

Malé Declaration

on Control and Prevention of Air Pollution
and Its Likely Transboundary Effects for South Asia



MALDIVES

An overview of progress
within the last decade...



MALDIVES

Status of Implementation 2008



Major emissions are being contributed by land and sea transport in the capital city Malé

Background

Air quality in the Maldives is generally considered to be good. Since the islands of the Maldives are small, the sea breeze flushes the air masses over the islands. However, it was observed late last decade that transboundary air pollution has been affecting the air quality of the Maldives during the northeast monsoon season. Urban air pollution is a growing concern in the capital, Malé, and indoor air pollution is also an aspect which should be explored further in congested houses. Transboundary air pollution in the Maldives first became apparent in 1997, when large parts of the country were affected by a haze caused by forest fires in Indonesia. The haze layer blanketed the country from October to December 1997 and significantly affected the livelihoods of Maldivians.

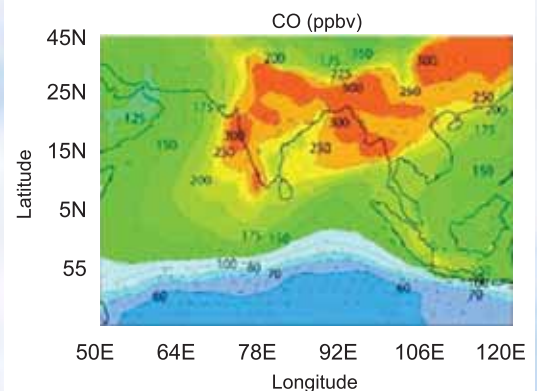
The actual state of transboundary movement of air pollutants in the Maldives was measured by the Indian Ocean Experiment (INDOEX). INDOEX was carried out in March and April 1999 by a team of more than 200 international scientists, led by the Centre for Clouds, Chemistry and Climate (C4) of the University of California.

Two air pollution monitoring stations have been established in the Atmospheric Brown Cloud (ABC) project, initiated by the Centre for Clouds, Chemistry and Climate and UNEP, in collaboration with the Government of Maldives to monitor long-range transport of pollutants from Asia to the Indian Ocean. These sites are located in Hanimaadhoo and Gan. Apart from these efforts, one additional monitoring station has been established at Hanimaadhoo under the Malé Declaration in order to collect transboundary air pollution data.

Major Sources of Air Pollution and Impacts

Urban air pollution observed in Malé is mainly due to emission from land and sea transport, power generation, and construction related activities. Particulate matter such as soot and coral dust are also introduced into the air. High-rise buildings and congestion in Malé has disrupted air circulation and emissions from the increasing number of motor vehicles on the roads are deteriorating the urban air quality of Malé. Though the pollution is visible in certain times, no numerical measures of the level of pollution are available. Elevated particulate matter levels are implicated in a range of respiratory problems such as asthma, allergic respiratory responses, bronchitis and emphysema. The Health Master Plan identifies outdoor air pollution as a major contributor to respiratory problems in the Maldives (MoH 1998). Health records show that cases reported with respiratory problems has increased in the past several years.

Land transport largely contributes to the air pollution of the country. Cars represent a very significant number among the registered vehicles. In 1994, 128 new cars were registered and this grew to 315 in 2000 (MPND, 2001). From 1990, the import of motorcycles has increased at an average of 14% per annum. In 2000 alone, 1860 motorcycles were registered (MPND, 2001). The small size of the islands and the infancy of the land transportation sector has limited the land transport system mainly to Malé, and some regional growth centres such as Hithadhoo and Kulhudhuffushi. The increased use of vehicles in Malé is causing not only congestion on the narrow streets, but is deteriorating the urban air quality as well.



Mean carbon monoxide (CO) concentrations near the surface over the Indian Ocean during February 1999.

The Malé Declaration in the Maldives

Malé Declaration activities in the Maldives are primarily focused on strengthening the monitoring capacity. Capacity building started in 2003 after providing a short training program lasting two weeks for personnel involved.

The activities that have been carried out are:

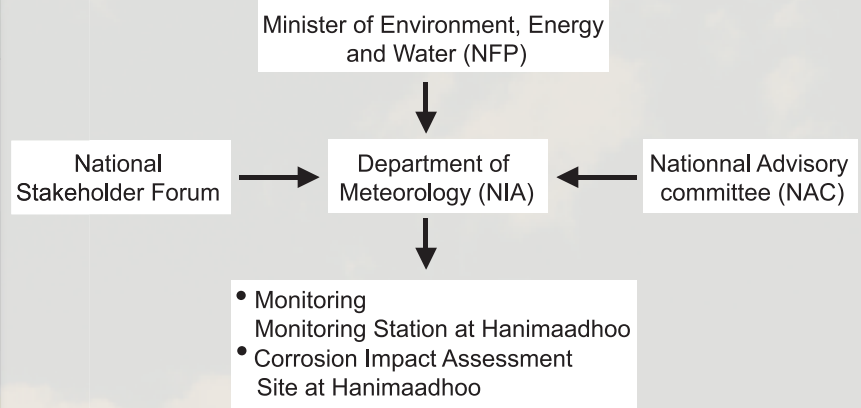
- Two weeks of training was provided on the basics of air pollution at Hanimaadhoo, Maldives in 2003.
- Passive sampler was installed at the Meteorological Office, Hanimaadhoo in October 2003
- Participation in the Malé network and stakeholders meetings
- Wet only collector was installed in 2005 at Maldives Climate Observatory, Hanimaadhoo.
- Participated in the training workshops and refresher course under Malé Declaration



