بسم الله الرحمن الرحيم

Male Declaration on Control & Prevention of Air Pollution and it Likely Transboundary Effects for South Asia

Ninth Session of Intergovernmental Meeting

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Male

Pakistan Scenario

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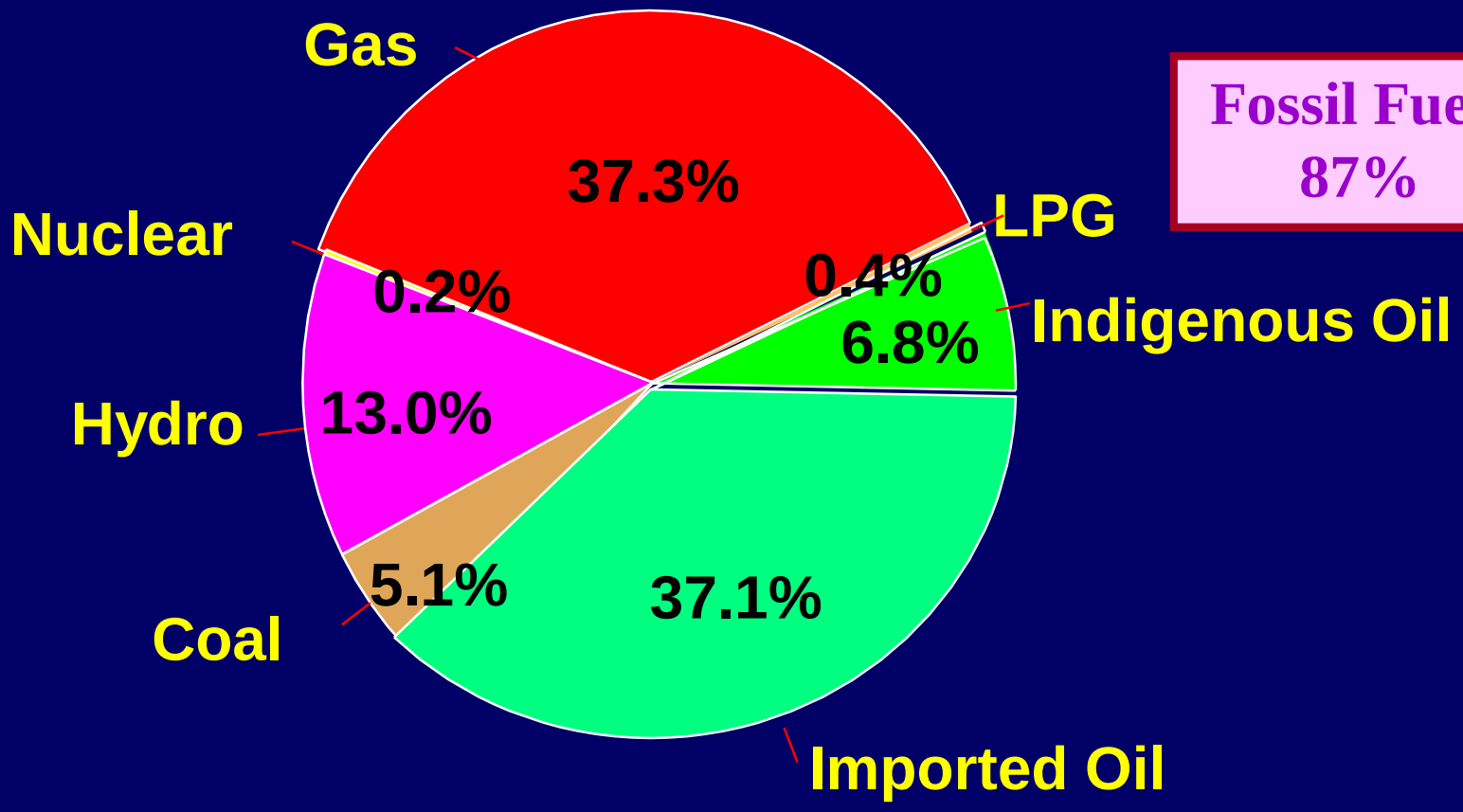
(Ministry of Environment)

SEQUENCE OF PRESENTATION

- Air Quality Issue in Pakistan and Remedial Approach
- Implementation Status of Phases
- Recommendations

Pakistan's Energy Supplies

Total: 40.4 million toe/y (825,000 toe/d)



