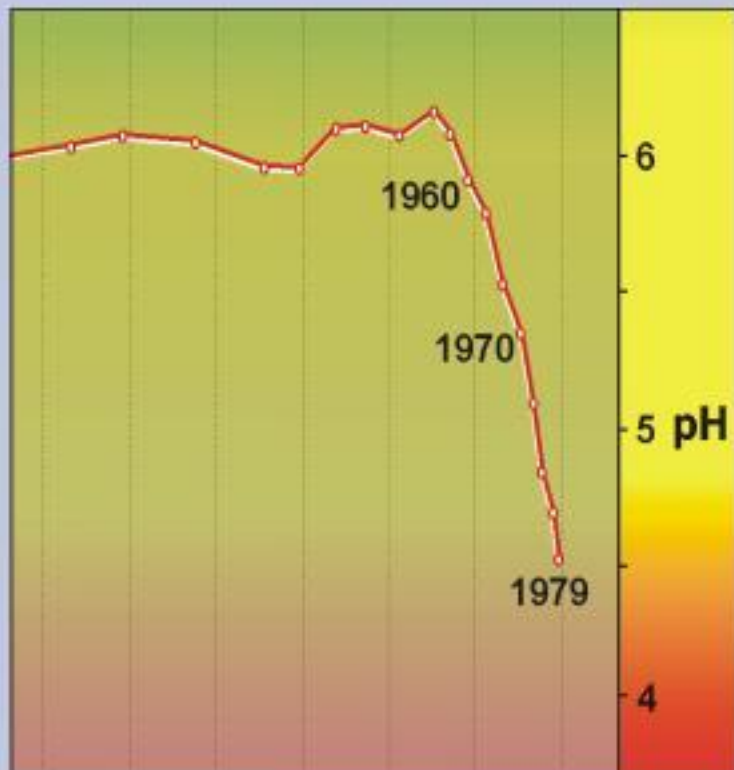
Fish affected at pH 6 and stronger



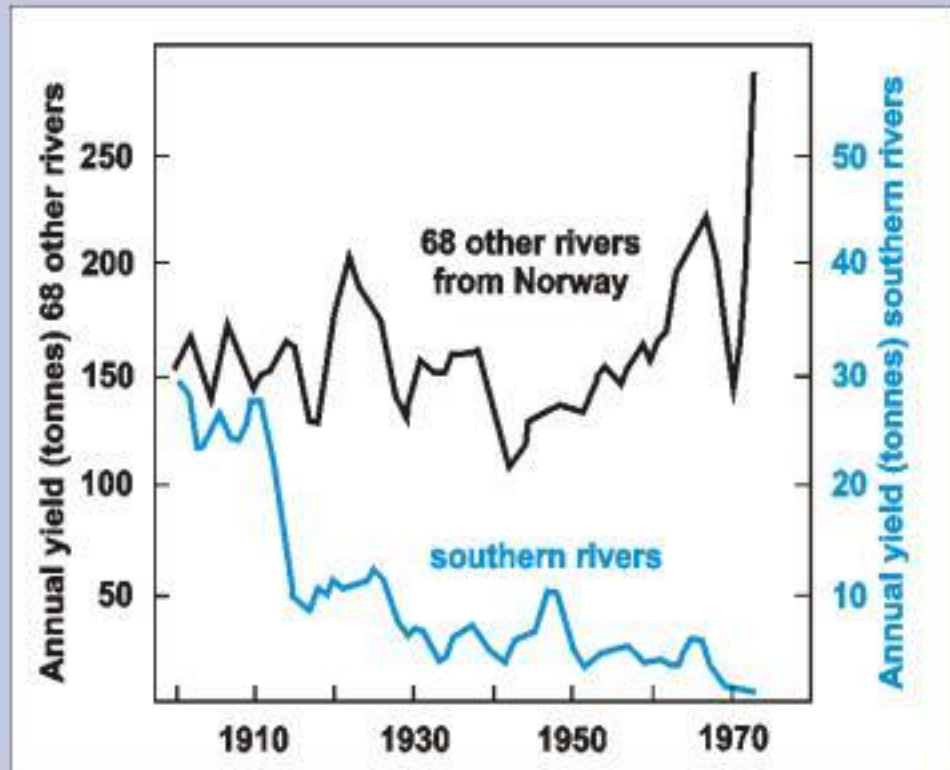
More and more acidic

More and more basic

Acidification of Surface Waters in Europe



The pH of lake
Gårdsjön, SW Sweden

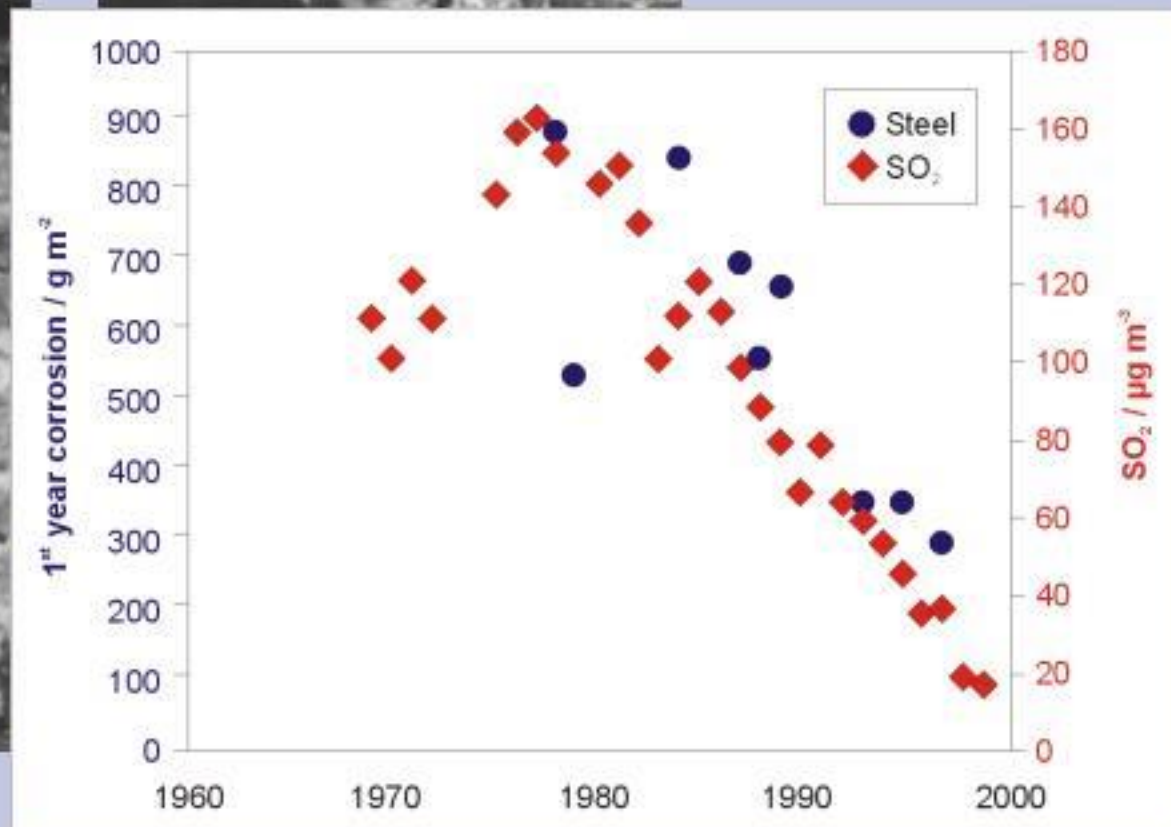


Salmon decline in the
acidified waters of southern
Norway

Air Pollution and Corrosion in Europe

