



DOE

Fifth Regional Stakeholder cum Regional Coordination Meeting and Tenth Session of Intergovernmental Meeting: 2008

Overview of National Level Implementation of Malé Declaration





Overview of National Level Implementation of Male´ Declaration

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Implementation of Male Declaration Project in Bangladesh



Overview of National Level Implementation of Male' Declaration

Outline of the Presentation

Last 3 Years of Implementation

1. National implementing agency and institutional arrangement
2. Monitoring activities.
3. Stakeholders participation.
4. Data completeness.
5. Status of emission inventory and modeling
6. Status of impact assessment including outcome
7. Awareness activities
8. Challenges and difficulties.



Overview of National Level Implementation of Male' Declaration

Outline of the Presentation

Plan for Next 3 Years

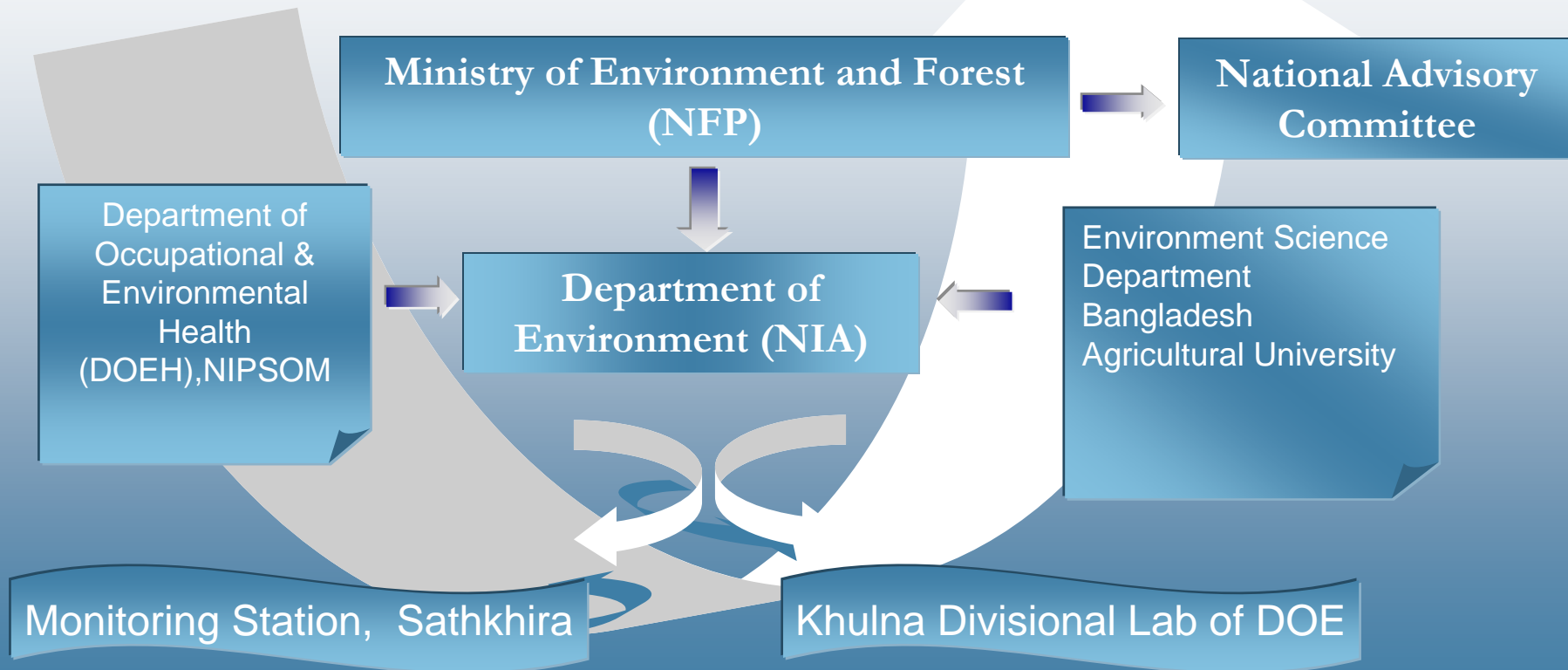
- Institutional arrangement
- Monitoring plan
 - Existing station
 - New station
- Plan for emission inventory and modeling
- Plan for impact assessment including capacity of the expert institution.
 - Health impact
 - Crop impact
 - Corrosion impact
 - Acidification impact