Fossil Fuels 87%

Sources of Air Pollution in Pakistan

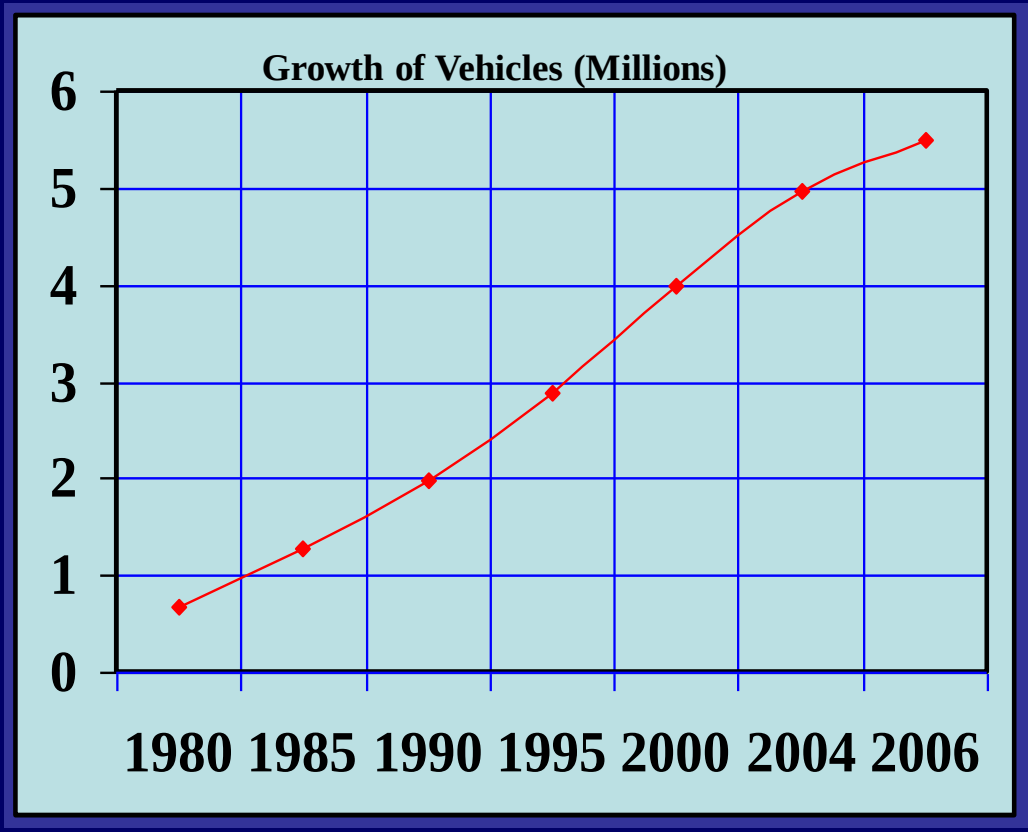
- Vehicles
- Natural Dust
- Garbage Burning
- Brick Kilns
- Domestic Burning
- Transboundary Pollution
- Bio-mass Burning
- Stone Crushers
- Industry

QUALITY OF FUEL OIL

	Pakistan	Other Countries of Region
• Gasoline	Unleaded	Unleaded
• Sulphur in Diesel oil	0.2-0.6%	0.05-0.5%
• Sulphur in Furnace oil	3%	0.5-1%

VEHICLE POPULATION

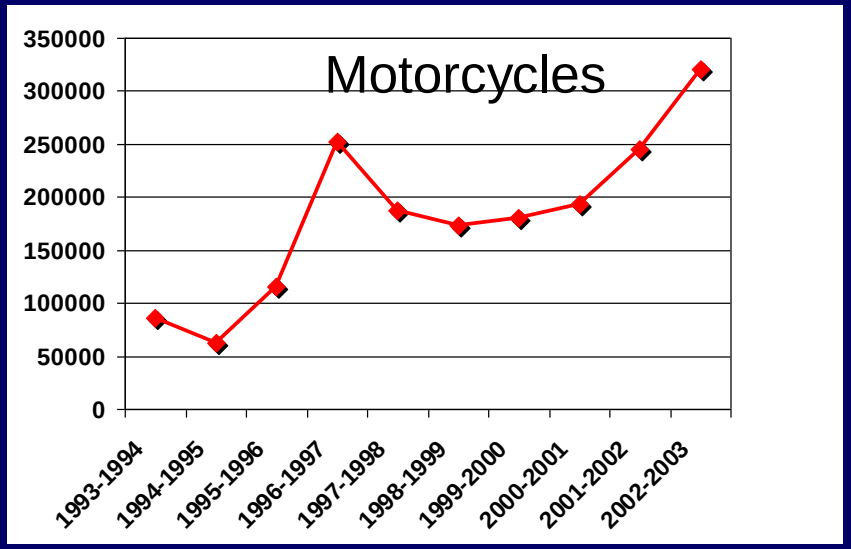
	million
1980	0.682
1985	1.288
1990	1.990
1995	2.876
2000	3.997
2004	4.973
2006	5.500

