

Centre for Science & Environment Conference
Clean and Sustainable Mobility for all: An Agenda for Reform

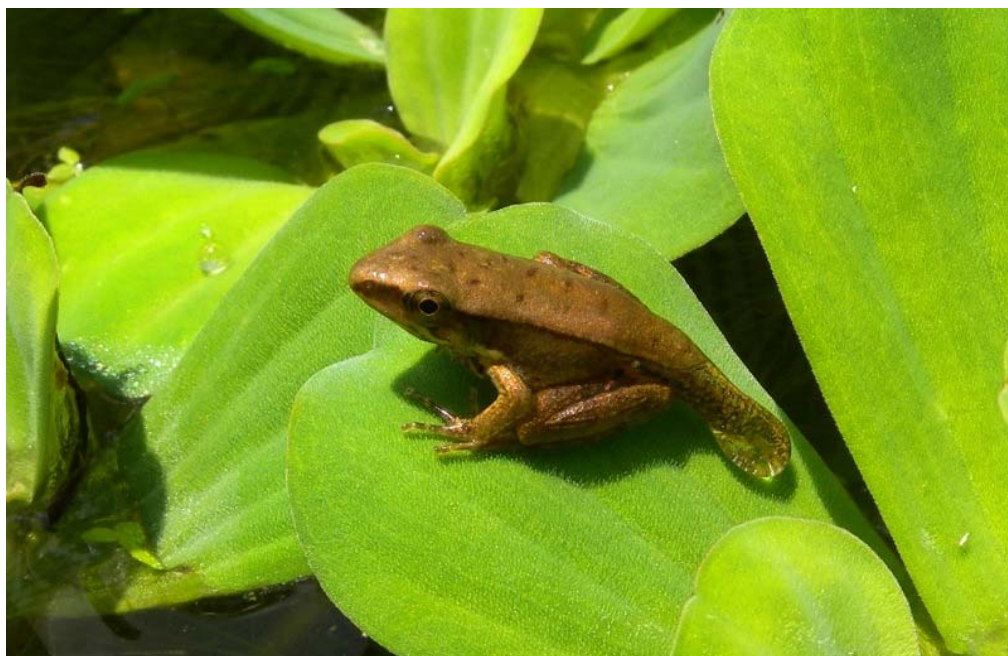
Session: Leapfrogging strategy for clean vehicles & fuels

