

Foundation Course on Air Quality Management in Asia

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Introduction on Foundation Course on Air Quality Management in Asia

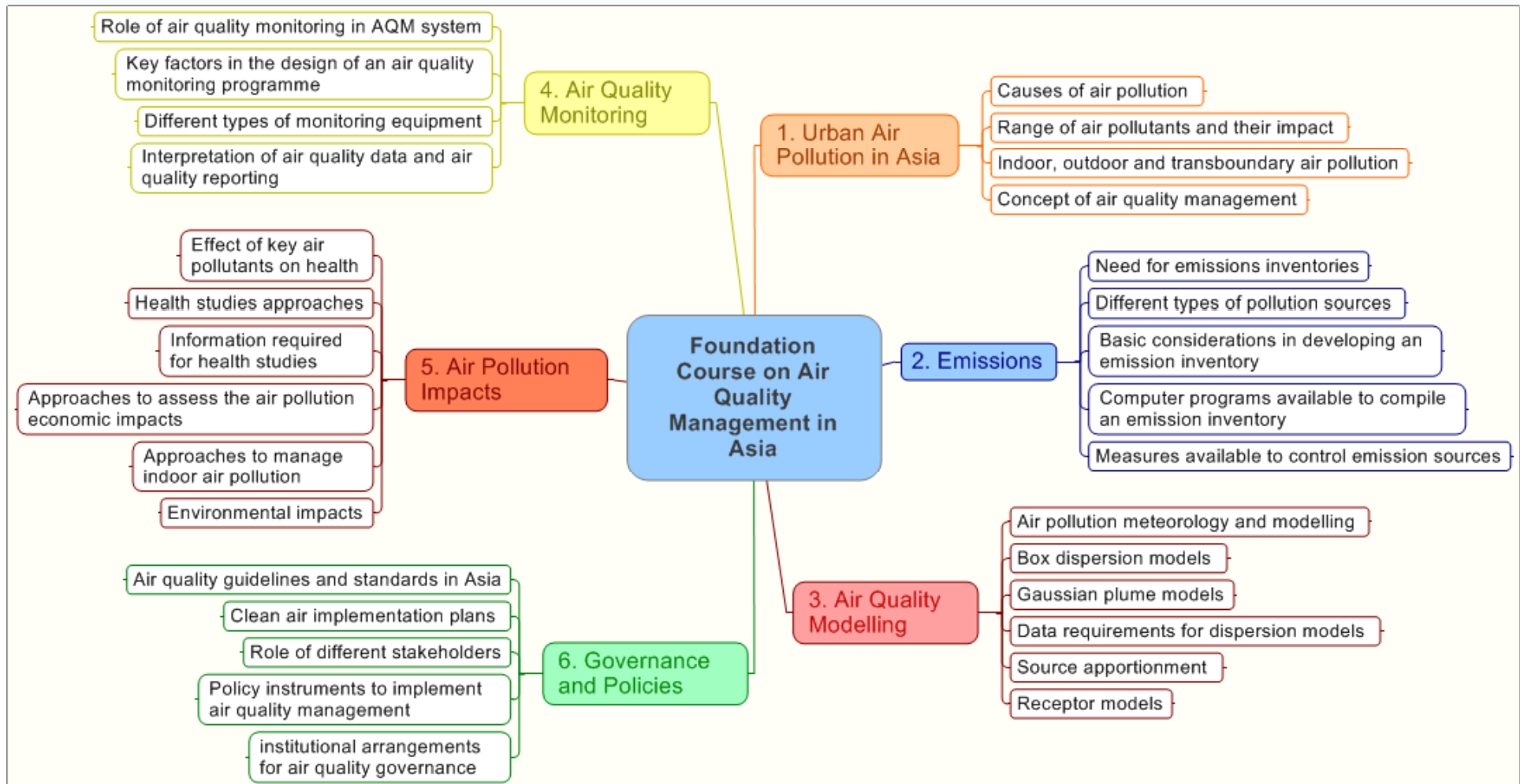
- The Course
- Structure of the modules

The Course

- The **Foundation Course on Air Quality Management in Asia** aims to enhance capacity by providing a good grounding in the key components relevant to managing urban air quality.
- The Course has been compiled by an international team of air pollution specialists and aims to provide the student with a good grounding in the mains issue relevant to each aspect of air quality management.
- The Foundation Course was produced by the Stockholm Environment Institute (SEI) and the University of York (UoY) as part of the Clean Air for Asia Training Programme.