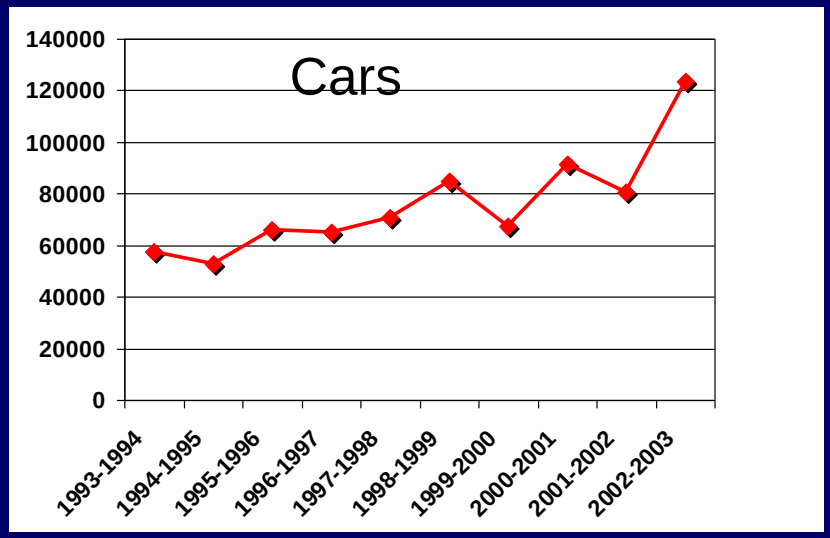


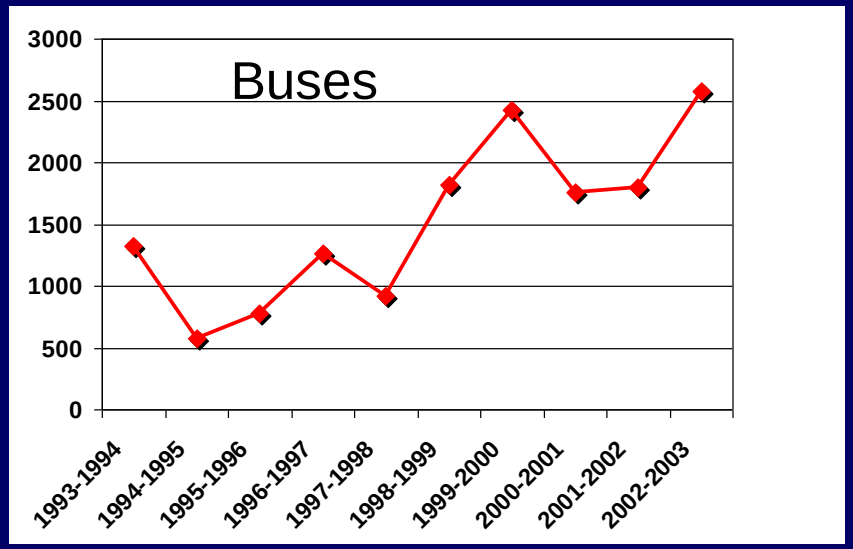
PRESENT ANNUAL AVERAGE GROWTH: 11.9%

Source: Economic Survey of Pakistan
National Transport Research Centre

Demand of Vehicles

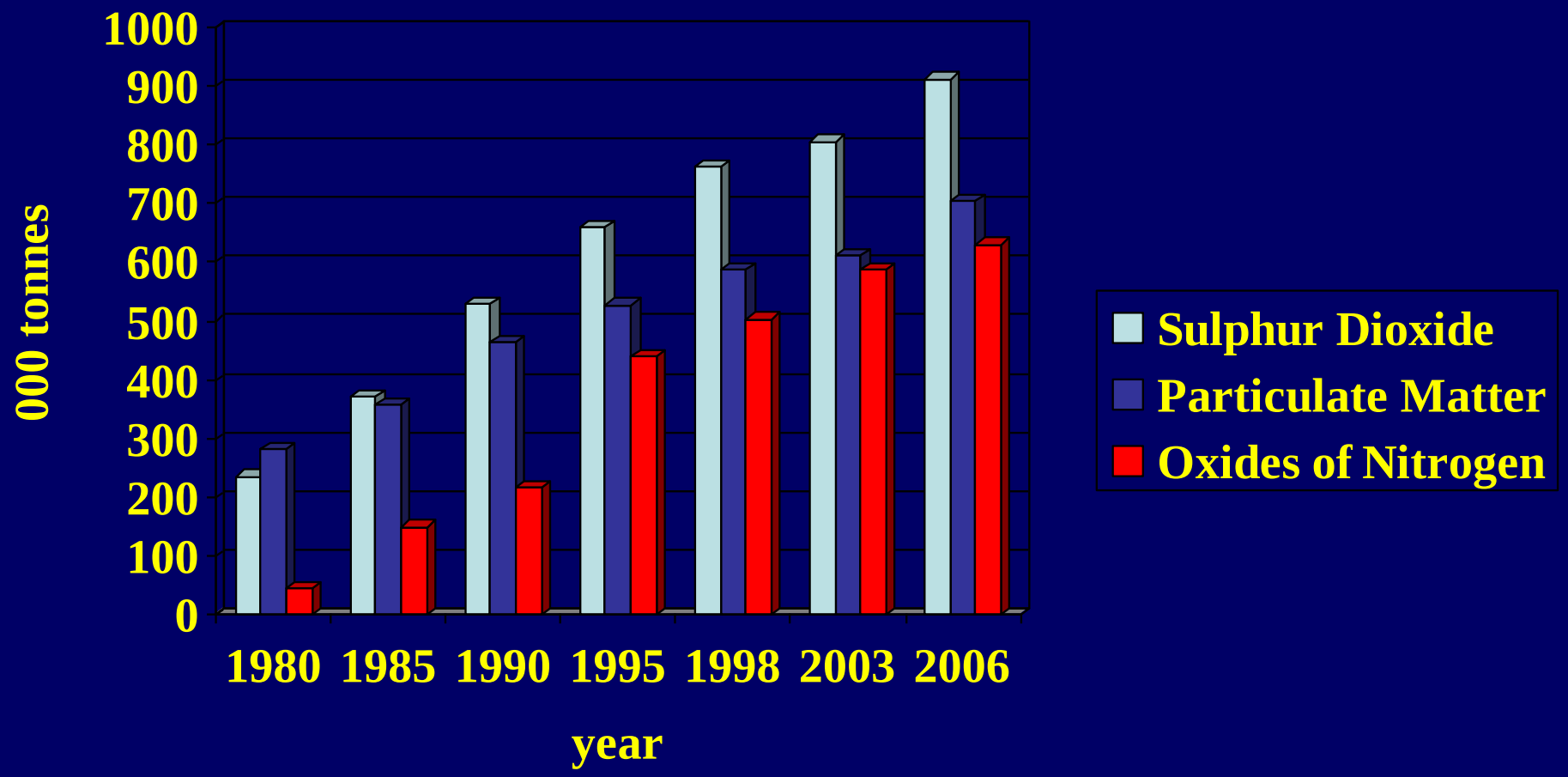






EMISSIONS TRENDS

ALL SOURCES



Source:Pak-EPA Estimation based on Emission Factors

Level of Suspended Particulate Matters

Major Cities

	μg/m3 Microgram per Cubic Meter
Multan	1030
Faisalabad	870
Lahore	895
Karachi	230
Rawalpindi	709
Islamabad	520
Peshawar	834

