

Coping Strategies on MManila's Vehicular Emission Problem



(How to Survive Pollution from Transport)

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Outline of Presentation

- Defining the Problem
- Adverse Impact of Emissions
- Generic Strategies
- Specific Strategies for MManila
- Choosing appropriate & workable strategies
- Obstacles to Clean Air 2000
- What Other Countries are doing
- Conclusions - What Next

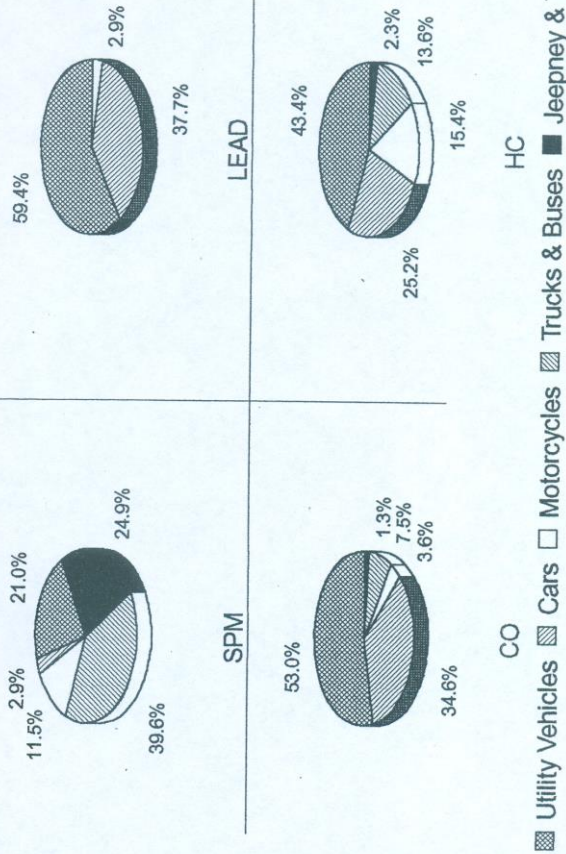


The Air Pollution Problem of MManila

PM10 exceed acceptable levels by 3

Lead, CO, and NOx occasionally exceed standards

Emission Sources By Vehicle Category



*Based on the ADB-funded study "Vehicular Emission Control in MManila", (June 1993)

Effects of Vehicular Emissions

- PM, especially from diesel, is the worst . . . *probably*, a carcinogen
- Lead is detrimental to children . . . *lower IQs* . . . behavioral problems
- Carbon monoxide affects those w/coronary disease . . . chest pains, *altered* electrocardiograms . . .

Diesel-fueled vehicles: source of PM, NO_x



Gas-fueled vehicles: source of Lead, CO, HC

PROGNOSIS:

Emission levels projected
to double in 10 years !

GENERIC STRATEGIES vs AIR POLLUTION

	DIRECT	INDIRECT
<i>Market-based incentives</i>	Emission charges, Tradable permits & quotas	Input/output taxes & subsidies Subsidies for substitutes & abatement inputs
<i>Command and Control measures</i>	Emission regulations (source-specific, non-transferable quotas)	Regulation of equipment, processes, inputs, and outputs
<i>Government production or expenditure</i>	Expenditures for purification, cleanup, disposal, & enforcement	Development of "Clean" technologies

Other Classification:
 - "End-of-Pipe" vs "Start-of-Pipe"
 - Preventive vs Curative



Proposed Strategies for MManila

CLEAN FUELS

Reduce lead in Gas
Introduce unleaded petrol
Reduce Sulfur in diesel

INSPECTION & MAINTENANCE

Set up centralized facility for annual vehicle inspection (expand existing MVIS)

CLEAN VEHICLE EMISSION STANDARDS

Require new vehicles to conform to emission standards (Japan, EC, or USA)
Emit standards for 2 stroke motorcycles (Taiwan)

CLEAN JERBOAS

Standards applied in anti-smoking banning will be enforced
Encourage engine conversion from diesel to gas
Prohibit installation of used diesel engines