Initiatives to cut emissions from vehicles in Hong Kong

Mike Kilburn
Civic Exchange

Presentation outline

1. The size of the problem
2. The shape of the problem
3. Attempted solutions
4. Possible alternatives

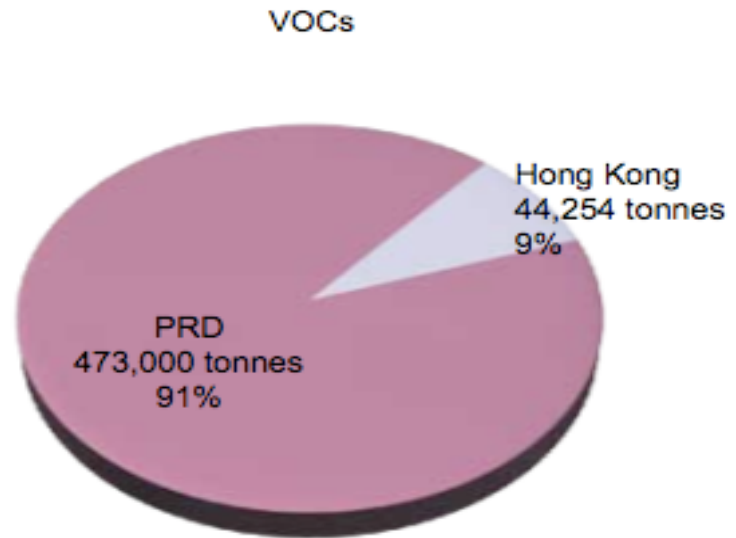
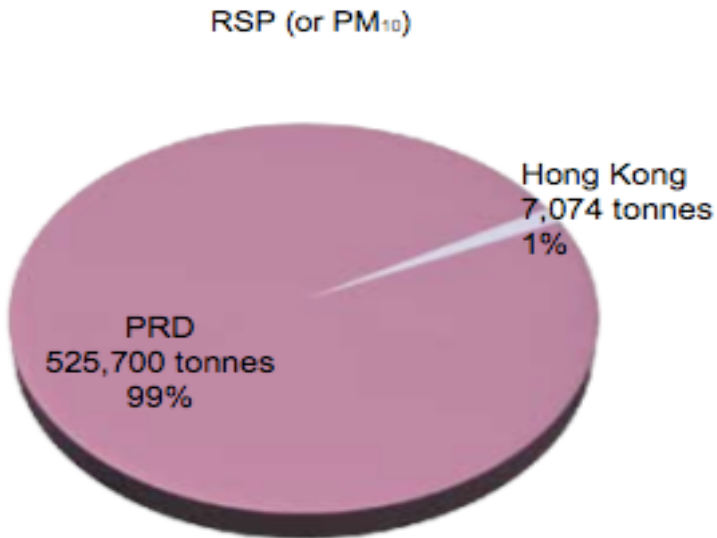
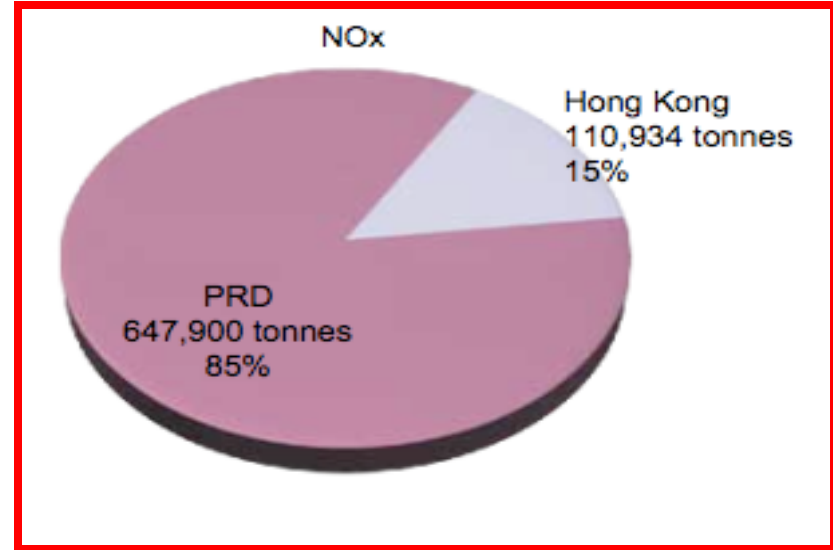
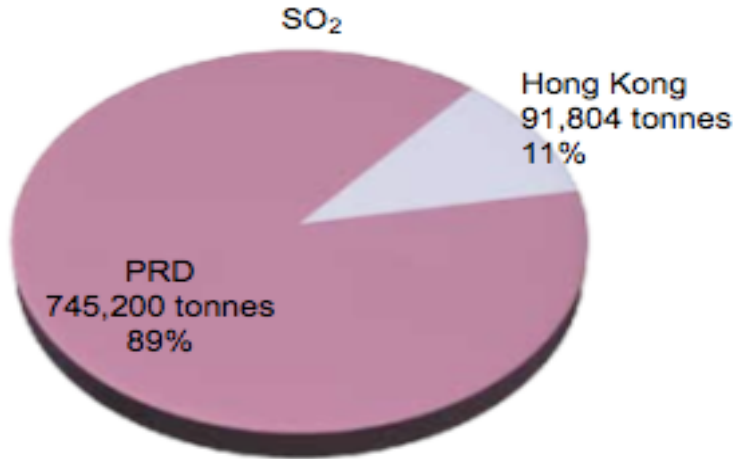


The size of the problem

Multiple sources of pollution

1. Power stations
2. Marine & port sources
3. 80,000 Pearl River Delta factories
4. **Roadside emissions**

Figure 2.4 : Emissions of SO₂, NO_x, RSP (or PM₁₀) and VOCs in PRD (2003)