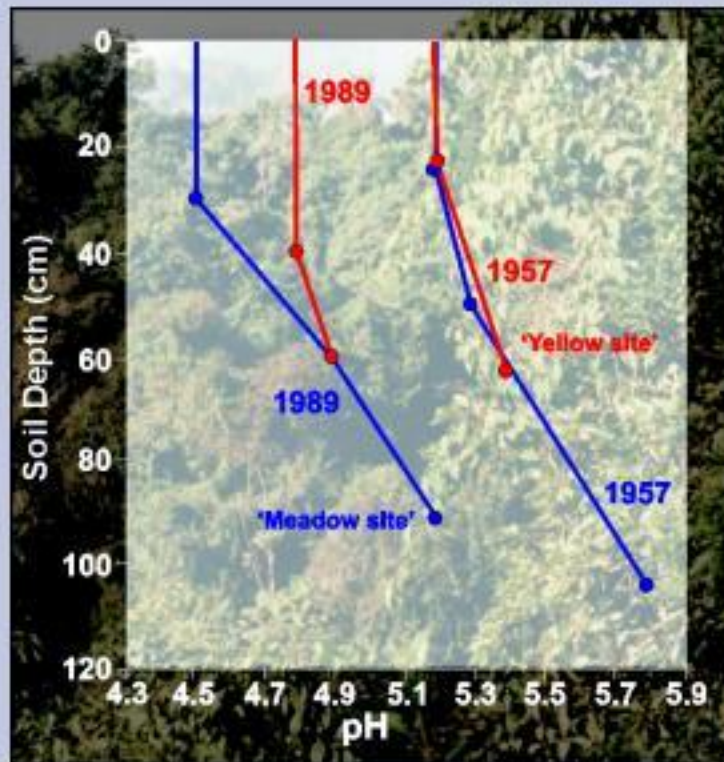


Impacts in Central Germany



Steel corrosion in Kopisty, Czech Republic

Regional Impacts of Pollution: *Acidification and Eutrophication*



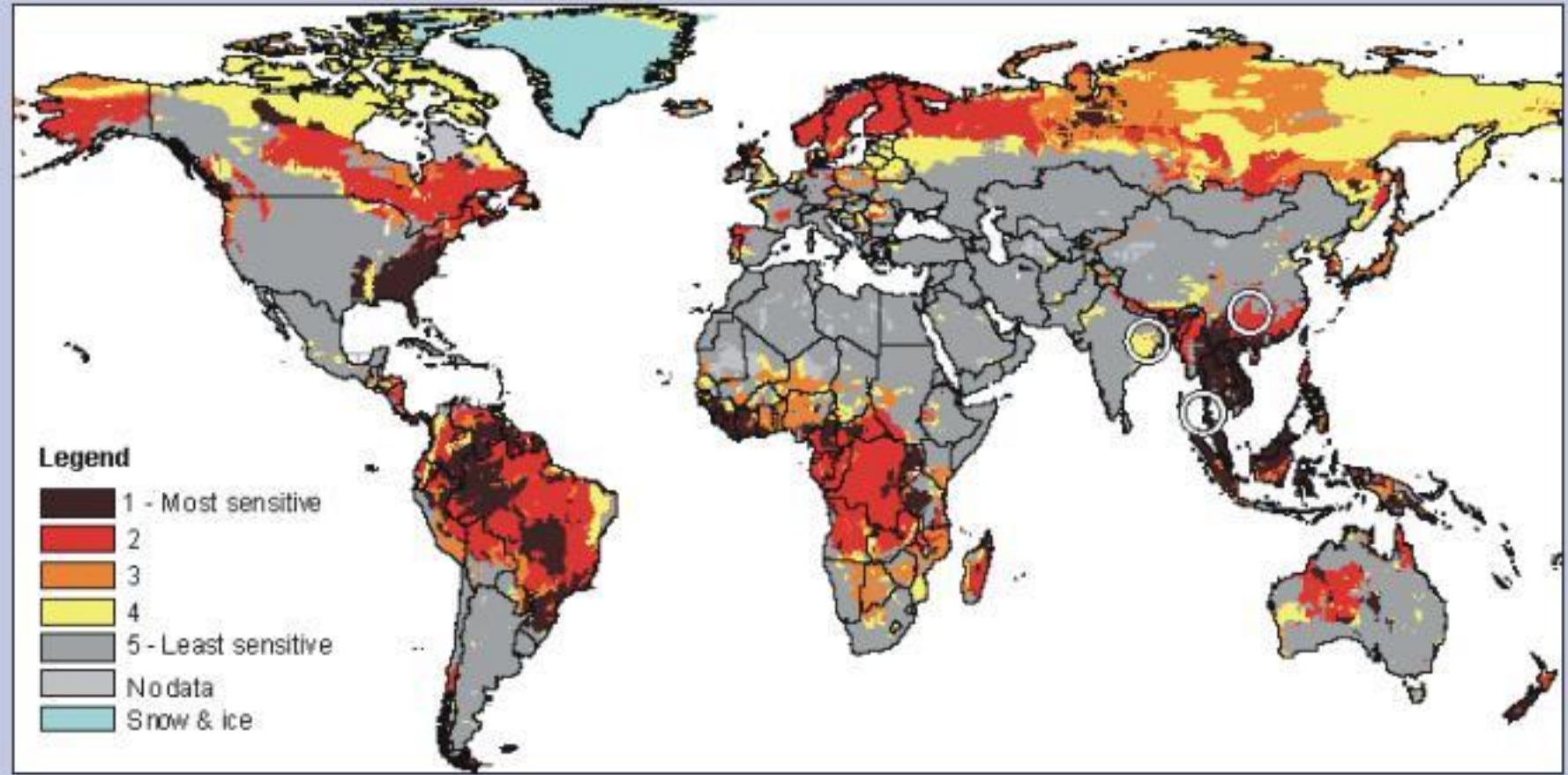
Soil acidification in southern China



Forest damage in
Germany



Global Map of Terrestrial Ecosystem Sensitivity to Acidic Deposition



Impacts on Crops and Forests

VISIBLE INJURY



Ozone induced injury on clover and white pine

Ozone induced injury to muskmelon and peach trees in the Mediterranean region



Invisible Injury: as shown by filtration experiments



O_3 injury to wheat whole plant growth, Pakistan
(courtesy of A. Wahid)

Malé Declaration: Conceptualization

POLICY DIALOGUE ON REGIONAL AIR POLLUTION ISSUES
19-20 March 1998

Main Aims

Create a broader dialogue of the air pollution issues in Asia

Promote the policy cycle in South Asia by:

(i) re-affirmation that transboundry air pollution is a priority issue for South Asia;

(ii) agreeing upon a draft action plan for inter-governmental activities at the policy dialogue.

Participants

Target countries for the phase I (South Asia)