TIMETABLE

Lead - 0.4 g/l by 1Q94; 0.3 by 3Q94; 0.15 by 3Q95

Unleaded - Intro by 1Q94; 50% by 1Q95

Sulfur - 0.5% by 1Q95; 0.3% by 1Q97; 0.05% by yr2000

1st Qtr'94 - I/M regulations
1994-95 - Build I/M facilities

4th Qtr'93 - issue standards
CY1996 - compliance

1Q95 - require all new PUJs to be gas

3Q93 - modify diesel price

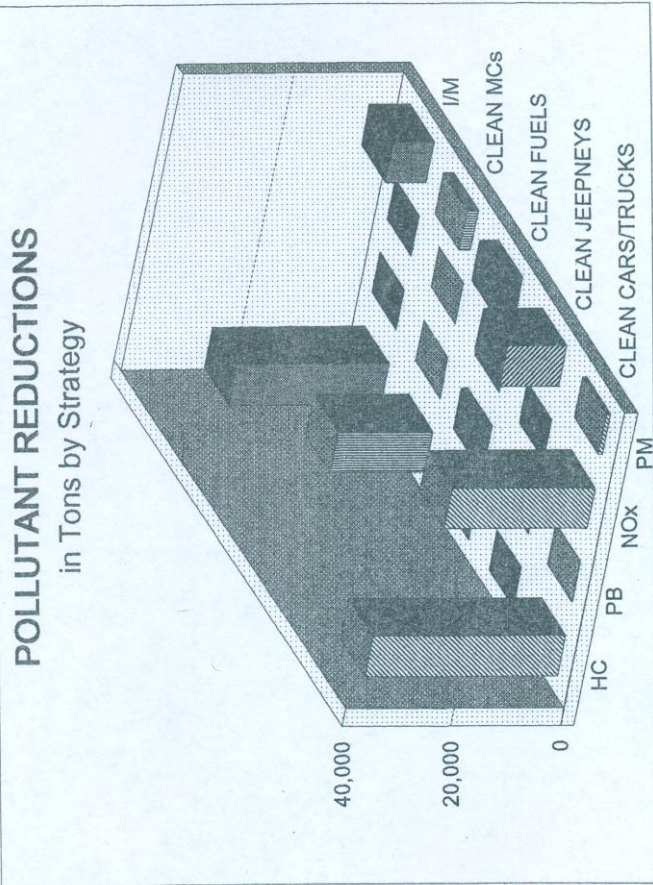
200% tariff on imported diesel engine

Low-cost financing to PUJ operators

Adjust fares accordingly



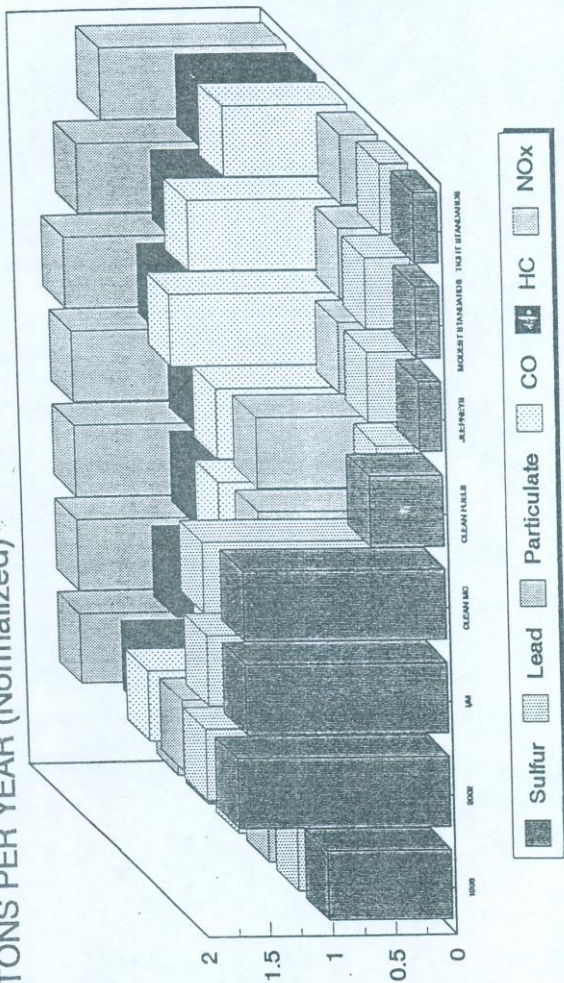
Impact of Specific Strategies