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Institutional Arrangement : Maldives



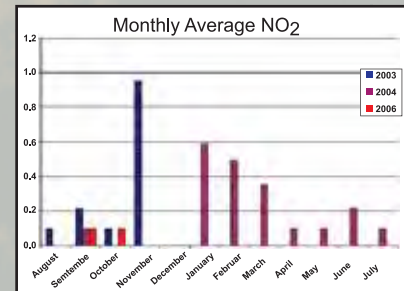
NFP : National Focal Point

NIA : National Implementing Agency

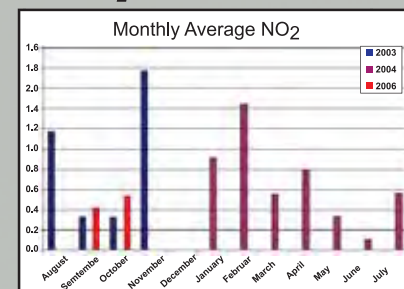
Summary of Baseline Information

	2000	2008
Nature of problem	- Urban air pollution - Transboundary air pollution over the ocean	- Indoor air pollution - Urban air pollution - Transboundary air pollution
Status of monitoring	- No monitoring stations - Data from INDOEX	- Monitoring under the Malé Declaration is carried out by a station located in Hanimaadhoo
Pollutants monitored	None	NO ₂ , SO ₂ and O ₃
Number of monitoring stations	None	3
Capacity to study air pollution	None	Limited
AQ Standards	None	None

Monthly average concentration of SO₂ over Hanimaadhoo



Monthly average concentration of NO₂ over Hanimaadhoo



Achievements

- The Maldives has established a transboundary air pollution monitoring station at Hanimaadhoo.
- Short-term training has been undertaken to compile emissions inventory by two staff members of Environment Section and one staff member of the DoM of the MEEW.
- Technical staffs have been trained in conducting health assessment, crop impact assessment and corrosion impact assessment.
- Greater public awareness about air pollution in the region, through media reports.

Status of Air Pollution

Pollutant	Status of problem
Particulate matter	Concentration of particulate matter varies during the Northeast monsoon season
SO ₂	Highest concentration is in the month of November in Hanimaadhoo
NO ₂	Highest concentration is in the month of November in Hanimaadhoo
O ₃	Started monitoring in May 2007



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Response

Legal

In 1999, the Government of Maldives formulated the Second National Environment Action Plan in order to address the environmental planning and management needs of the country. The Second National Environment Action Plan states that air pollution dust, smoke and fumes from motor vehicles are reaching levels of concern in the capital city, Malé. This plan called for an assessment of environmental and health impacts due to land transportation in Malé and enforce measures to ensure the exhaust gases and cement dust do not reach critical levels. In order to reduce the need for motor vehicles in new growth centers, this plan prioritized the development and implementation of strategies which favor public transport, by providing safe and appealing bicycle paths and footpaths.

As a Means of reducing emissions from vehicles, several steps were taken by the Government of Maldives. To improve the air quality in Malé, in December 2000, the Government banned the import of reconditioned motorcycles which have an engine capacity of less than 150 cubic meters. Similarly, a ban was introduced on the import of cars more than 5 years old.

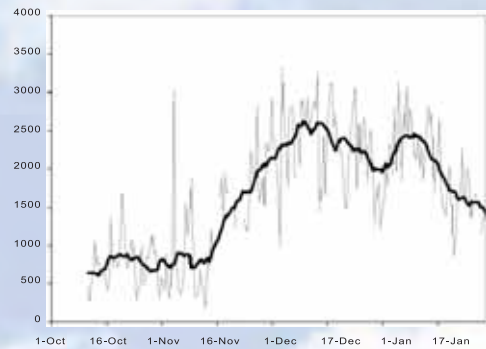
The Ministry of Environment, Energy and Water (MEEW) established and implemented regulations several years ago, stating that any new project starting in the country should undertake a full Environmental Impact Assessment (EIA). The Ministry of Transport and Communication (MoTC) has implemented a regulation which states that all the vehicles driving on the roads of the Maldives should have a road worthiness certificate to reduce the emission rate of vehicles used in the country.

Financial

The MEEW charges a fine for any party starting a project without a detailed EIA, and halts project work until the EIA is completed. The MoTC monitors whether vehicles driving on the roads have a road worthiness certificate. For vehicles without certification, a compensation is taken.

Technology

Recently a pilot project was started by the MEEW to introduce renewable energy as an alternative source of electricity generation to households.



Total aerosol concentration ($0.008 \text{ pm} >D>5 \text{ pm}$) at Maldives Climate Observatory at Hanimaadhoo (MCOH) from October 2004 through January 2005

Recommendations

- Continue capacity building programs, including providing graduate or higher-level education on atmospheric chemistry to four staff members of the National Implementing Agency and the National Focal Point
- Establish an early warning mechanism for transboundary air pollution at the national and regional levels
- Build capacity to conduct studies on crop impact assessments
- Place high priority on conducting health impact assessments
- Conduct public awareness programs on air pollution

Coordinating Agencies



UNEP Regional Resource Centre for Asia and the Pacific (UNEP RRC.AP) Bangkok, Thailand



South Asia Cooperative Environment Programme (SACEP) Colombo, Sri Lanka



Stockholm Environment Institute (SEI) Stockholm, Sweden



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Maldives NFP : Ministry of Environment, Energy and Water, Malé
NIA : Department of Meteorology