WHO Guidelines: 120 μg/m3

Japanese Standards: 200 μg/m3

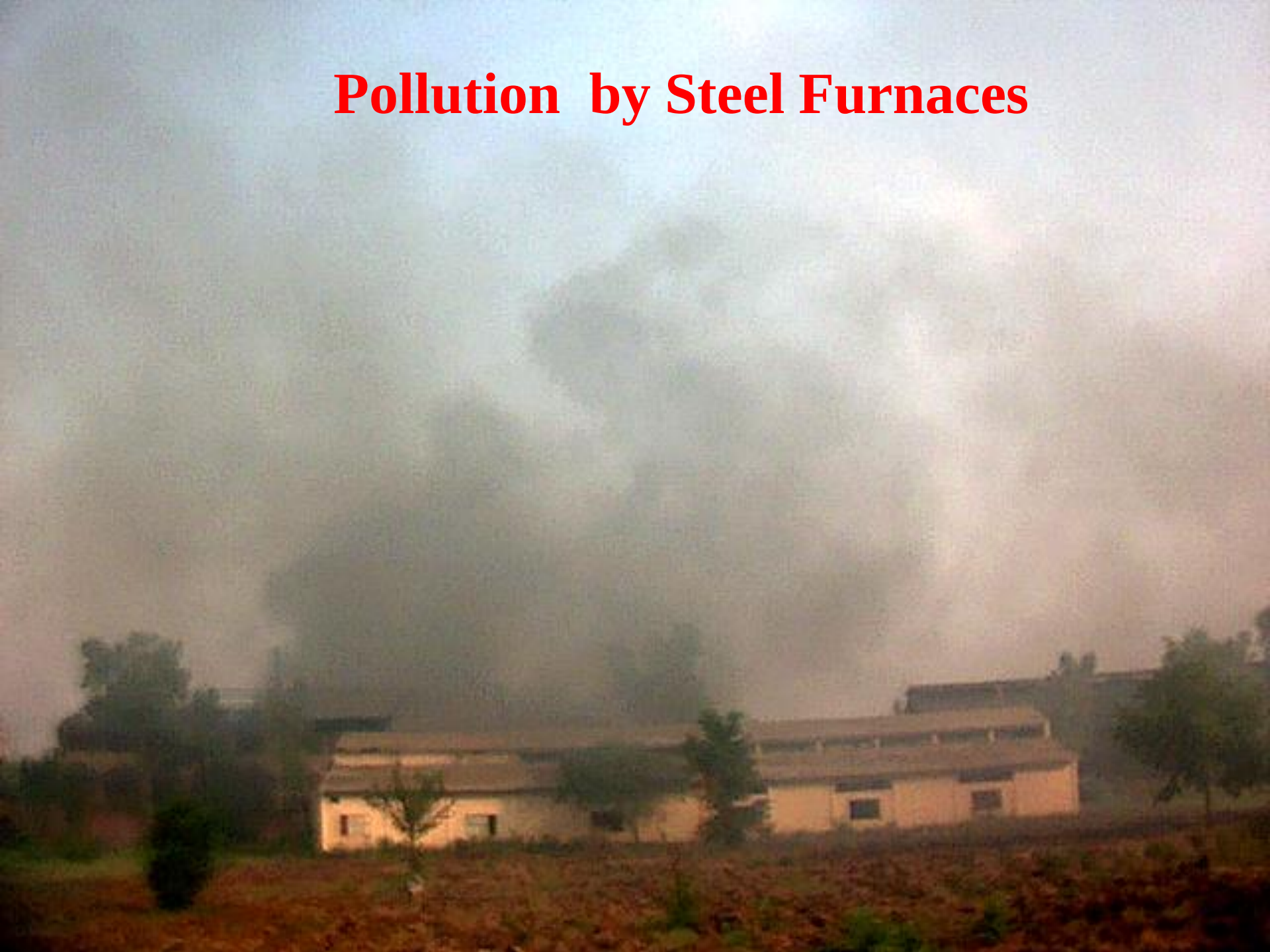
Source: EPD/SUPARCO/NWFP EPA/PAK-EPA

Pollution by Diesel Vehicles

Pollution by Two Stroke Rickshaw

Pollution by Brick Kilns

Pollution by Steel Furnaces



Effects of Air Pollution

- Haze (fades out colors)
- High suspended particulates facilitate formation of fog
- Less Blue Sky Days
- Respiratory Diseases (Caught, irritation of throat very common)
- Increased Heart Attack deaths
- Less agricultural yield
- High suspended particulates facilitate spreading of air born bacteria and viruses
- Deposition of dust on surfaces

COSTS OF ENVIRONMENTAL DAMAGE

Cost to Pakistan Economy

In six Environmental Areas

US $ 1.8 billion

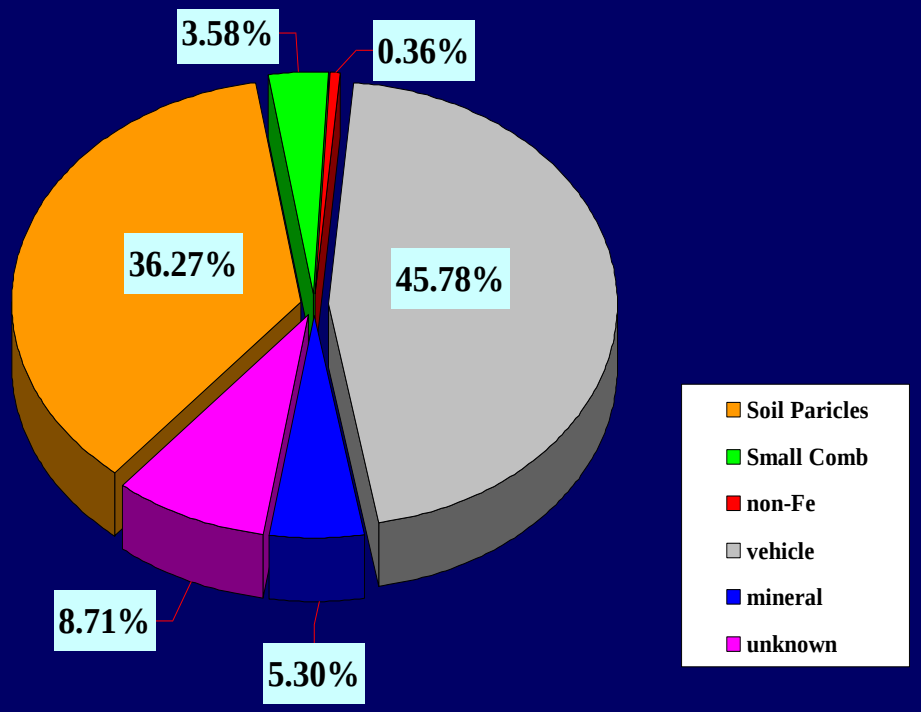
	Annual Damage in US$
Municipal Solid & Liquid Waste	883 million
Urban Air Pollution	369 million
Soil in Cropland Degradation	357 million
Rangeland Degradation	125 million
Deforestation	28 million
Destruction of Mangrove Forests	15.7 million
Total	**1777.7 million**