Module Structure



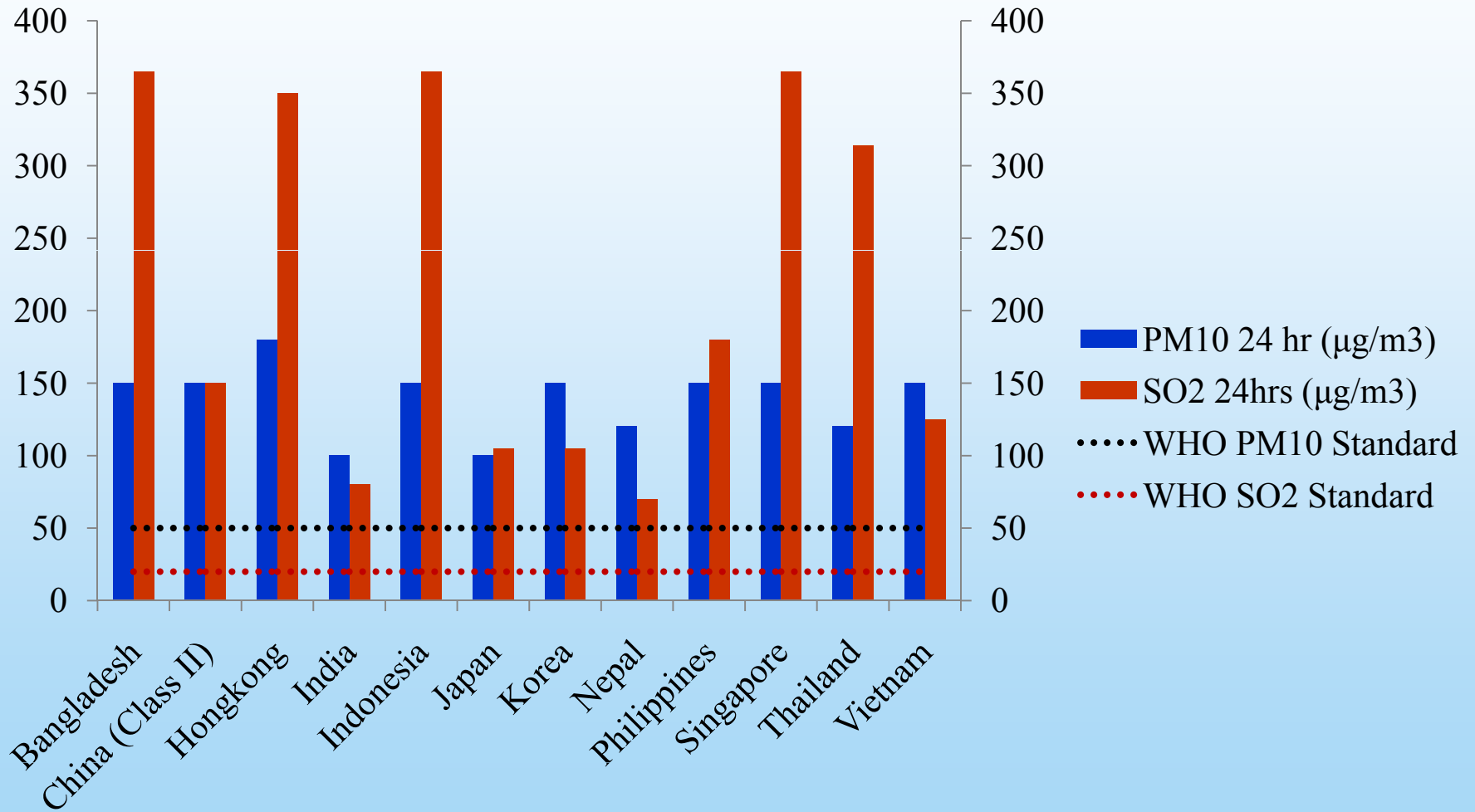
Air Quality Management in Asia

- Background on AQM in Asia
- Air Quality Management Capacity in Asia

Background

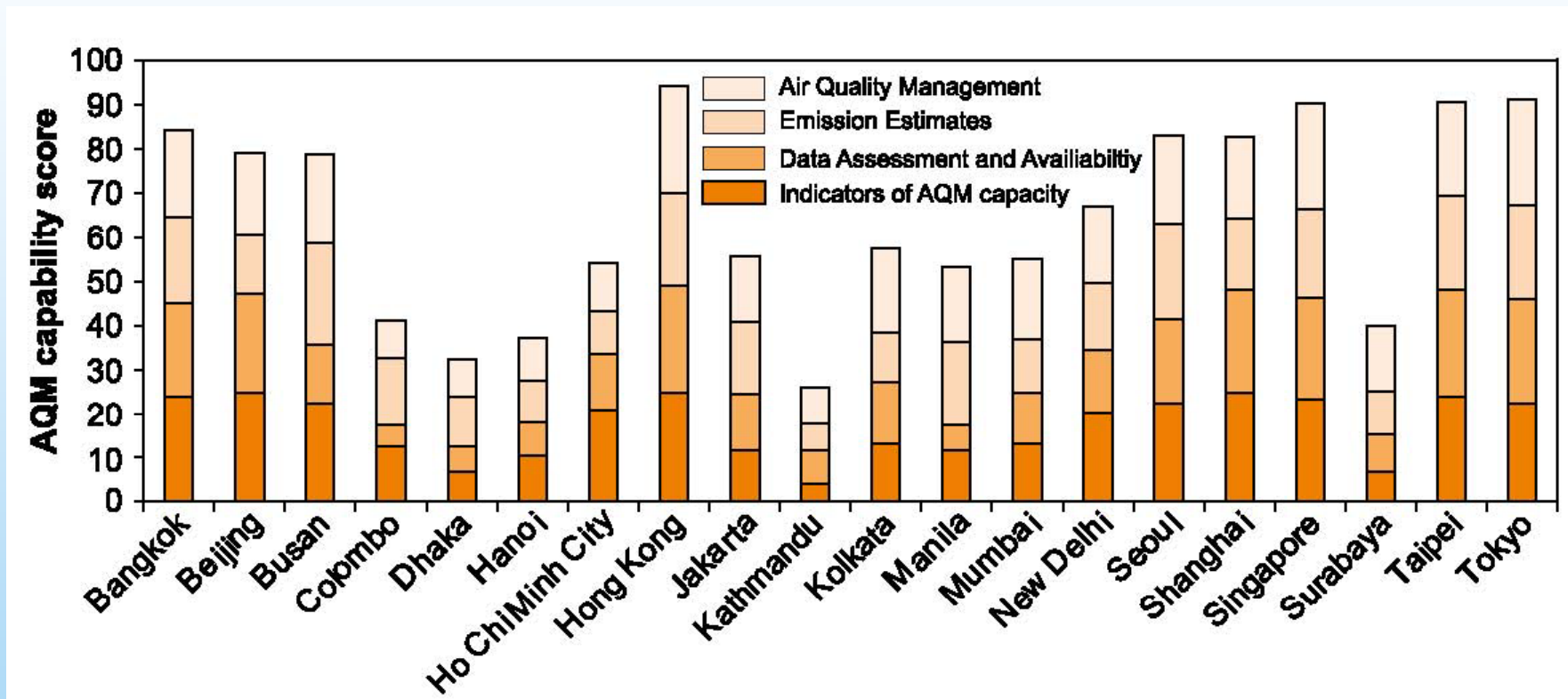
- Levels of air pollution in Asian cities regularly exceed World Health Organization (WHO) recommended guidelines with smoke and dust particles being double the world average.
- Many Asian governments have recognised air pollution as a key environment problem that needs to be addressed.
- Those cities which have been able to introduce emission control early in their development path (e.g. Hong Kong, Tokyo and Singapore) have avoided the extremely high levels of urban pollution that are often associated with other cities that have introduced emission control measures later.
- The earlier integrated AQM systems are introduced, the lower the maximum pollution levels that will occur.