Bangladesh

India

Nepal

Pakistan

Sri Lanka

ADB, ASEAN, SACEP

AIT, ERTC

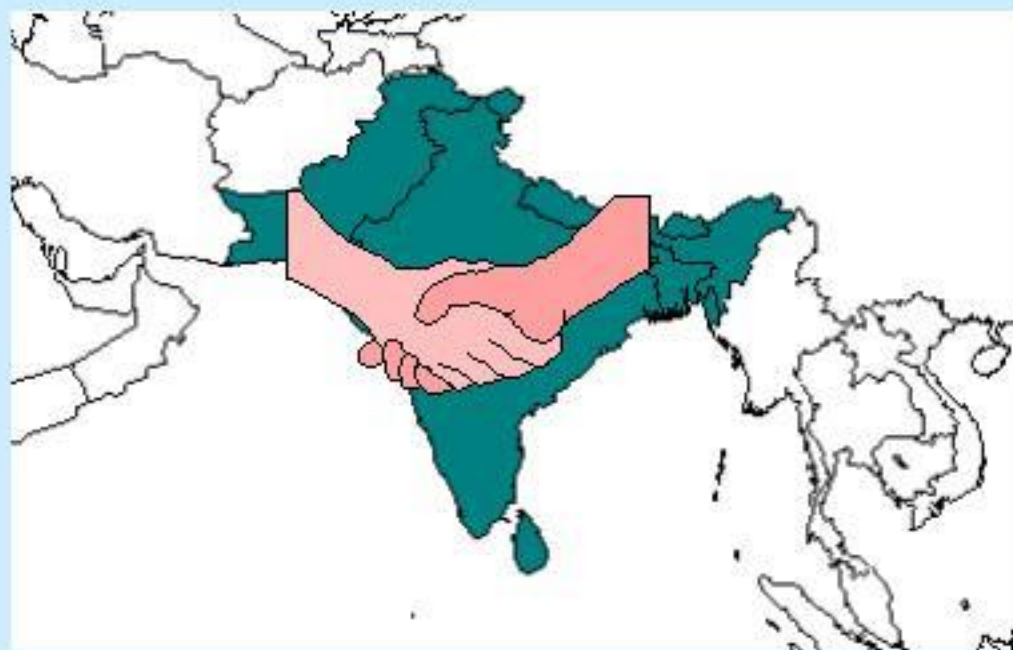
Sida, SEI, UNEP

Malé Declaration: Adoption

**Adopted at SACEP GC Held
on 22 April 1998 in Malé,
Maldives.**

**Inaugurated by His
Excellency Mr. Maumoon
Abdul Gayoom, President of
Maldives**

**Attended by ministers and
high level policy makers
from South Asian
Environment ministries.**



Malé Declaration: Implementation

PHASE I: Awareness and preparation of the baseline information

PHASE II: Local capacity development for monitoring and analysis

PHASE III: Provide scientific information; assist in activities to reduce pollution

Malé Declaration: Phase I Implementation

Network Establishment

Identification of NEAs
Establishment of NEAs
Network & Database of Experts/Institutions