Overview of National Level Implementation of Male' Declaration

Last 3 Years of Implementation

National implementing agencies and Institutional Arrangement





Overview of National Level Implementation of Male' Declaration

Last 3 Years Implementation

Monitoring activities

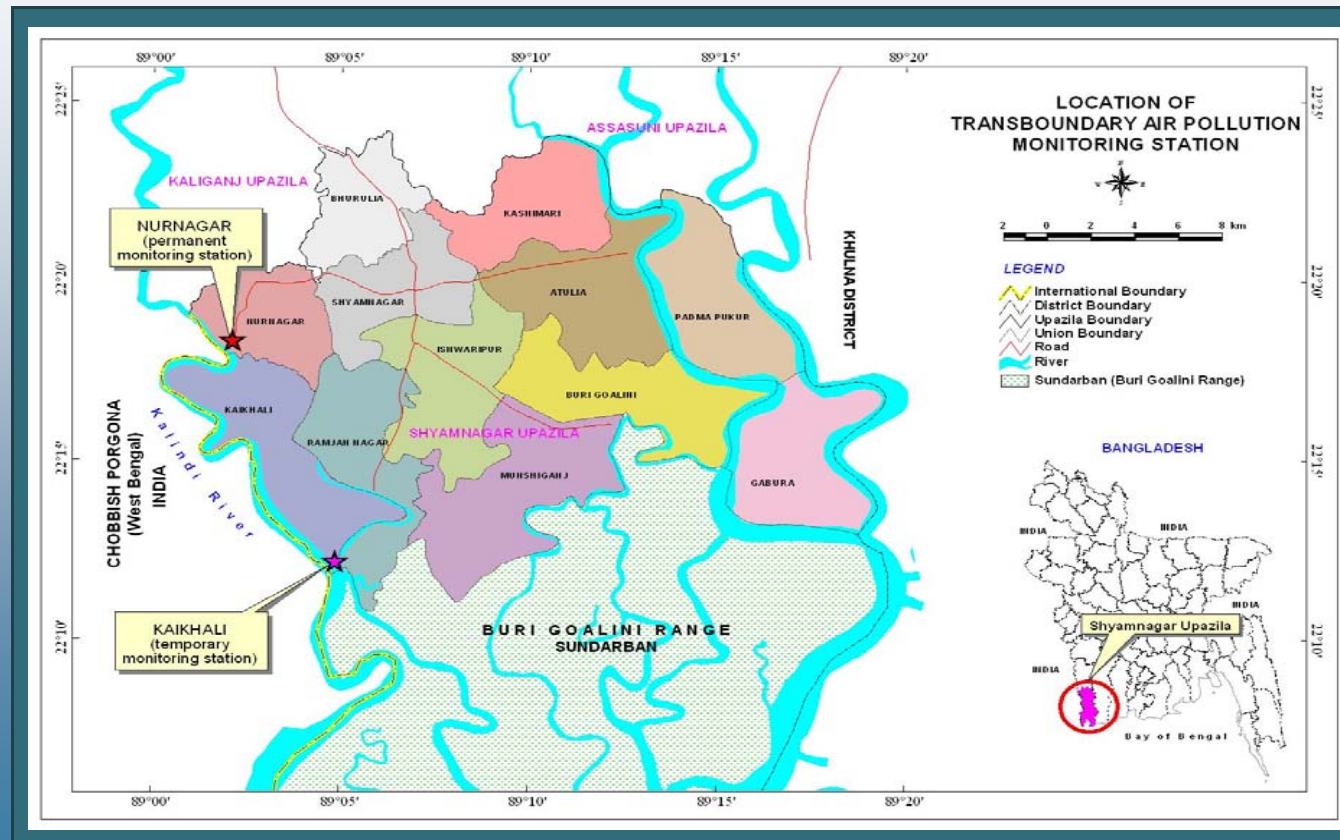
- Analysis Concentration of Air Pollutants By High Volume samplers and Diffusive samplers
- Rain water Analysis
- Metrological Parameter



Overview of National Level Implementation of Male' Declaration

Last 3 Years Implementation

Location of Transboundary Air Pollution Monitoring Station

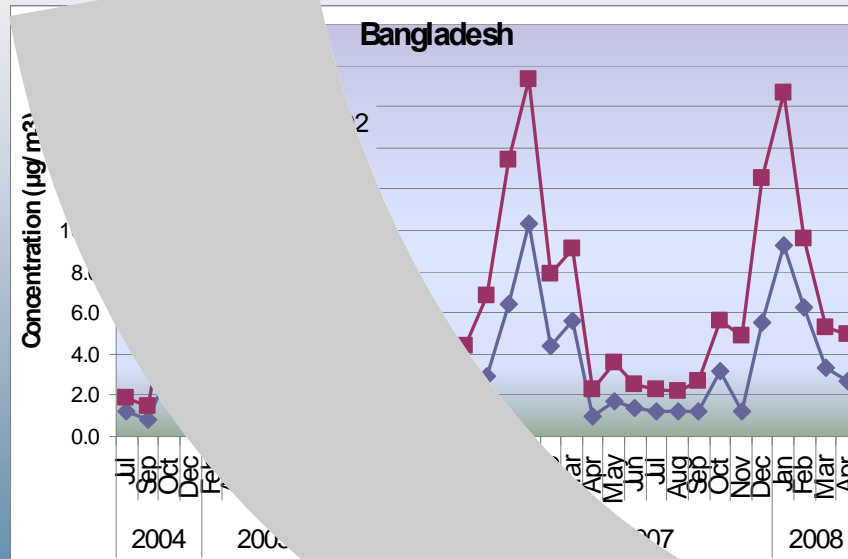




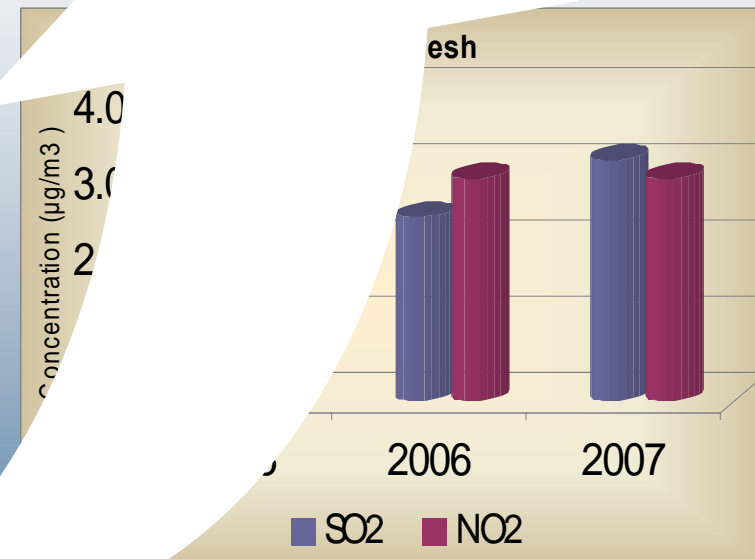
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Last 3 Years Implementation