International and National Air Quality Guidelines and Standards



Air Quality Management Capacity in Asia

The WHO/UNEP/MARC AQM capability index was used to assess AQM capabilities in the 20 Asian cities.



Source: Schwela et al. (2006)

Governance and Policy Options for AQM

- Controlling Local Stationary Air Pollution
- Reducing Air Pollution from the Transport Sector/Mobile Source

Controlling Local Stationary Air Pollution

- Comparison on Conventional Approaches (CAC; Emission Charge; Emission Trading)
- Case Study: Innovative Option-Information disclosure (participatory governance) in Hohhot, China

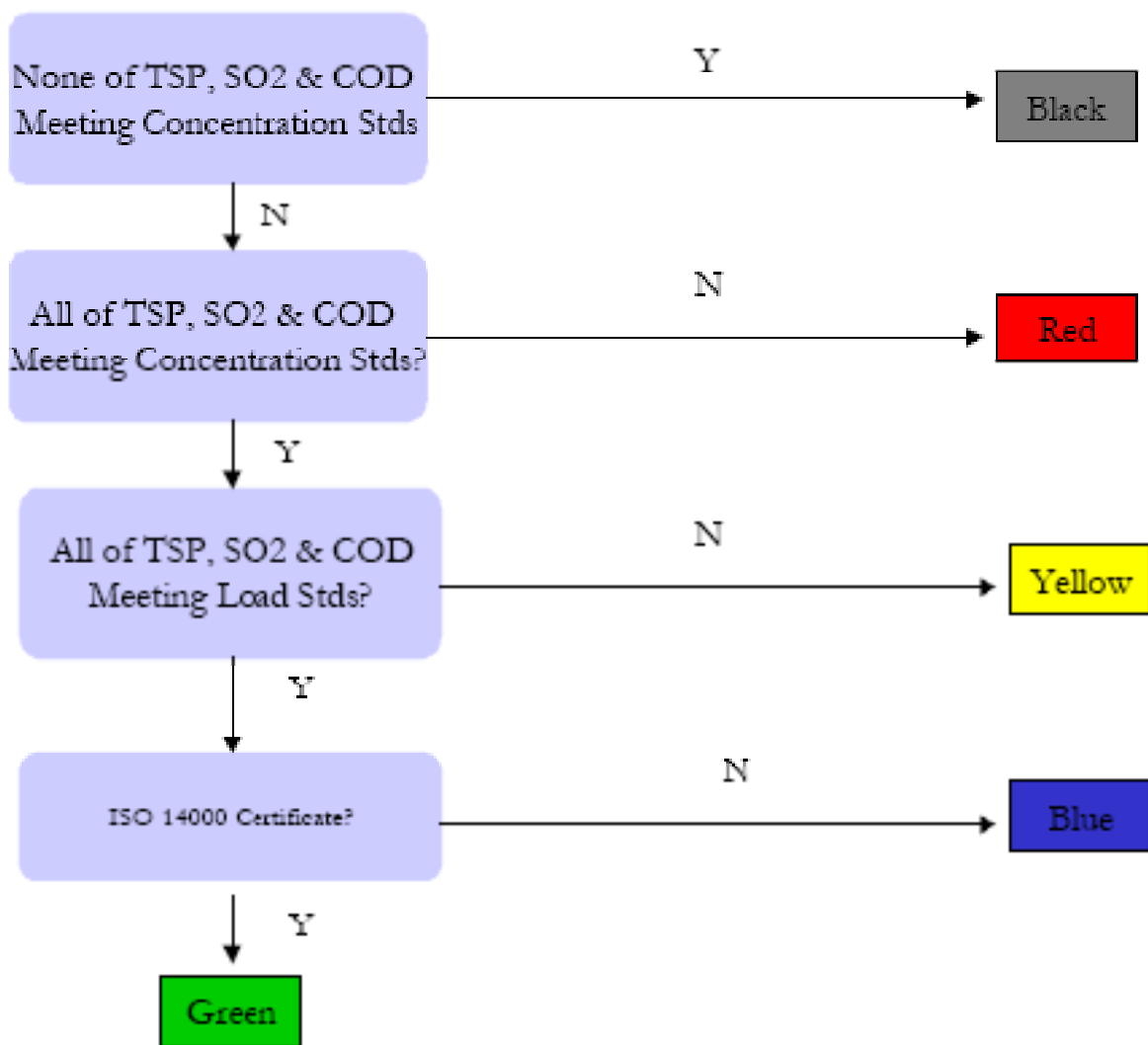
Comparison on Conventional Approaches

Approaches	Comparison
Control and Command Approach (Regulations, standards)	<ul style="list-style-type: none">❖ provide more direct control of pollution sources and reduce the uncertainty of the policy result❖ but less cost-effective compared to economic instruments
Emission Charge	<ul style="list-style-type: none">❖ A clear incentive occurred when the fee is high enough.❖ However, if the fee is disproportionately low compared to the cost of reducing emissions, there is a risk that the companies will prefer to pay the fees rather than to implement air pollution control