Identified impacts

1. Harm to public health

people are suffering

wealthy & educated are leaving town

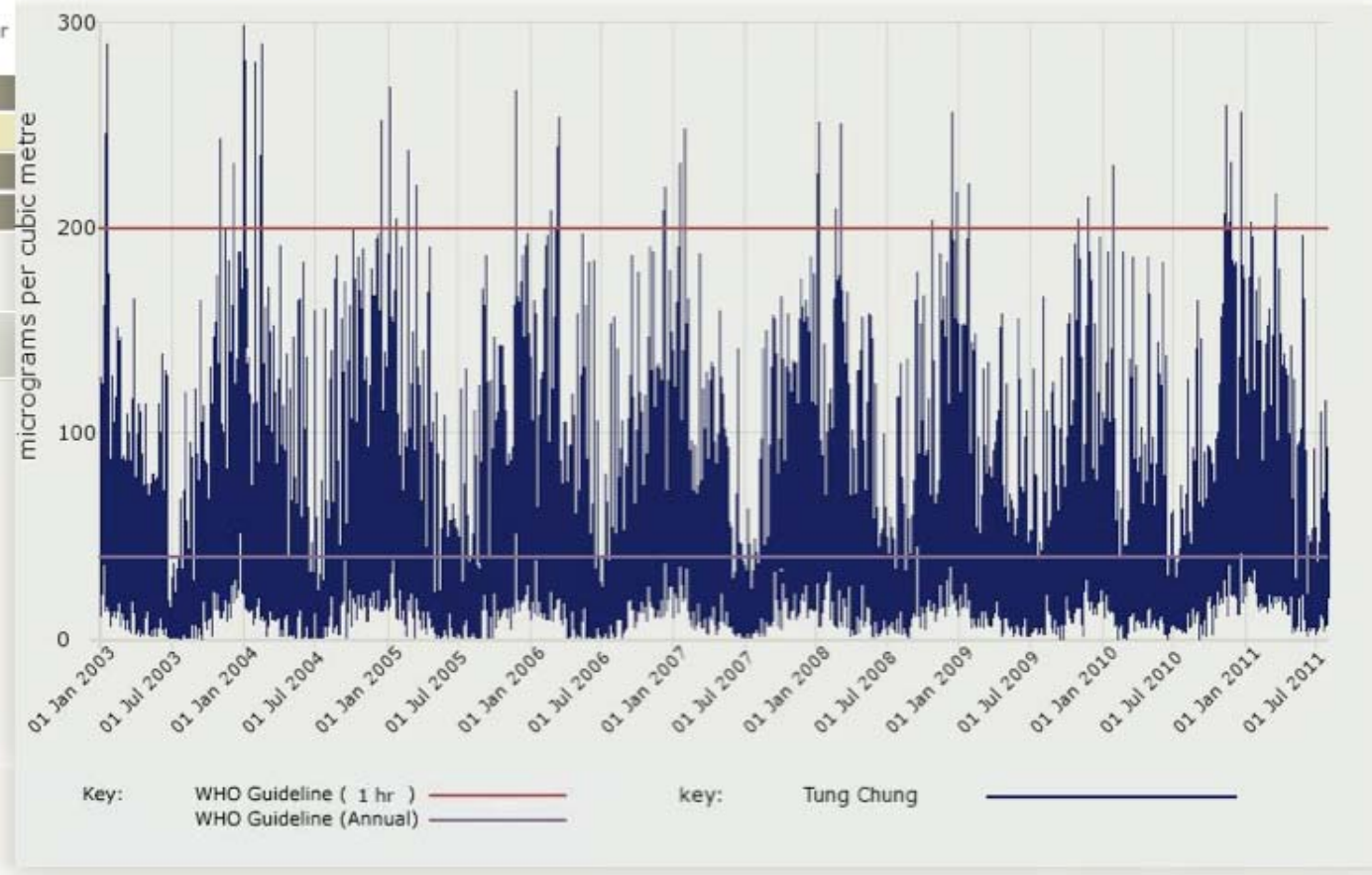
businesses are leaving town