Data Completeness



Temporal variation of SO₂ & NO₂ concentration



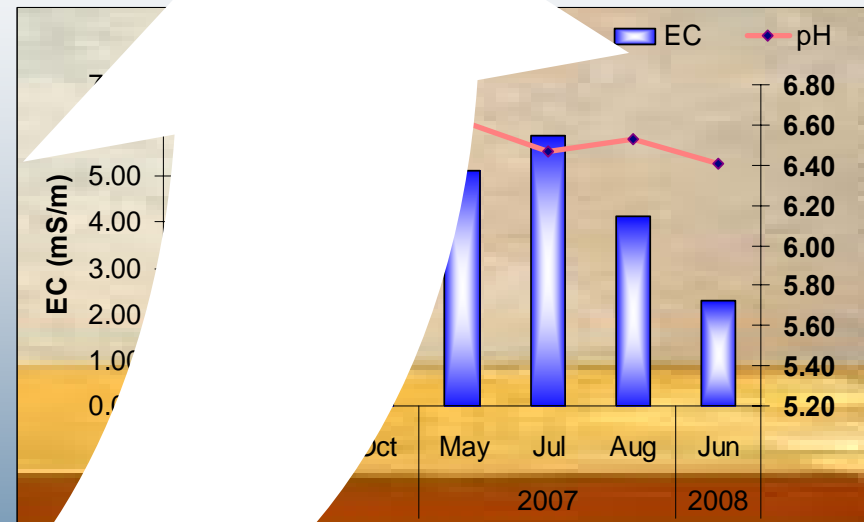
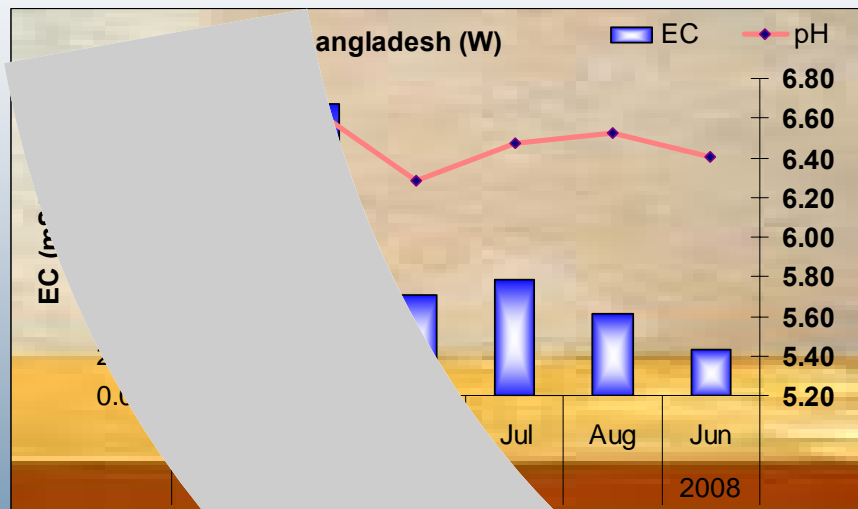
Annual variation of SO₂ and NO₂



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Last 3 Years Implementation

Data Completeness



Variation in electrical conductance and pH (wet (w))

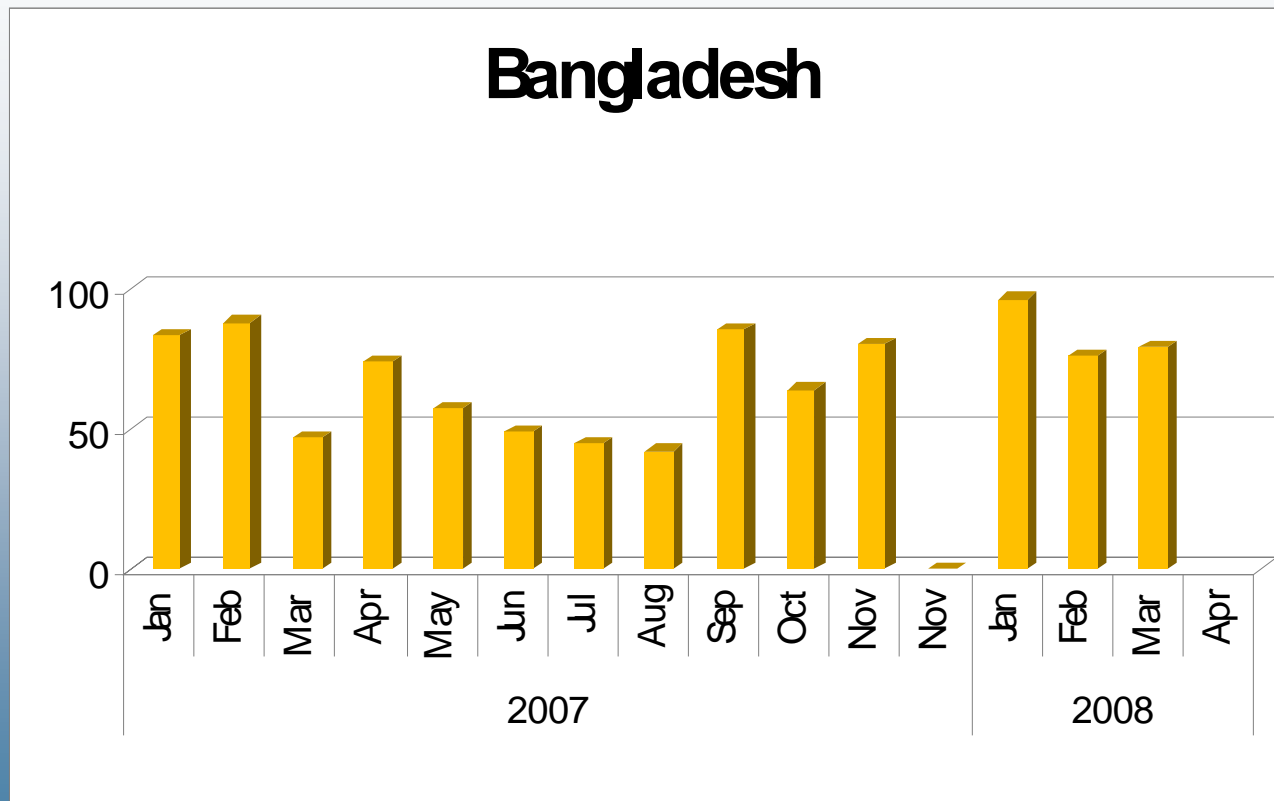
Variation in electrical conductance and pH wet (bulk)



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Last 3 Years Implementation

Data Completeness



Temporal variation of Ozone concentration ($\mu\text{g}/\text{m}^3$)



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Last 3 Years Implementation

Stakeholders Participation on Male' Declaration Activities

- Awareness activities
- Monitoring activities
- Emission inventory and modeling
- Impact assessment



Last 3 Years Implementation

■ Status of Emission inventory and modeling

- Emission Inventory, Emission Scenario and Modeling under Malé Declaration on Control and Prevention of Air Pollution And Its Likely Transboundary Effects for South Asia

The emissions inventory under the current exercise is based on a common methodology developed by the Swedish Environmental Institute (SEI) for countries in South Asia - itself derived from various inventory approaches used in other regions of the world. According to the SEI approach, sources of air emissions are categorized into ten sectors.