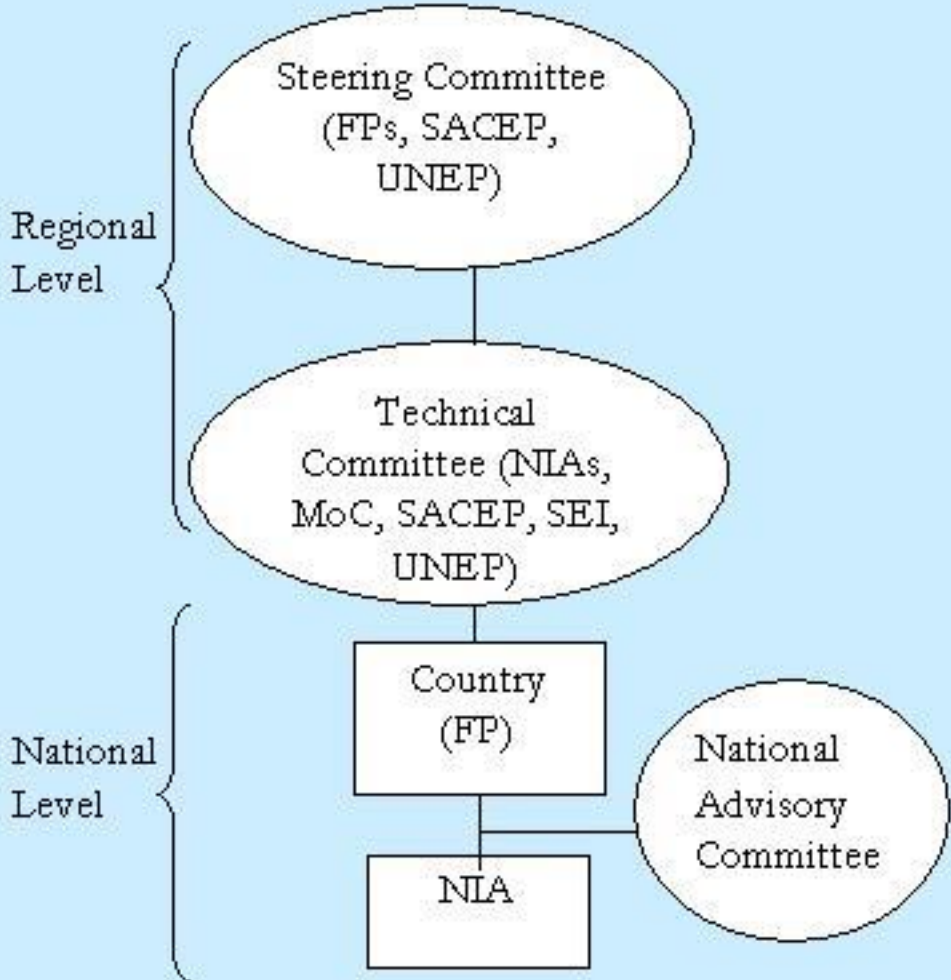
Baseline Studies

Guidelines for the Baseline Studies
Preparation of Baseline Studies
Baseline Studies & Database

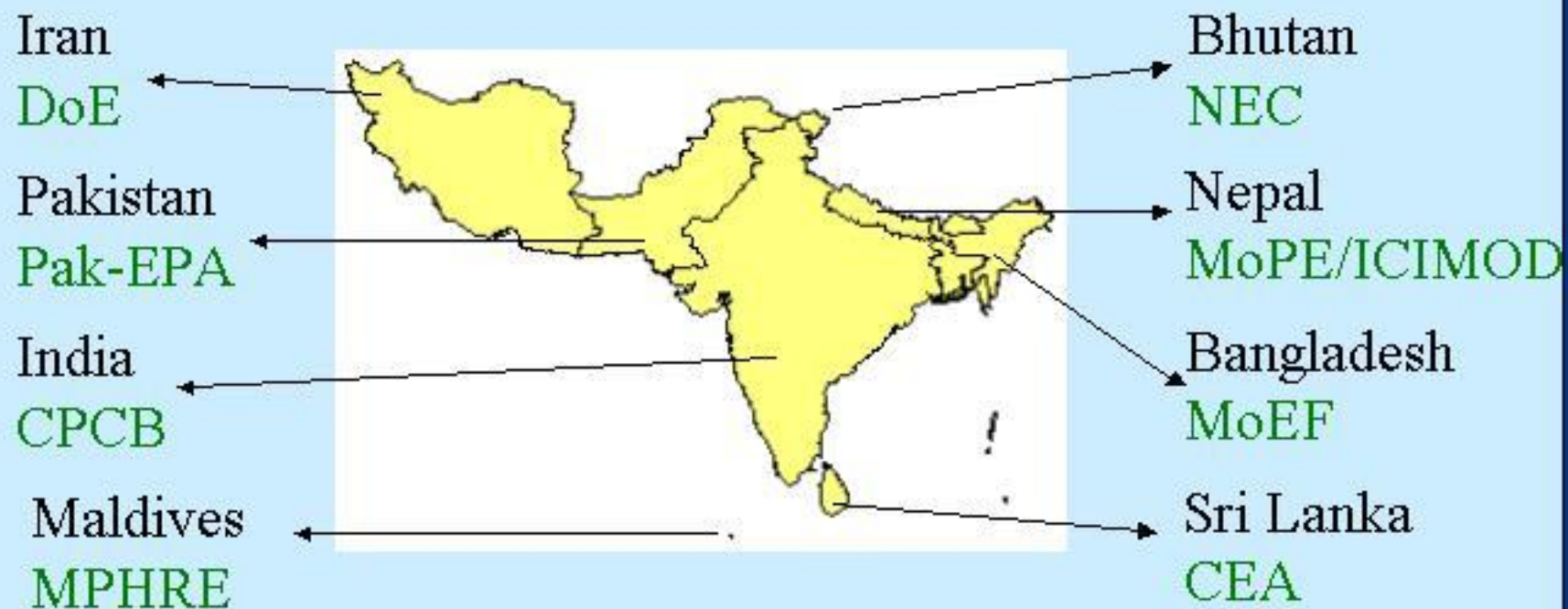
Action Plans



Malé Declaration: Institutional arrangements



Malé Declaration: National Implementing Agencies



PHASE II

Objective

“Implementation of phase II is to put in place expertise, equipment and information for quantitative monitoring, analysis and policy recommendations for eventual prevention/control of air pollution”