Emission Trading	<ul style="list-style-type: none">❖ Provides flexibility to industry to pursue the lowest cost options while meeting government policy objectives.❖ However, it may be considered that sufficiently developed markets are a prerequisite for an emissions trading system in developing countries.

Cost-Effectiveness of CAC Approaches

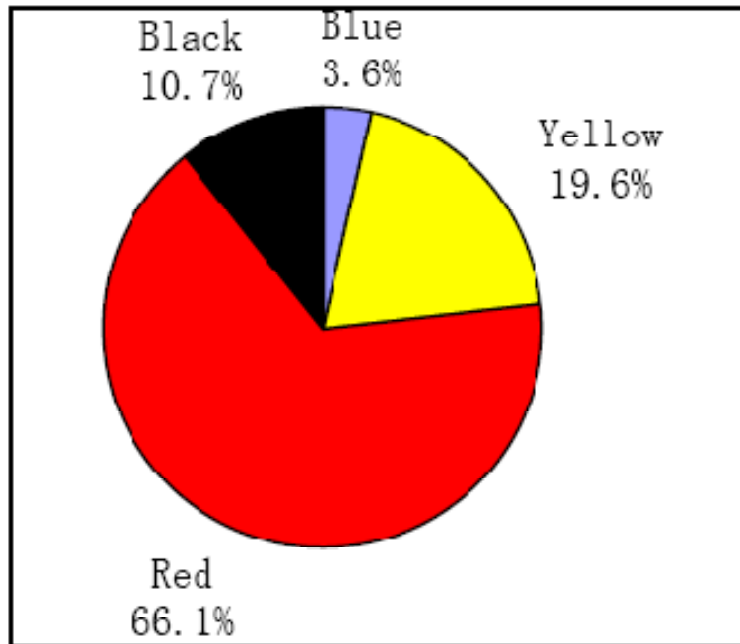
Study and Year	Pollutants Covered	Geographic Area	CAC benchmark	Assumed pollutant type	Ratio of CAC to least cost
Atkinson and Lewis (1974)	Particulates	St. Louis Metropolitan Area	SIP regulations	Nonuniformly mixed	6
Roach, et al. (1981)	Sulfur dioxide	Four Corners in Utah, Colorado, Arizona and New Mexico	SIP regulations	Nonuniformly mixed	4.25
Hahn and Noll (1982)	Sulfates	Los Angeles	California emission standards	Nonuniformly mixed	1.07
Krupnick (1986)	Nitrogen dioxide	Baltimore	Proposed RACT regulations	Nonuniformly mixed	5.9
Seskin, Anderson & Reid (1983)	Nitrogen dioxide	Chicago	Proposed RACT regulations	Nonuniformly mixed	14.4
McGartland (1984)	Particulate	Baltimore	SIP regulations	Nonuniformly mixed	4.18
Spofford (1984)	Sulfur dioxide	Lower Delaware Valley	Uniform percentage reduction	Nonuniformly mixed	1.78
Spofford (1984)	Particulates	Lower Delaware Valley	Uniform percentage reduction	Nonuniformly mixed	22

