

Malé Declaration 1998-2013: Progress and Opportunities - a synthesis

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IG13 Dhaka, Bangladesh
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Synthesis Report – Writing Process

- First draft written by Secretariat and technical advisors led by Lars Nordberg
- Now require your feedback
 - What is missing?
 - What is incorrect?
 - what could be improved?
- Report will be finalized and widely circulated to policy makers in South Asia and all relevant stakeholders to promote awareness of issues and opportunities.

Overall achievements of the Malé Declaration

- **Awareness** – meetings, internet and newsletters, linking to the youth, even adverts on buses and Malé Declaration song!
- **Training** – capacity and institutional strengthening in all aspects of air pollution policy cycle:

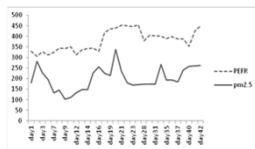
emissions/deposition ⇌ impacts ⇌ policy
- **Intergovernmental cooperation** - technical know-how and establishment of regional centres, financial mechanism, towards a regional cooperative agreement
- **Relationships** – within and between Malé Declaration countries and internationally

There is a foundation on which to build

Overall achievements of the Malé Declaration

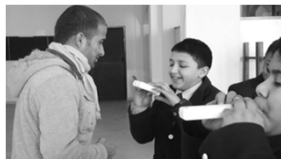
IMPACTS

Malé Declaration Results



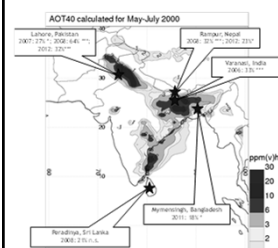
Health

Regional Technical Centre: Bangladesh



High cost of air pollution due to human health impacts and cost of hospital visits and lost school and work days

Malé Declaration Results

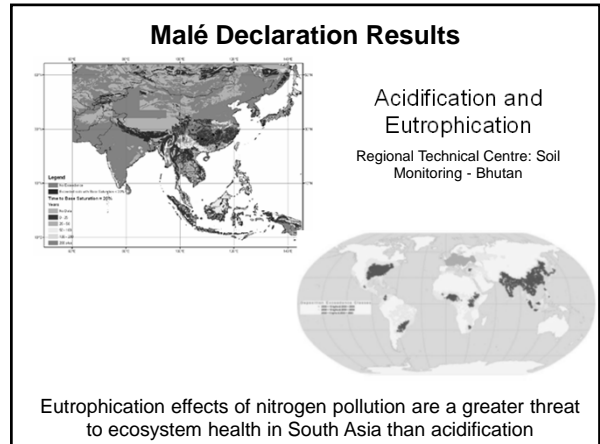
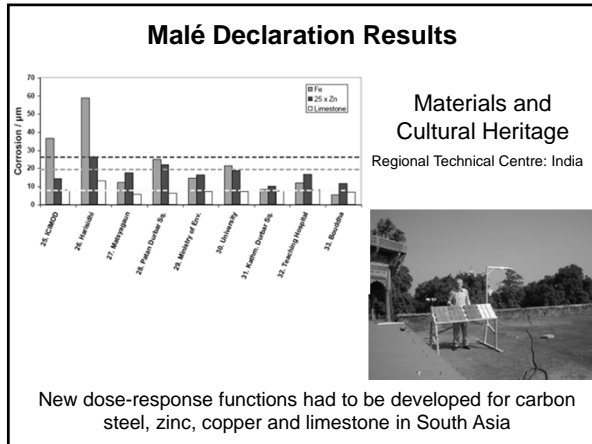