Source: Dr. Brandon-World Bank 1992-93/Mathew Addison 1997

How to Reduce SPM and Haze ?

- We must reduce emissions across broad areas of the country.

- Five types of fine particles contribute to SPM and haze: sulfates, nitrates, organic carbon, elemental carbon, and crustal material.



Pakistan Clean Air Program (PCAP)

- Phasing out 2-stroke and diesel public service vehicles
- Monitoring
- Awareness
- Fuel Improvement and balanced fuel mix
- Vehicle Inspection System
- Promotion of CNG and Alternate Fuels
- Fuel efficiency in road transport and domestic appliances
- Fuel Adulteration Management
- Zoning
- Traffic Management
- Waste Management
- Mass Transit
- Adoption of EURO standards at manufacturing stage
- Promotion of modern technology
- Industrial Emission Monitoring
- Paving alongside major roads being stabalised

IMPLEMENTATION STATUS OF MONITORING PROJECT

Phase-I

Tasks under Phase-I

- The Tasks Assigned to the NIAs under Phase–I of the Malé Declaration (July 1998 to February 2000) are given below:

  - To Carry out a Baseline Study
  - Compilation of Expert's Database
  - Create a Database on Air Pollution
  - Formulation of a National Action Plan to Cope with the Air Pollution.

Implementation Status

- A Country Report Containing the Baseline Report, National Action Plan, Database, Maps and National Emission Inventory was compiled in July, 2000 and forwarded to UNEP after approval from the Ministry of Environment.

- The Implementation of Phase-I of the Malé activities covering the network establishment, baseline studies and action plans were coordinated by Regional Resource Centre for Asia and the Pacific (RRC-AP) of UNEP, Bangkok in collaboration with all member countries of SACEP.

- At the final workshop held in Malé in 2000, baseline studies and action plans were reviewed and agreement reached on the Phase-II of the project.

Phase-II

Tasks for Phase-II

- Selection of sites for setting up monitoring stations.
- Provision of required equipment by UNEP-AP.
- To Install the Monitoring Stations by February, 2004.
- To organize a one week in-country training programme for all the technicians supposed to carry out the installation of monitoring equipment.
- Monitoring results of the air may be reported to RRC.AP on monthly basis from March, 2004.
- To organize a national stakeholders meeting in Pakistan by February, 2004.

Activities Undertaken Under Phase -II

- Monitoring Station has been Installed at Bahawalnagar
- Installation of Ambient Air Monitoring Equipment for Particulate Matter (PM10 & TSPM)
- Installation of Wet Deposition Monitoring Bulk Collector
- Installation of Wet Only Collector
- Installation of Diffusive Samplers (for NO2, SO2 & O3) According to the Monitoring Protocol
- Establishment of a Laboratory for Analysis of Basic Parameters of Field Samples Collected from Dry & Wet-Only Collectors

Official of Pak-EPA and Meteorological Department

Fixing of Wet-Only Collector

Fixing of Bulk Collector

Fixing of High Volume Air Sampler

Fixing of Diffusive Sampler

Training Imparted to Meteorological Officials

- Basic Training was Imparted to PMD Officials Second Time at Bahawalnagar to Improve their Skills & Expertise for the Following Aspects:
  - Wet Deposition Monitoring
  - Calibration
  - Bulk Collector Sampling
  - Diffusive Samples Monitoring
  - Monitoring Intervals & Data Reporting
  - Good Laboratory Practices
  - Equipment Calibration
  - Water Distillation Preparation & Usage