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Last 3 Years Implementation

1. Combustion in the energy industries,
2. Combustion in the manufacturing industries and construction,
3. Transport,
4. Combustion in other sectors
5. Fugitive emissions from fuels
6. Industrial processes
7. Solvent and other product use
8. Agriculture,
9. Vegetation fires and forestry, and
10. Waste

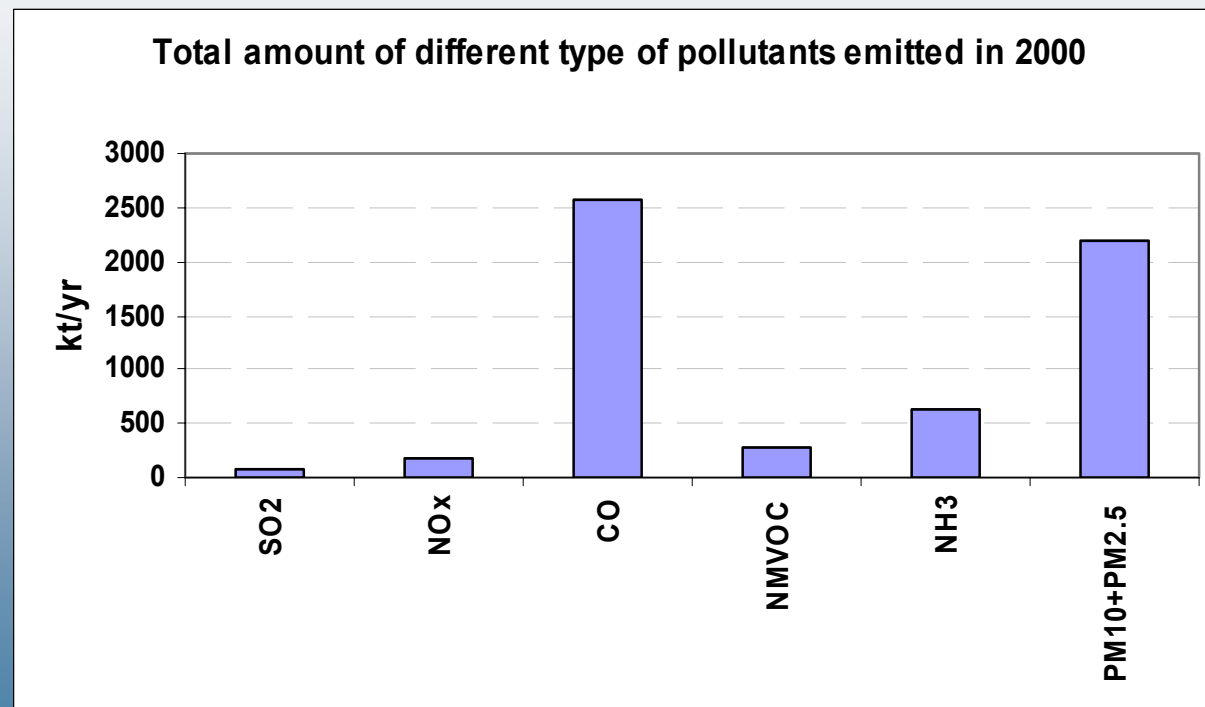
Each sector has several sub sectors. For each sector the basic approach for calculating emissions of a particular pollutant is simple in concept.