Crops

Regional Technical Centre: Pakistan

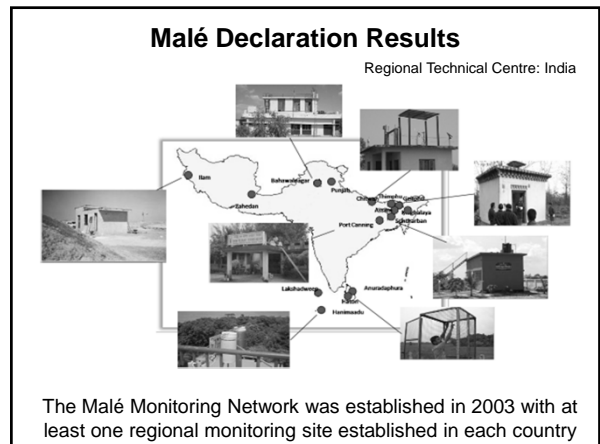
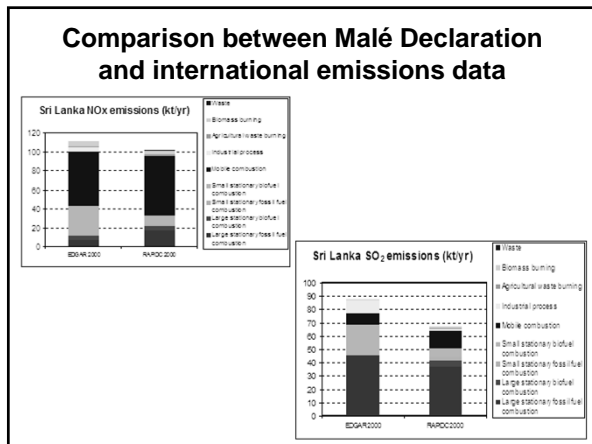
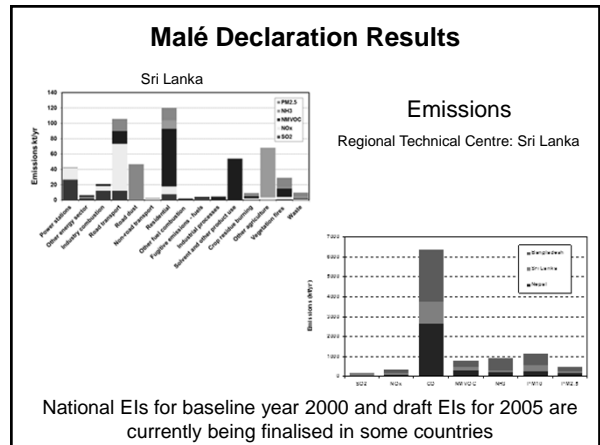


Evidence of ground-level ozone impacts during main growing seasons on important South Asian crops



Overall achievements of the Malé Declaration

Assessment of emission and deposition



Malé Declaration Monitoring Data

The equipment located at the monitoring sites is as follows:

IVL passive samplers for SO₂, NO₂ and ozone;

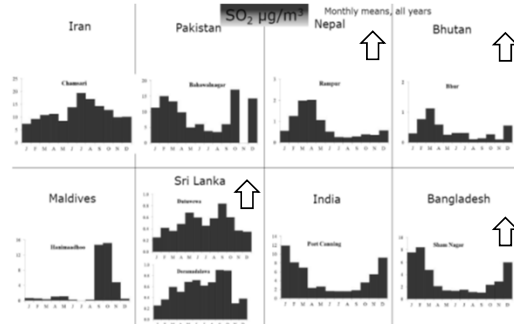
Total Suspended Particles (TSP) and PM₁₀ are being measured using high volume samplers (HVS) (regionally sourced);

Two Bulk samplers (funnel and bottle) at each site;

MISU wet-only collector at each site with solar panel;

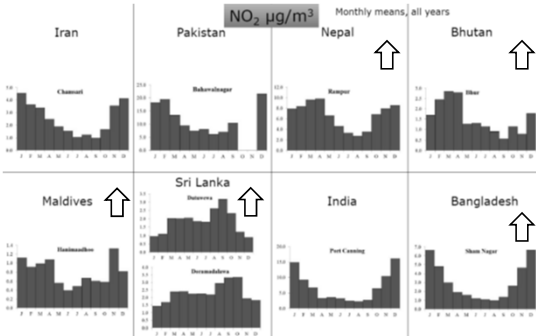
Meteorological measurements.

