

Setting the stage: Why Focus on in-use Diesel Emissions?



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Diesel Days, Washington DC
January 17, 2003

Why is Diesel still around?

- Benefits
 - Very robust
 - good fuel economy/high efficiency
 - Well developed fuel distribution & infrastructure
 - low "greenhouse gas" emissions: CO₂ & N₂O
 - low hydrocarbon (HC) and carbon monoxide (CO) emissions



Why is Diesel a Problem?

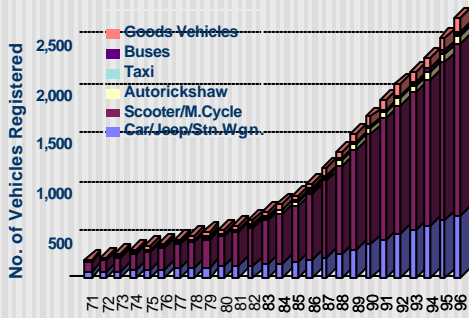
- Drawbacks
 - Emissions of particulate matter (PM) and related exposure – health impacts
 - Black smoke, major nuisance
 - High nitrogen oxide (NO_x) emissions
 - Sulfur contributes to SO₂, PM and acid rain, and prohibits introduction of latest technology



Hypotheses

- Emissions from in-use diesels will be one of the greatest contributors to human exposure to fine PM in the coming decade
- Lack of information on emissions and emissions management prevents simple and most cost-effective solutions to be tried and implemented
 - If better information was made available and was marketed, simple, cost-effective, and sustainable solutions can be promoted while formulating long-term solutions.
- There are significant differences between industrial and developing countries that affect selection of optimal policy towards diesel emissions control

Historical Vehicle Growth: Delhi

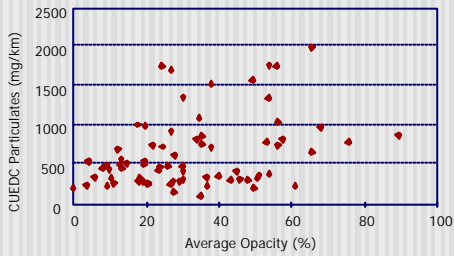


PM10 from Vehicles: Example of Bangkok

- Diesel vehicles 89%
 - Light duty trucks 31%
 - City buses 30%
 - City trucks 23%
 - Long haul trucks and buses 5%
- Gasoline vehicles 11%
 - Motorcycles 10%
 - Passenger cars 1%

Source: PCD, 2002

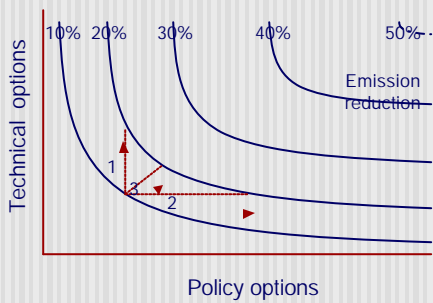
Identifying Gross Polluters: Better techniques needed?



Emission Control Options

- **Economic:** (differentiated) taxes, subsidies, pricing (congestion, parking)
- **Administrative:** emission, energy efficiency and fuel quality standards, restrictions on operation (vehicles, parking), previous history
- **Technological:** fuel improvements, new technologies, CNG retrofit, control devices
- **Transport policy:** traffic management, public transport, NMT

Policy and Technology: understanding the linkage

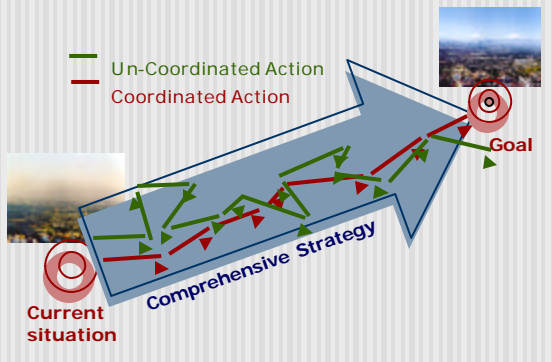


How to find sustainable action?

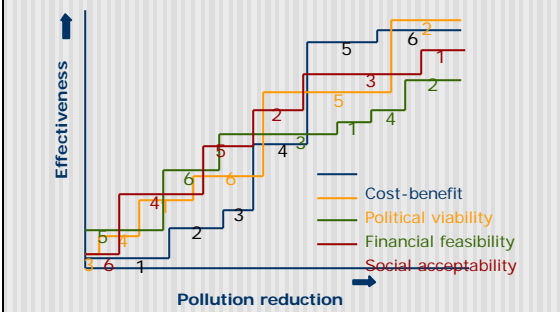


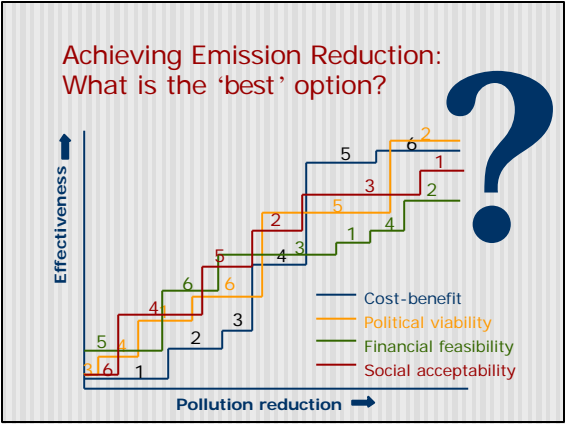
- **Compatibility with other sector objectives**
 - Do they go against, or reinforce, other sector objectives?
- **Political feasibility**
 - Are there interest groups that would oppose the proposed measures vigorously?
- **Cost of implementation**
 - Which measures would be the most cost-effective (Rs / population exposure reduced)?
- **Ease of enforcement**
 - How difficult would it be to carry out the proposed measures or to enforce them?

How do we go ahead?



Achieving Emission Reduction: What is the 'best' option?





- ### In Conclusion: Think Big and Take Small Steps
- **In-Use Diesel Vehicle Fleet** represent the largest source of PM exposure/health impacts
 - Look for **gross polluters** (often 10% of the fleet contributes 90% of the pollution)
 - **“Best” steps** must weight:
 - Technical feasibility
 - Cost-Benefit
 - Political viability
 - Financial feasibility
 - Social Acceptability