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Last 3 Years Implementation

Total amount of different type of pollutants emitted in the year 2000

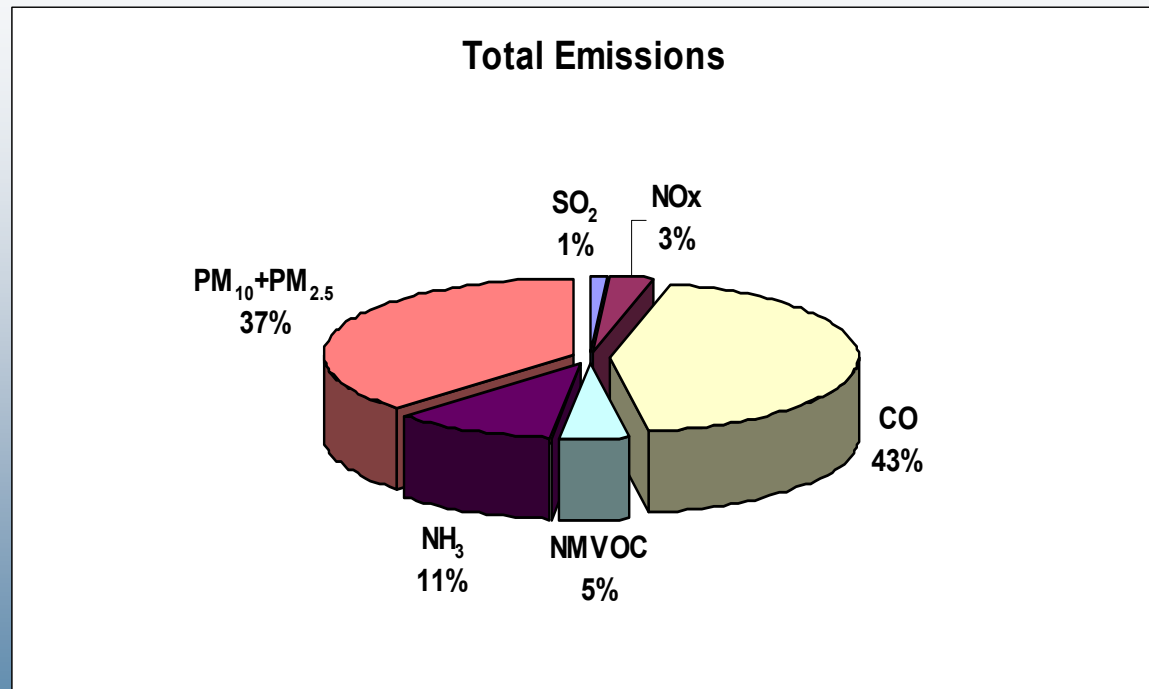




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Last 3 Years Implementation

Percentage distribution of pollutants

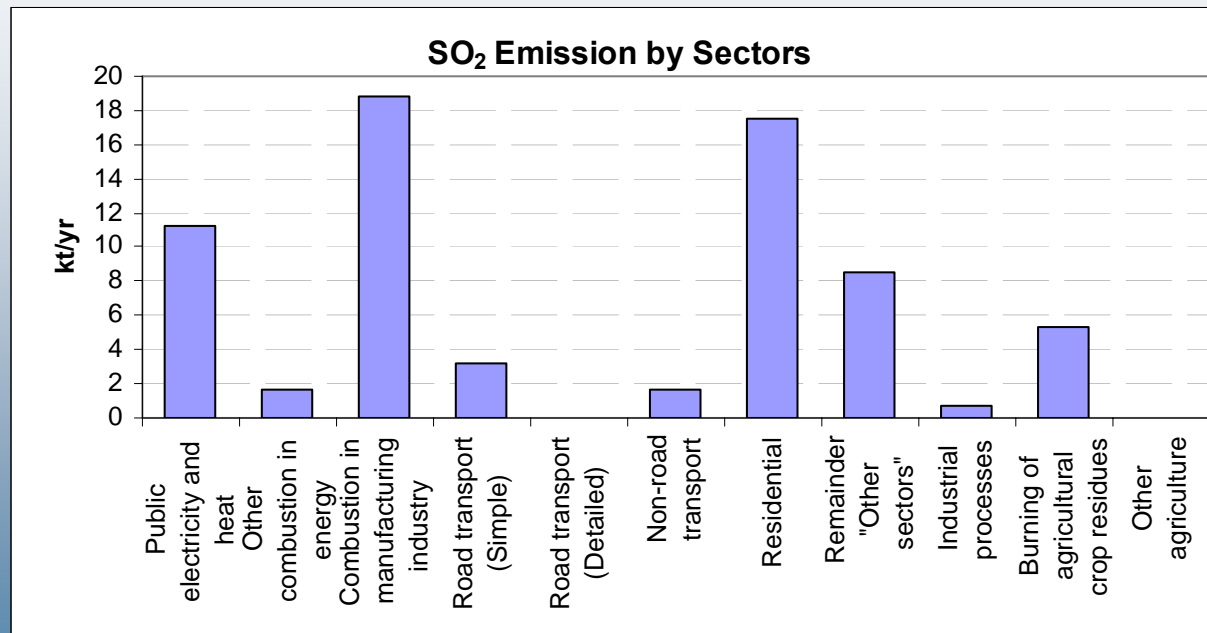




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Last 3 Years Implementation