ACTIVITIES

NETWORK Annual network meeting

The network meeting will guide the implementation process, and will be organized once each year. NIAs and national focal points will attend.

ACTIVITIES

NETWORK Stakeholders meeting

At the national level NIAs will be guided by the stakeholders from all the sectors such as academics, NGOs, industrial etc. National stakeholder meetings will be organized in 3 of the network countries to obtain collective view of all the stakeholders. This will also facilitate the dissemination of project findings to all the stakeholders.

ACTIVITIES

NETWORK Regional NGO Workshop

One regional NGO Workshop will be arranged during the Programme period. Participants from NGOs, media and industry will be invited to discuss and review the Malé Declaration implementation process. **The 2003 Annual network meeting will be followed by an NGO workshop.**

ACTIVITIES

NETWORK Publication of newsletter

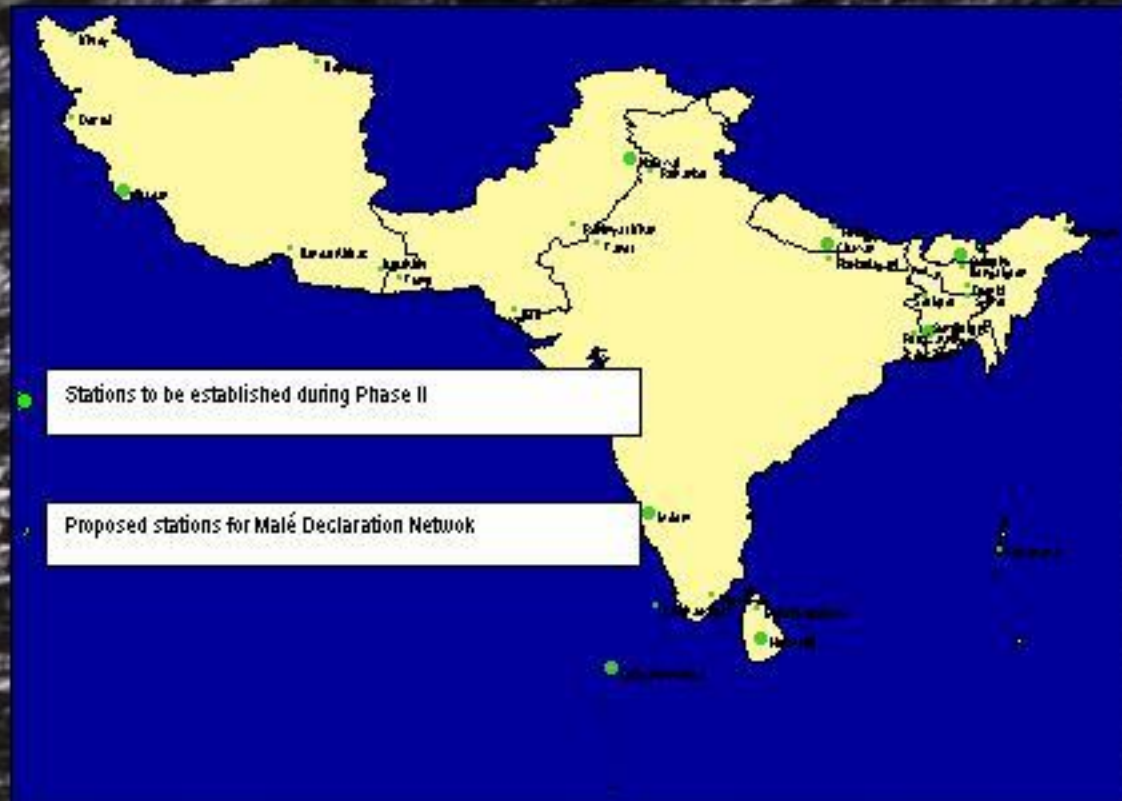
RRC.AP will publish a quarterly newsletter that includes network and other news, views, abstracts of recent research papers, study results, queries, etc.