Malé Declaration Monitoring Data



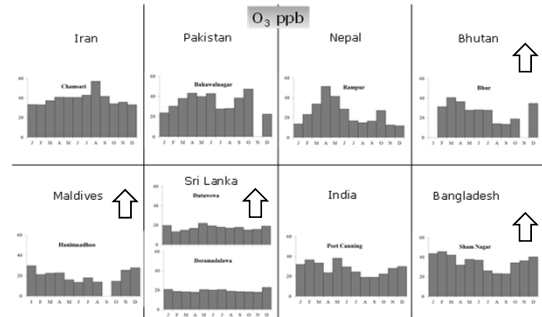
Sulphur dioxide concentrations with IVL Passive Samplers at Malé Declaration regional sites, monthly means 2003-2012

Malé Declaration Monitoring Data



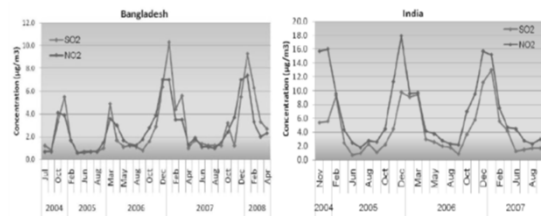
Nitrogen dioxide concentrations with IVL Passive Samplers at Malé Declaration regional sites, monthly means 2003-2012

Malé Declaration Monitoring Data



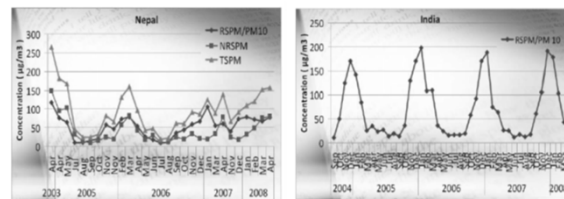
Ozone concentrations with IVL Passive Samplers at Malé Declaration regional sites, monthly means 2006-2012

Malé Declaration Monitoring Data



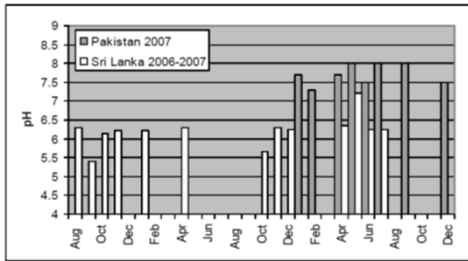
Seasonal variation of SO₂ and NO₂ concentrations measured with the High Volume Sampler (HVS) bubbler system

Malé Declaration Monitoring Data



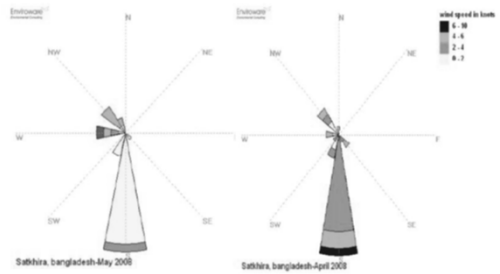
Particulate matter concentrations measured with the High Volume Sampler (HVS)

Malé Declaration Monitoring Data



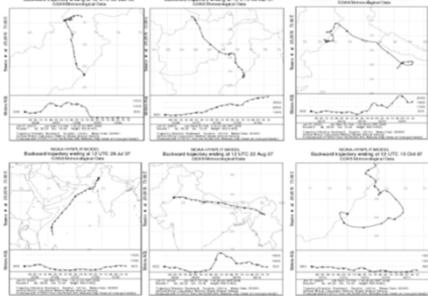
The pH of rainfall collected in the wet-only samplers