Amount of SO₂ emitted in various sectors

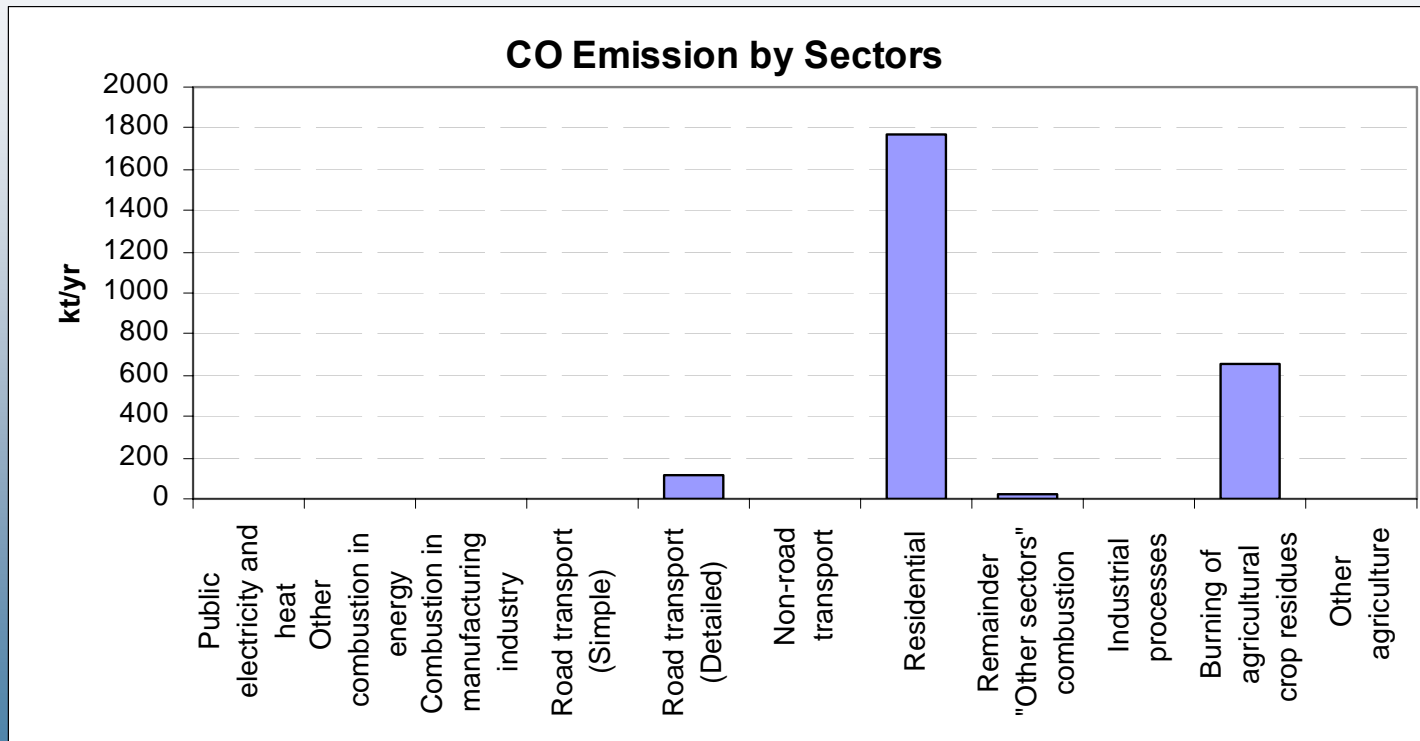




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Last 3 Years Implementation

Amount of CO emitted in various sectors

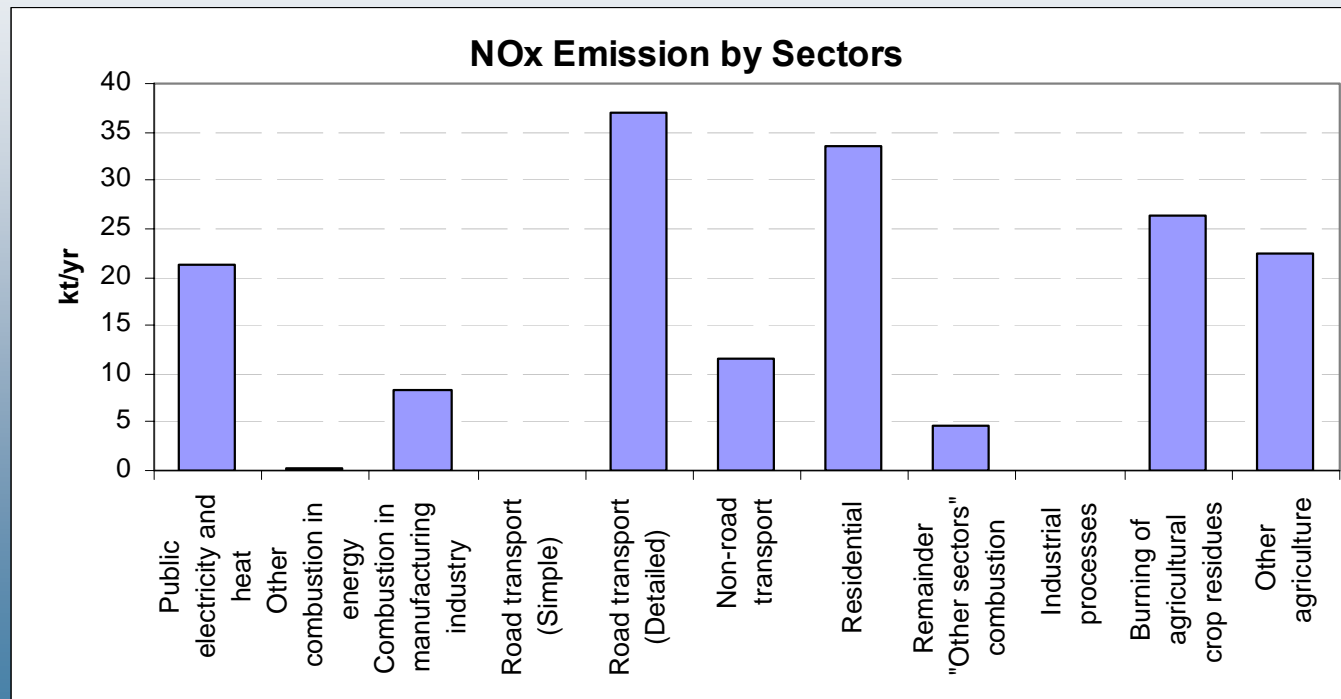




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Last 3 Years Implementation

Amount of NO_x emitted in various sectors

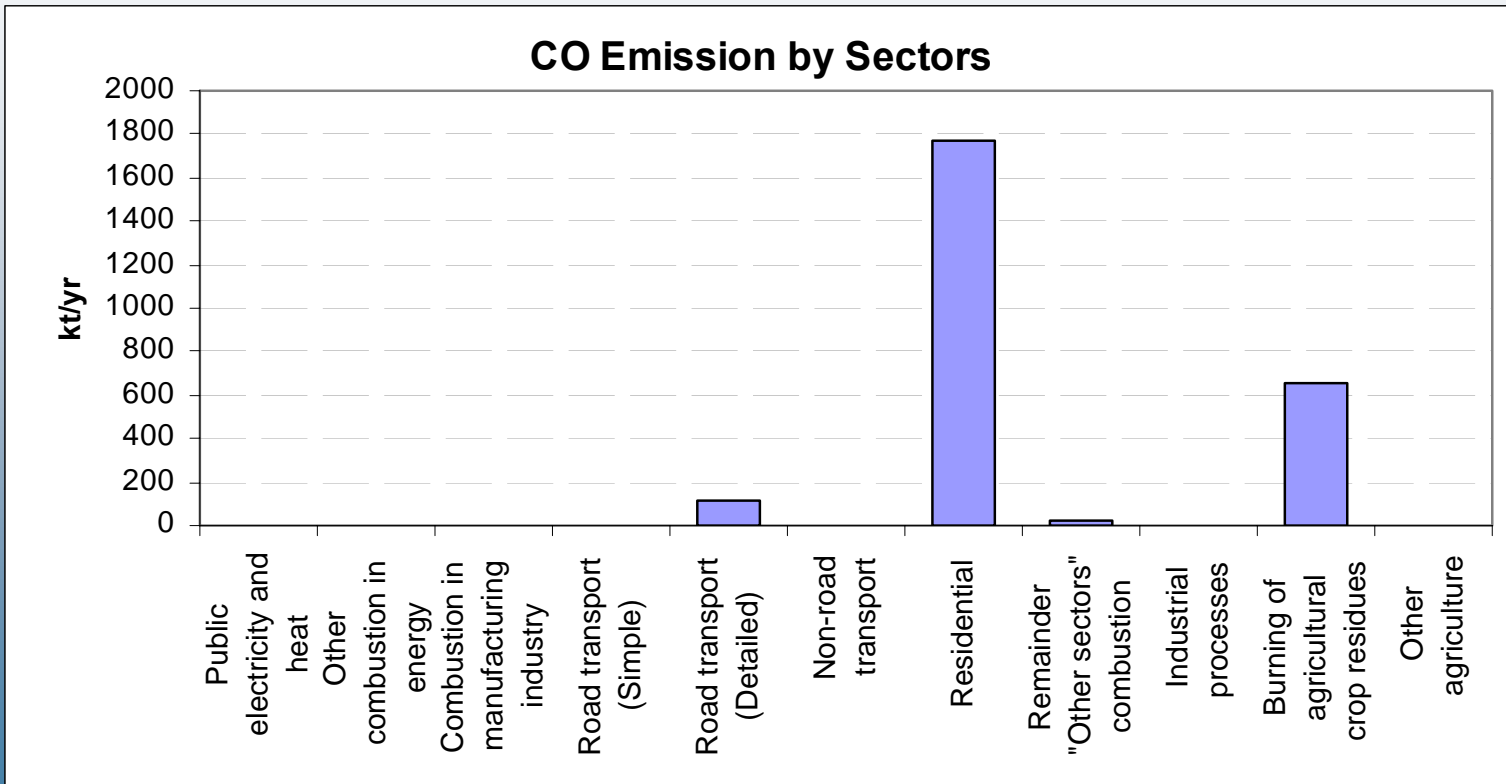




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Last 3 Years Implementation