ACTIVITIES

PARALLEL STUDIES

Emission inventory
Integrated modeling

MONITORING LOCATIONS



Remote sites for monitoring transboundary air pollution

One station per country

The network will be expanded based on the experience gained from these stations

MONITORING PARAMETERS

Wet Deposition
Dry deposition

Wet Deposition: pH, EC, SO_4^{2-} , NO_3^- , Cl^- , NH_4^+ , Na^+ , K^+ , Ca^{2+} , and Mg^{2+}
Bulk collector and Wet only collector

Dry Deposition: SO_2 , NO_2 , PM_{10} ,
HVS and passive sampling

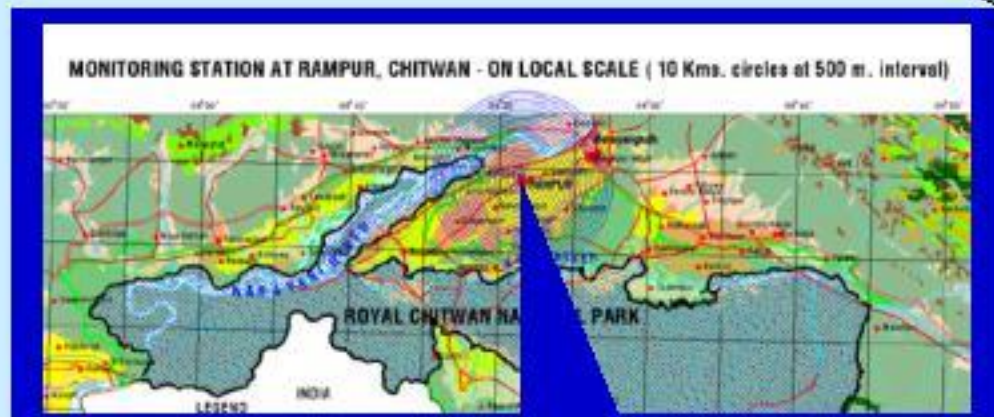
Technical Training

The first training program under the Malé Declaration was conducted in May 2002. The training program was participated by all the member countries and provided hands-on exercise on monitoring air pollution



Capacity building in Nepal

Monitoring station established in Chitwan, Nepal in March 2003. Trained over 15 technical personals.



- To be established by Dec 2003 (8 sites)
- Locations identified for further expansion (30 sites)



Sampling

HVS

Diffusive

Wet only Col.

Bulk Col.



Analysis



IVL



Reporting

PM₁₀

SO₂

NO_x

SO₂

NO₂

EC

pH

National DB

Regional DB



Regional
Resource
Centre for
Asia and the Pacific

This training program

To familiarize the participants on analyzing rainwater for anions and cations

Refresher discussions:

- on sampling and analysis AAQ

- on sampling and analysis of rainwater

Information Exchange

Publication of Newsletters

A discussion group for the Male' Declaration network is developed

<http://www.rrcap.unep.org/malewebboard>



NEWS LETTER
and the Representative Office for South Asia

Malé Declaration

Entering into the Phase II

International... (text continues)

Network Meeting 2001

Following... (text continues)

Visits and Discussions

Malé Meeting
The... (text continues)

Malé Visit
... (text continues)

Upcoming events

- The... (text continues)
- ... (text continues)
- ... (text continues)
- ... (text continues)

Technical manual for Male Declaration

Visit us
www.rrcap.unep.org/malewebboard/