Malé Declaration Monitoring Data



Wind rose for the monitoring site in Bangladesh

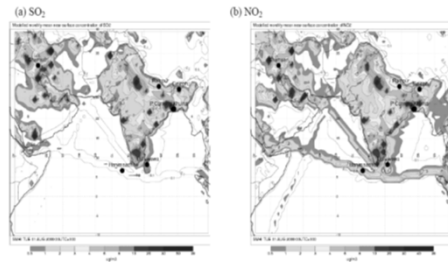
Malé Declaration Trajectory Analysis



Calculated three-dimensional, 5-day backward trajectories arriving at one of Pakistan's Malé monitoring stations during selected days of 2006 and 2007

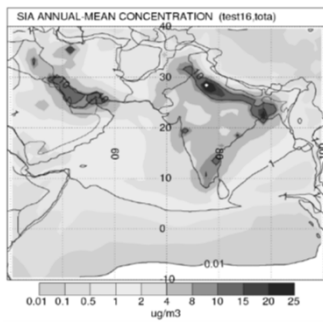
Malé Declaration Modelling Results

Regional Centre Modelling Atmospheric Transport of Air Pollution - Iran



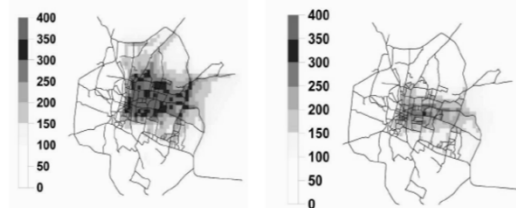
Near surface monthly-mean concentrations of SO₂ and NO₂ in July 2000 across South Asia from the MATCH model using EDGAR emission estimates for 1995.

Malé Declaration Modelling



Calculated annual-mean concentration of secondary inorganic aerosols (SIA) – sulphate, nitrate and ammonium (all within the PM_{2.5} size category)

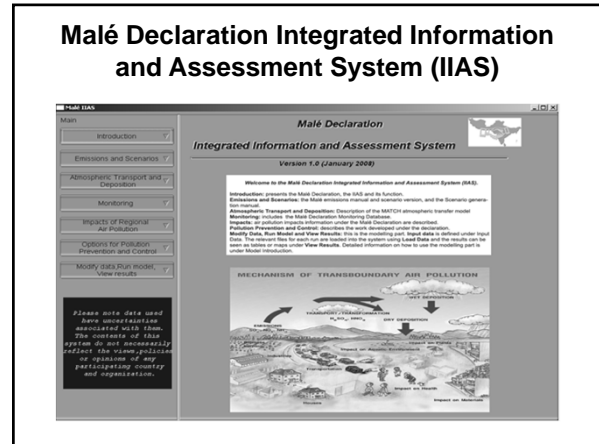
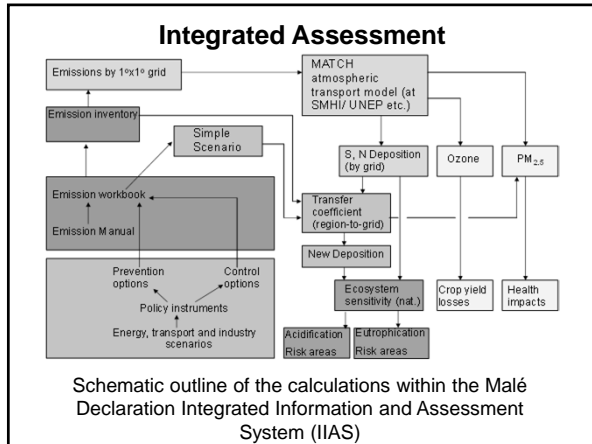
RAPID URBAN ASSESSMENT