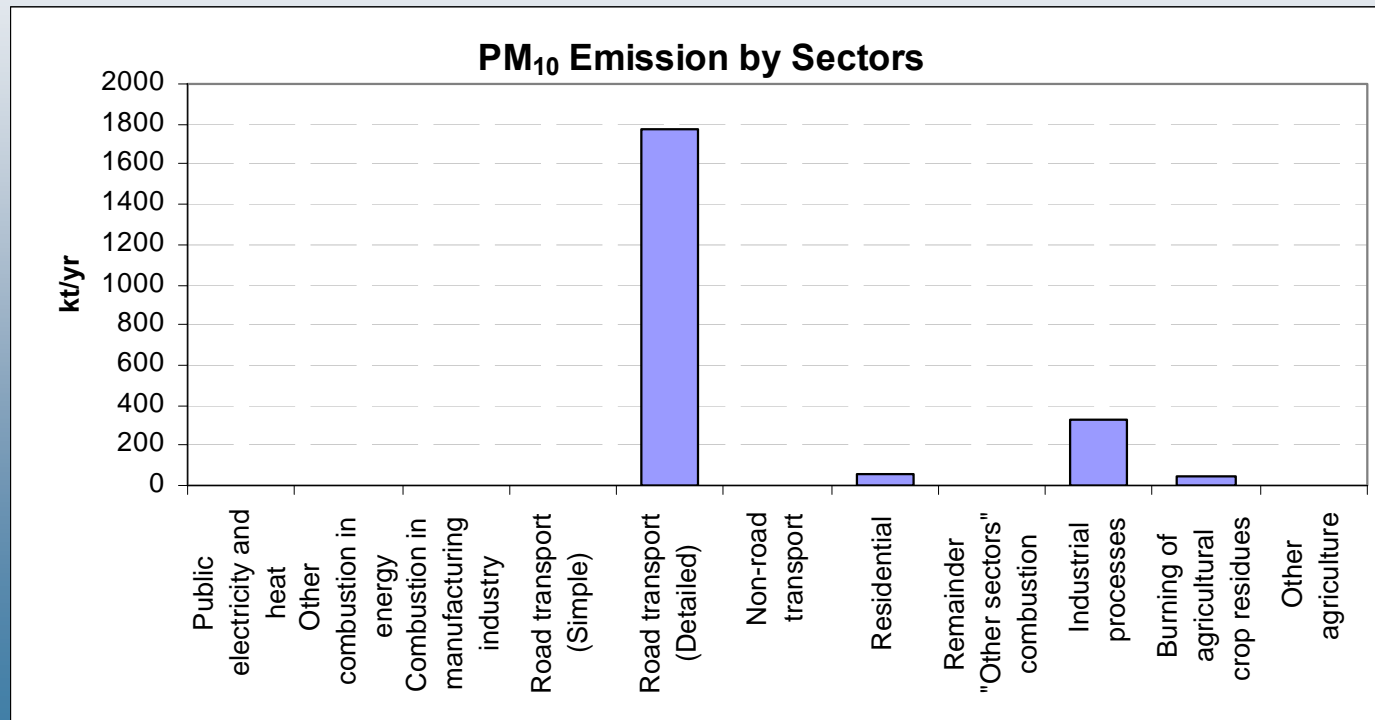
Amount of NMVOC emitted in various sectors





Last 3 Years Implementation

Amount of PM10 emitted in various sectors

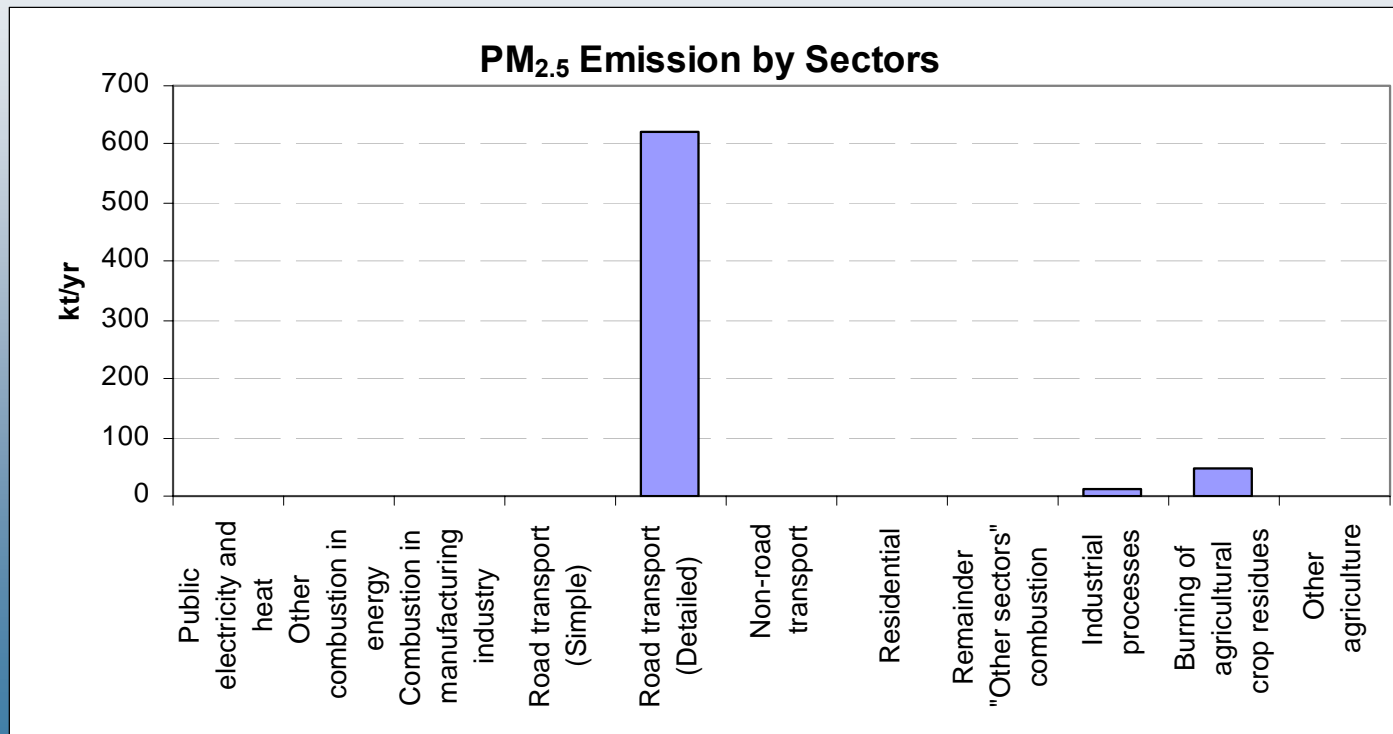




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Last 3 Years Implementation

Amount of PM_{2.5} emitted in various sectors





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Last 3 Years Implementation

DIFFICULTIES.....