Performance Rating Procedure in Hohhot, China

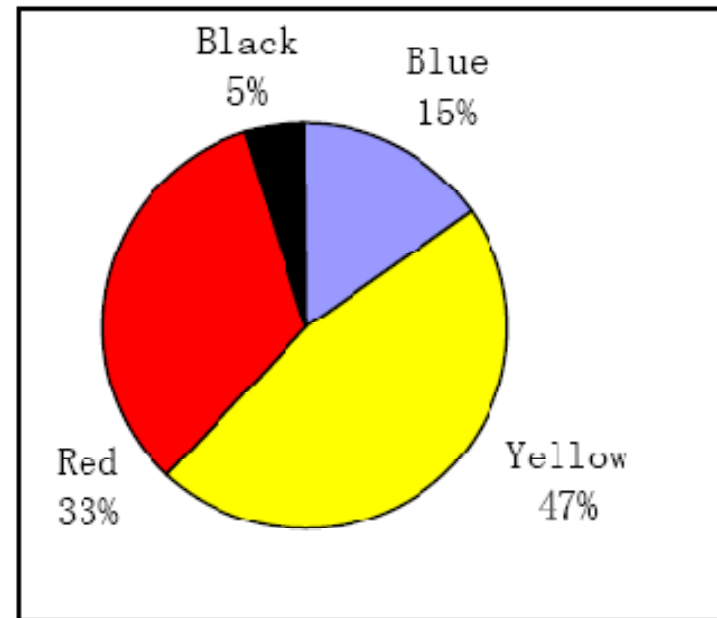


Source: Worldbank 2002

Performance Rating Results in Hohhot



A. Ratings in 1999



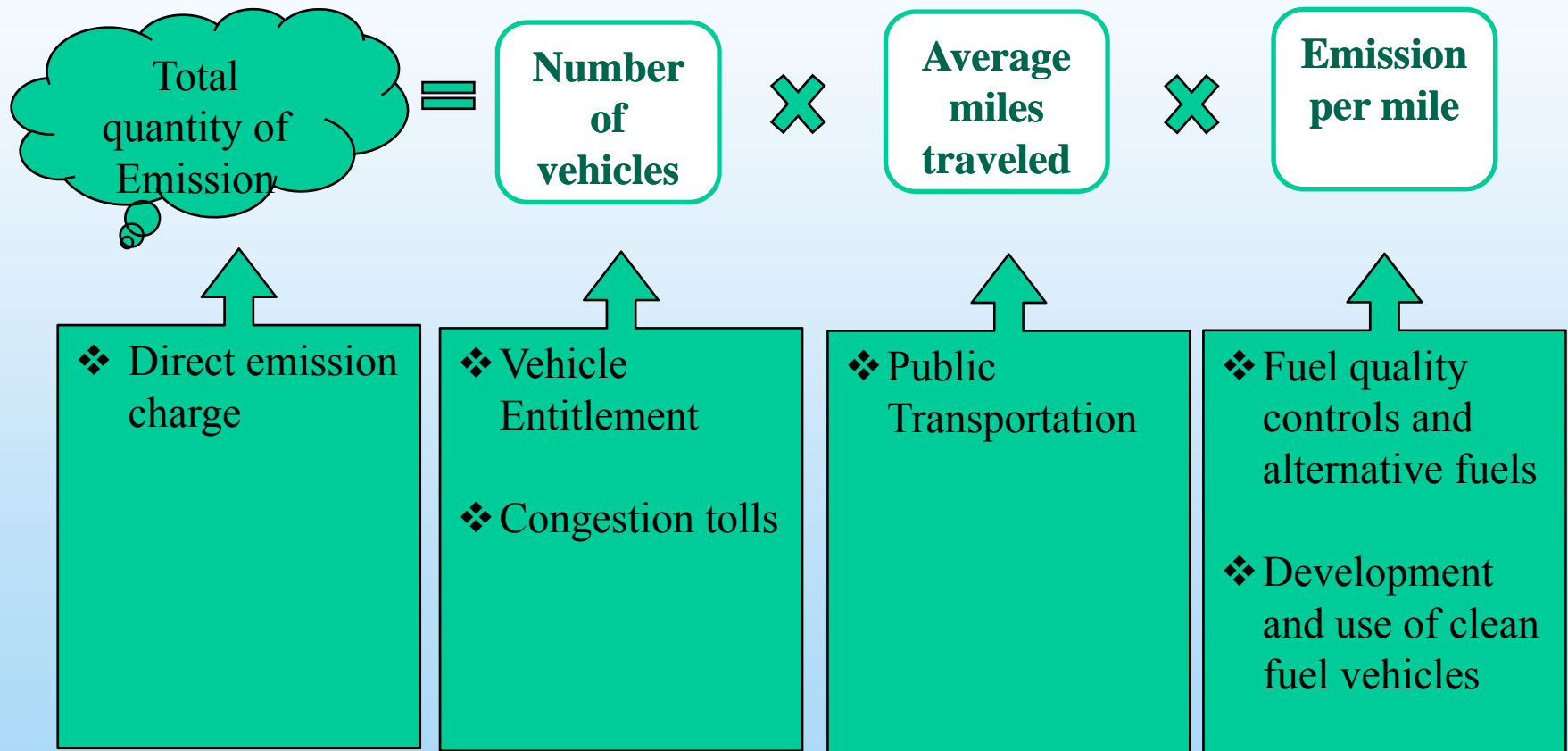
B. Ratings in 2000

Source: Worldbank 2002

Reducing Air Pollution from the Transport Sector/Mobile Source

- Comparison on Controlling Emissions at the Point of Production and Mobile-Source Pollution Control
- Case Study: Singapore's approach (COE & ERP)

Total Quantity of Mobile-Source Emissions



Comparison on Controlling Emissions at the Point of Production and Mobile-Source Pollution Control

Approaches	Some Potential Problems
Controlling Emissions at the Point of Production	<ul style="list-style-type: none"> ❖ The emission rate may deteriorate over time ❖ It may take longer to reach target of emission reduction as new cars replace old vehicles slowly ❖ The amount of emissions is also critically affected by choices made by vehicle owners.
Mobile-Source Pollution Control	<ul style="list-style-type: none"> ❖ While the additional private cost of insurance for additional miles driven is typically zero, the social cost is not zero. ❖ Road construction and maintenance costs are often funded out of tax revenues and the marginal private cost of extra mile in terms of these costs is zero.

Singapore's COE and ERP System

- ❖ **The Certificate of Entitlement (COE) Open Bidding System fully replaced the Closed Bidding System from April 2002.**

The COE Open Bidding System allows you to submit your bid for a COE, monitor the Current COE Price and revise your reserve price for your bid. With the real-time information provided by the Open Bidding System, you will be able to make more informed decisions when placing your bids for a COE.

- ❖ **Electronic Road Pricing (ERP)**

ERP is an electronic system of road pricing based on a pay-as-you-use principle. It is designed to be a fair system as motorists are charged when they use the road during peak hours.