July-September 2007

February-April 2008

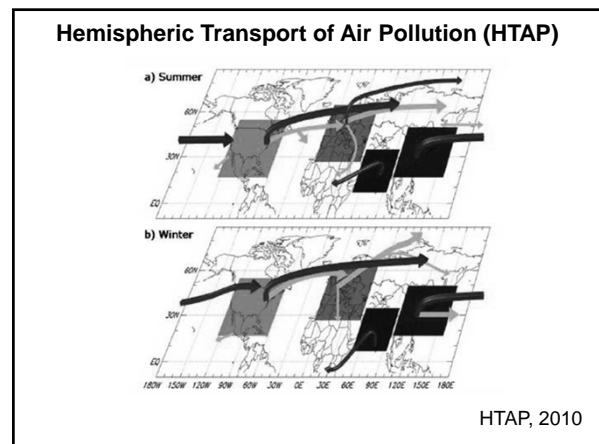
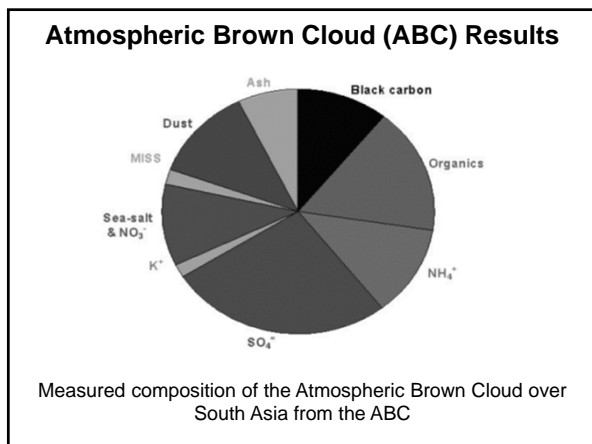
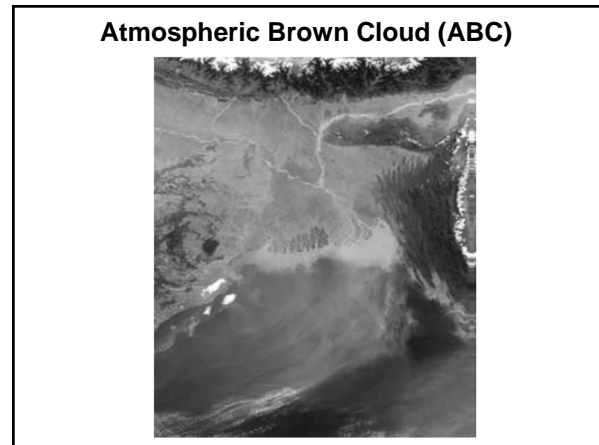
Results make it clear that the most important pollutant in Kathmandu is particulate matter, largely from the transport sector, which is known to have the greatest impact on human health

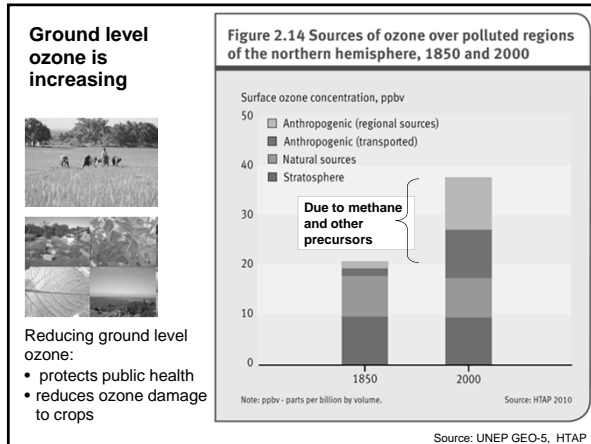


International evidence of the transboundary nature of air pollution

e.g.