POTENTIAL IMPACT OF CONTROL STRATEGIES

TOTAL POLLUTANTS FROM VEHICLES

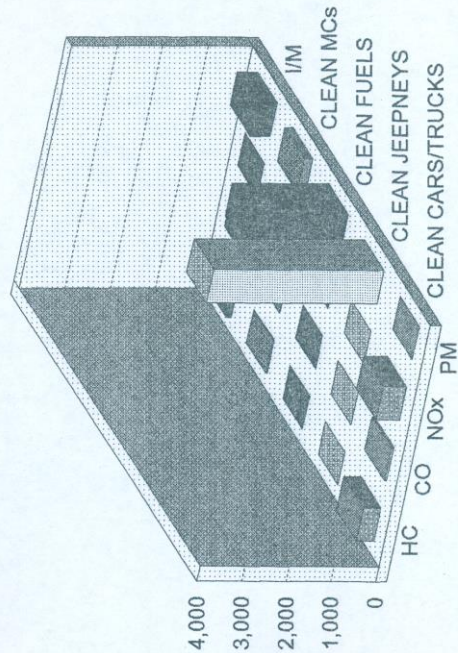
TONS PER YEAR (Normalized)



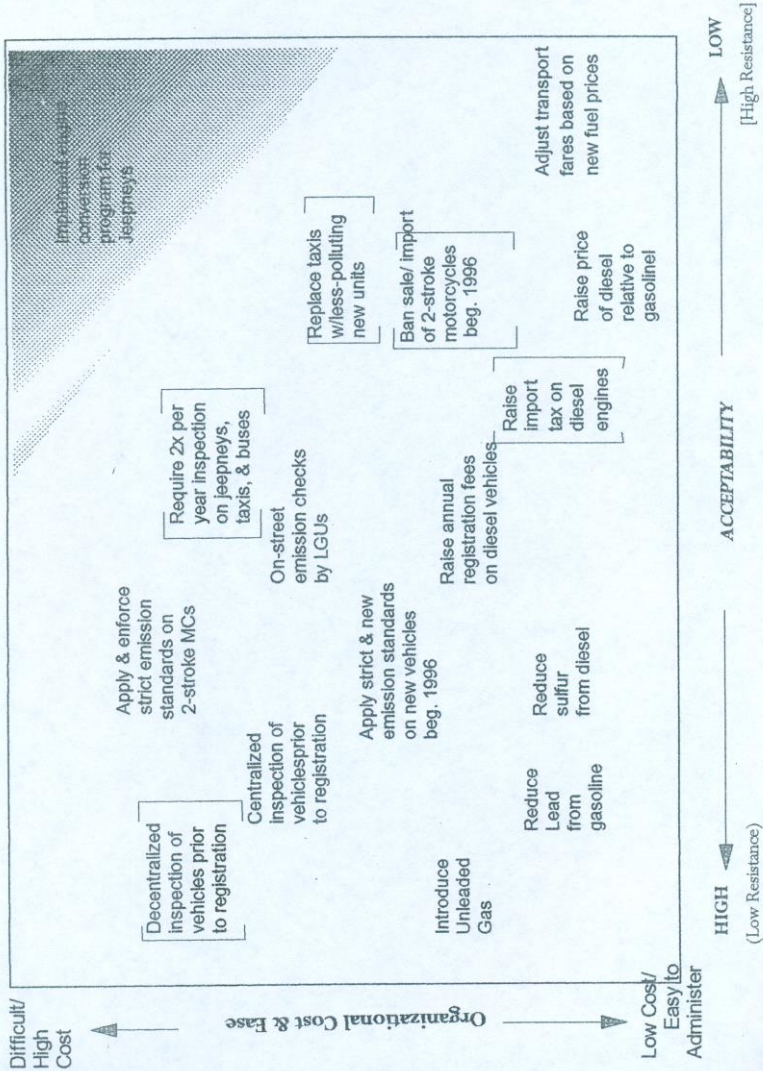
The Economics of Specific Strategies

Cost Effectiveness of Strategies

in \$/ton



Evaluating Control Measures: Beyond Economics



Hurdles on the Way to Clean Air 2000



Some ADMINISTRATIVE NIGHTMARES

- Uniformity of actions among 17 LGUs
- Pricing of Diesel Fuel and the Jeepney Union
- Violation Tickets: TOP or CST
- Limited capacity of MVIS