- Data are not available in all sectors.
- Data are not in same time frame.
- Incomplete data



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Last 3 Years Implementation

Status of Impact Assessment

- Assessment of Impact of Air Pollution among School Children of selected school of Dhaka City
- Impacts of Troposphere Ozone on crop



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Last 3 Years Implementation

Assessment of Impact of Air Pollution among School Children of selected school of Dhaka City

3 schools of Dhaka City

Survey: 1680 Students (Class V-IX),

Duration: 7 Days

Main Study: 180 Students (120 Asthma = 60 Non-Asthma),

Duration: 42 Days



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Last 3 Years Implementation





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Last 3 Years Implementation





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- The study was carried out in three schools , the schools are located with in one Km radius of the air pollution monitoring center.. A total of 180 school children Both asthmatic and non-asthmatic children were included in the study.
- The assess the lung function of the student in relation to PM_{10} and $PM_{2.5}$ Peak Expiratory Flow Rate (PEFR) was measured daily in the morning and afternoon under the supervision of teachers and technicians.



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- The current study is concluded with that the air pollution especially the particulate matter (PM_{10} and $PM_{2.5}$) are causing respiratory health problems particularly of the children in Dhaka, who are suffering from asthma.
- The air pollution is not only affecting the health of the children but also causing adverse economic implication in the family and as well as in the nation



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Last 3 Years Implementation

IMPACTS OF TROPOSPHERIC OZONE ON CROP

Ozone injury assessment in white clover in Bangladesh during 2007

Harvesting period	Occurrence of 1 st ozone injury	Total No. of plant (NC-S) suffering to ozone injury	Very slight injury	Slight injury
1 st Harvesting	7 th days	10	6	4
2 nd Harvesting	7 th days	11	8	3
3 rd Harvesting	21 th days	9	4	5
4 th Harvesting	7 th days	8	4	4



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Last 3 Years Implementation

Ozone injury in white clover





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Last 3 Years Implementation

Findings

Higher Troposphere ozone concentration in atmosphere reached up to 34.75 ppb

Ozone sensitive white clover was suffering from troposphere ozone injury symptom



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Last 3 Years Implementation

- Ozone concentration in atmosphere was lower than 1st year,
- Ozone sensitive white clover was suffering from tropospheric ozone injury symptom



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Last 3 Years Implementation

Research going current year

EDU study is underway on Tomato, Mug bean , Potato and spinach plant , which may be completed within January 2009.



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Last 3 Years Implementation

Awareness Activities

Awareness material for print and electronic media developed

Print Material:

- a .Posters-20,000
- b. Leaflets-20,000
- c. Stickers-10,000

Electronic Media Material:

- a. TV spots- 4 Nos.
- b.Docodramas-3 Nos.
- C. Folksongs- 2 Nos.

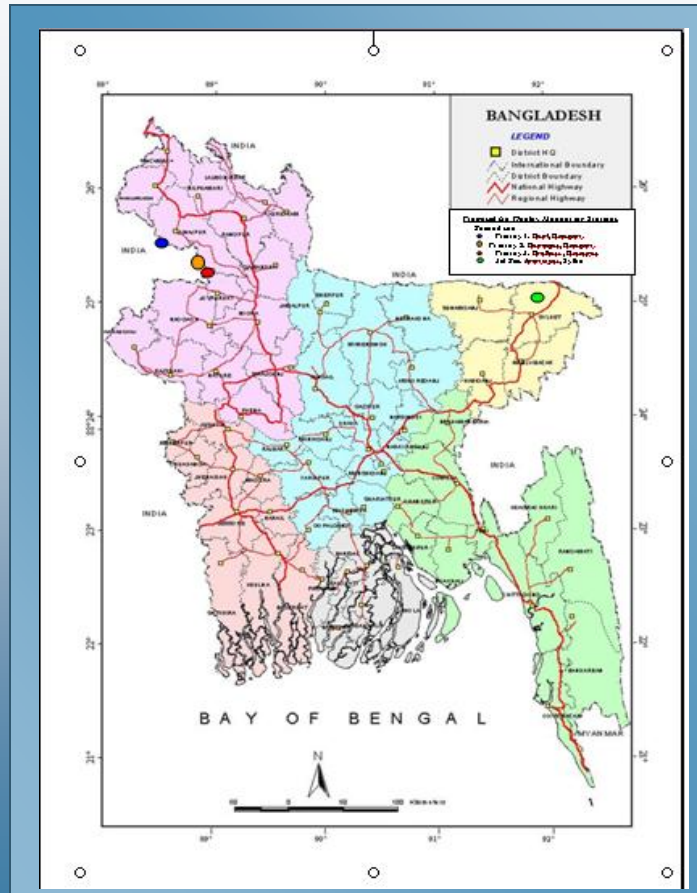
Bus Sticker- 6 Nos.



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Last 3 Years Implementation

Selection of 2nd Monitoring Station





Plan for Next 3 Years

Institutional Arrangement

This will be almost same. The institutional arrangement may change with inclusion of new study.



Plan for Next 3 Years

Monitoring Activities

- All parameters will be monitored as usual.
- 2nd monitoring station will be set up, if fund is made available



Plan for Next 3 Years

PLAN FOR EMISSION INVENTORY AND MODELLING

Updating emission inventory by using 2005 data



Plan for Next 3 Years

- Plan for Impact Assessment
- Health Impact –Study may be expended to other areas
- Crops Impacts - Study may be undertaken on local varieties in other areas
- Corrosion Impacts-Study may be undertaken
- Acidification- Study may be undertaken



Thank you.....