- Atmospheric Brown Cloud (ABC)
- Hemispheric Transport of Air Pollution (HTAP), LRTAP
- UNEP Short Lived Climate Pollutant (SLCP) Assessment



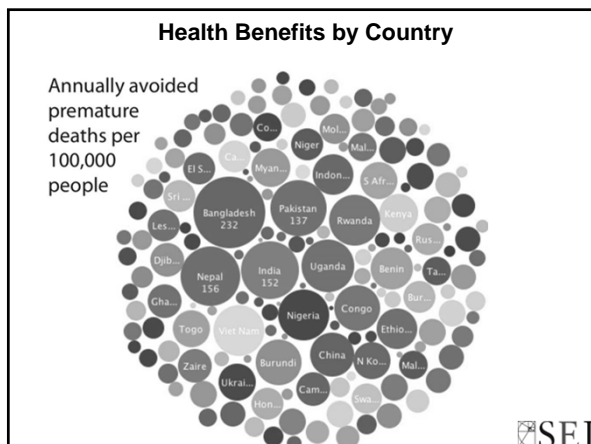
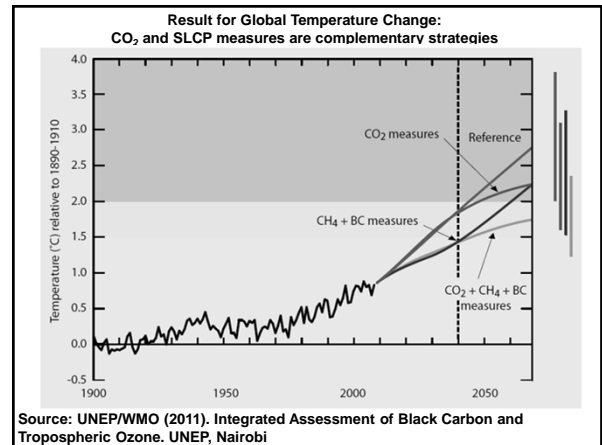


What are short-lived climate pollutants?

- Black carbon
- Tropospheric ozone
- Methane
- some Hydrofluorocarbons (HFCs)

Lifetimes in the atmosphere

Substance	Lifetime
Carbon dioxide	Decades to centuries and about 20 per cent will persist for many millennia
Ozone	4 – 18 days
Methane	12 years
Black carbon	3-8 days
HFCs	Average of mix: 15 years



Overall achievements of the Malé Declaration

Decision Support Information

Science to Policy

Regional Centre: Pollution Reduction Policies/Strategies – Nepal / Maldives

- Reports and training on good practice for air pollution policy, examining Best Available Techniques (BAT) for the housing, transport and power sectors.
- Study of factors that affect how well policy interventions work in the social and political contexts of the different countries.
- Training on regional cooperation issues focusing on good practices and knowledge on international policies and regulations related to air pollution in other parts of the world.
- Feasibility study of regional cooperative framework.
- Bangladesh National Action Plan for Air Pollution.

Overall achievements of the Malé Declaration

Opportunities and Challenges

Opportunities for Regional Co-operation

- Enough evidence to act - synthesis report showing much evidence produced and capacity established.
- Some Malé Declaration countries are prioritising action on air pollution and SLCPs and good practice in region can be shared – Malé Declaration is prime vehicle for doing this.
- Transboundary nature of air pollution in South Asia - offers incentives for action and co-operation.
- Links to ABC and particularly to black carbon and Himalayas – 30K glaciers in the Himalayas provide extra incentive.
- Ambitious national programmes on emission control contribute to international resolve—and *vice versa*

Opportunities for Regional Co-operation (cont.)

- Address short-term (health and crops) and long-term like climate and sustainability and link to SLCPs
- Monitoring programme important to protect and promote as basis for action – crucial to reviewing success of implementation of measures
- Need to continue work towards a regional treaty on air pollution:
 - international agreement involving the different sectors
 - characterized by flexibility and differentiated responsibilities and obligations for individual countries according to national priorities and possibilities.

Requirements for Further Progress

Emphasize opportunities based on what the Malé Declaration has already achieved to:

- Achieve stable and long-term funding in the region
- Establish working regional technical centres
- Link to national development planning
- Share good practice and experience across a range of Malé Declaration stakeholders, including policy makers, to facilitate international cooperation for progress on emission reduction.

Thank you for
your attention