UNRESOLVED POLICY ISSUES

- Inspection: centralized or decentralized? Integrate or separate from LTO?
 - Private or government-run ?
 - Emission standards for 'old' and 'new' vehicles
 - Importation of used diesel engines : Ban vs Entry w/ECC
 - What about existing motorcycles: benign neglect or active intervention
 - What will Clean Air Act solve?
 - Role of MMA under the Local Government Code
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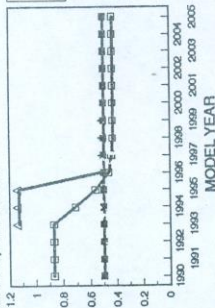


A Question of Emission Standards

CURRENT LIGHT DUTY VEHICLE STANDARDS

HC PLUS NO_x COMBINED

GRAMS/KILOMETER

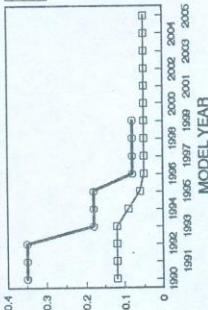


The US, Europe and Japan Use Different Test Procedures Which Influence The Actual Stringency of the Requirements

PASSENGER CAR EMISSION STANDARDS

DIESEL PARTICULATE

EMISSIONS (Grams Per Kilometer)

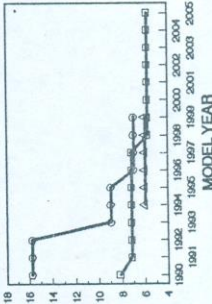


The US and Europe Use Different Test Procedures Which Influence The Actual Stringency of the Requirements

HEAVY TRUCK AND BUS EMISSION STANDARDS

NITROGEN OXIDES

Grams Per Kilowatt-Hour

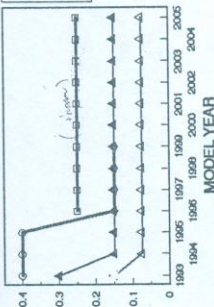


The US, Europe and Japan Use Different Test Procedures Which Influence The Actual Stringency of the Requirements

HEAVY TRUCK AND BUS EMISSION STANDARDS

DIESEL PARTICULATE

Grams Per Kilowatt-Hour



The US, Europe and Japan Use Different Test Procedures Which Influence The Actual Stringency of the Requirements



EMISSION CONTROL: OTHER COUNTRIES

ALTER USE/CONSUMPTION

- Rome banned private cars from downtown, in November, to arrest dangerous levels of CO
- Higher (32% up) diesel fuel tax in Japan, las December, to address pollution & raise revenues
- Carbon Tax in Europe, to control CO₂ emission

- Vehicle emissions Indexing plan in California: fees to be imposed on vehicles depending on emissions and mileage.

- Promote greater use of telecommuting, by USA EPA & DOT



BETTER ENGINES

- CNG Buses in Egypt
- Sale of E-class Mercedes clean diesel engine, w/c generates 40% less PM than the old

- Cooperative researches toward Clean Car: advanced manufacturing, mid-term emission control & safety technologies, and new-generation fuel-efficient vehicles



CLEANER FUELS

- Electric trolley buses in Tehran
- Electric TukTuks in Bangkok
- Production & sale of E2 (battery-powered) sedan in California by BMW
- Mercedes Benz prototype: Hydrogen Car

In Conclusion - We've only just begun



No up-to-date air pollution emission inventory, nor an operating network of ambient air monitoring stations



The problem (and the remedies) are known, but no one is pushing the 'bitter pills'. Clean Air needs a long time to achieve.



Number of vehicles are escalating & traffic congestion bound to get worse; therefore, expect air pollution to worsen



In many areas of the Philippines (countrysides), vehicle emission is not yet a problem.



No specific national targets of reduction in PM, NOx, SOx, CO, Pb..
No goal, ambiguous standards, no means to monitor = no program in place