Training on Air Sampler

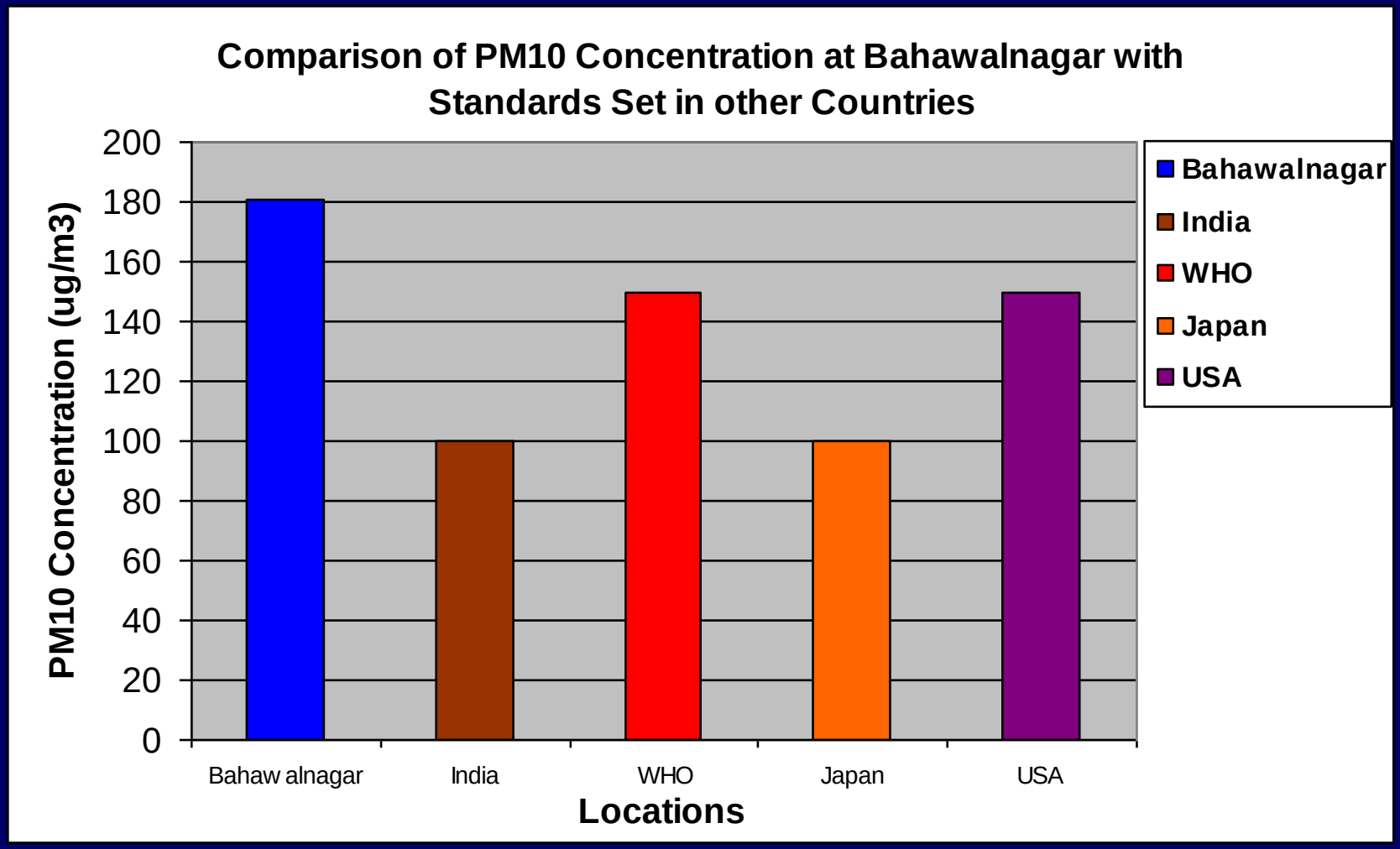
Training on Air Sampler

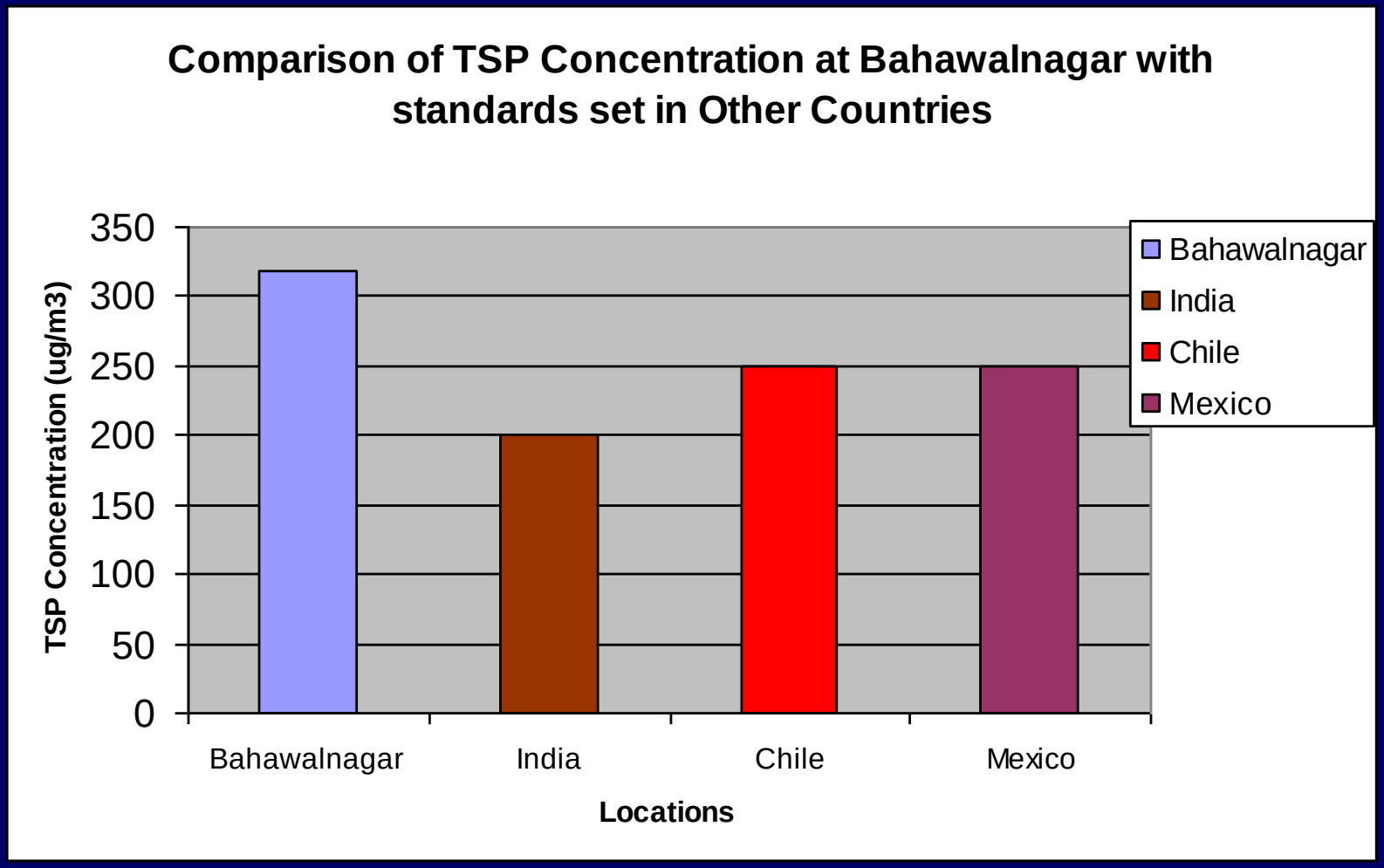
Demonstration on Diffusion Samplers

Training in Laboratory

Training on Wet-Only Collector

Training on Bulk Collector


Comparison of PM10 Concentration at Bahawalnagar with Standards Set in other Countries
PM10 Concentration (ug/m3)
200
180
160
140
120
100
80
60
40
20
0
Bahaw alnagar
India
WHO
Japan
USA
Locations
Bahawalnagar
India
WHO
Japan
USA


Comparison of TSP Concentration at Bahawalnagar with standards set in Other Countries
TSP Concentration (ug/m3)
350
300
250
200
150
100
50
0
Bahawalnagar
India
Chile
Mexico
Locations
Bahawalnagar
India
Chile
Mexico

Phase-III

Phase-III Implementation

- Implementation of Phase-III has been delayed due to Delay in Approval of MoU for Phase-III & also in Transfer of Funds

- We now looks forward to work closely for Phase-III of the Malé Declaration Programme.

Recommendations

- Exchange of successful technical solutions to control air pollution sources
- More studies on transboundary effects of air pollution in the region
- Exchange of experts and study visits within region
- Adoption of Euro standards at regional level
- Common strategy on import of used plant and machinery
- Discouraging smuggling of low grade lubricating and fuel oils

Let us work together for
the blue sky though it's
a long way to
travel.....!

THANKS