2. Harm to economic development

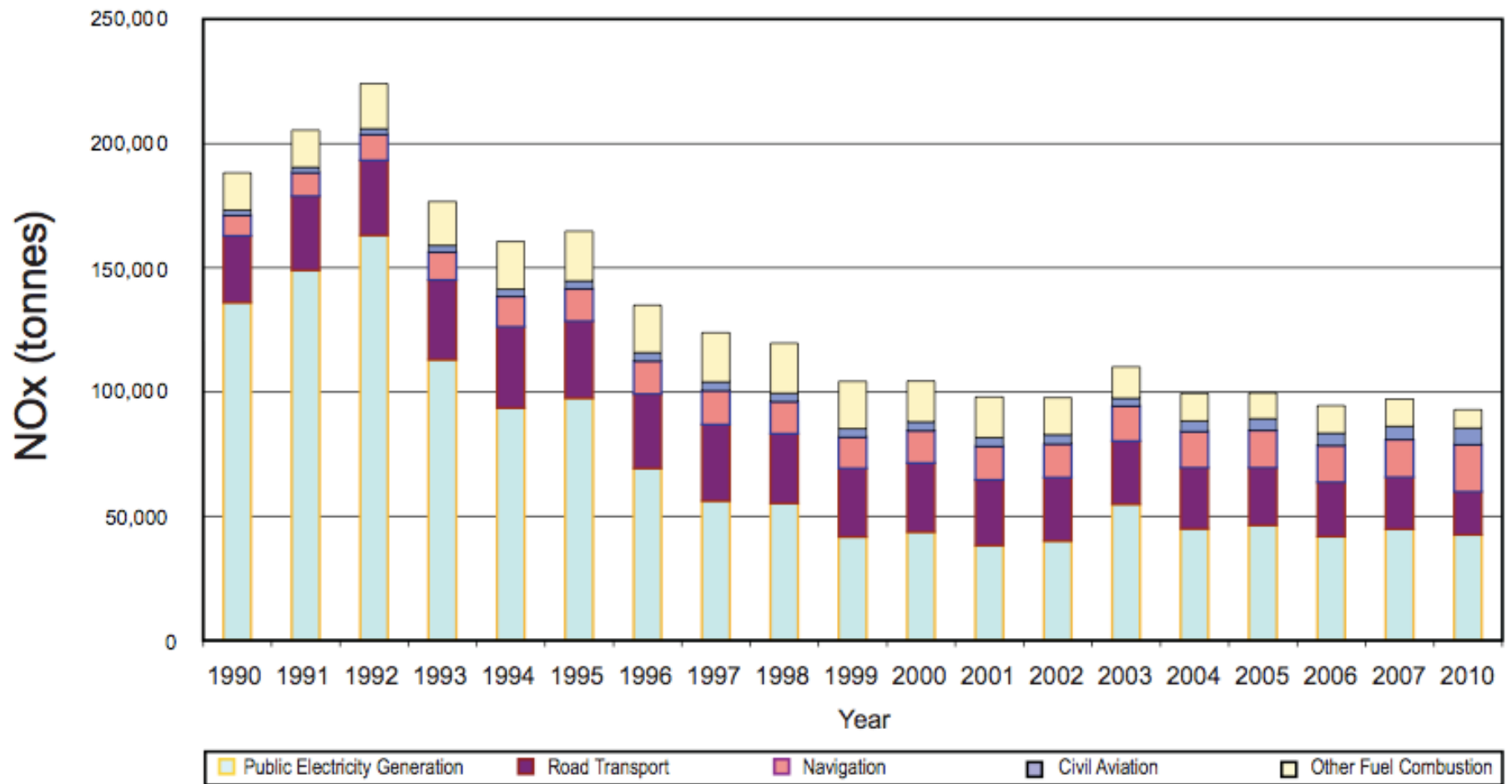
Did You know? : [Children and people over the age of 45 are more vulnerable to air pollution.](#)

Historical Series -NO₂

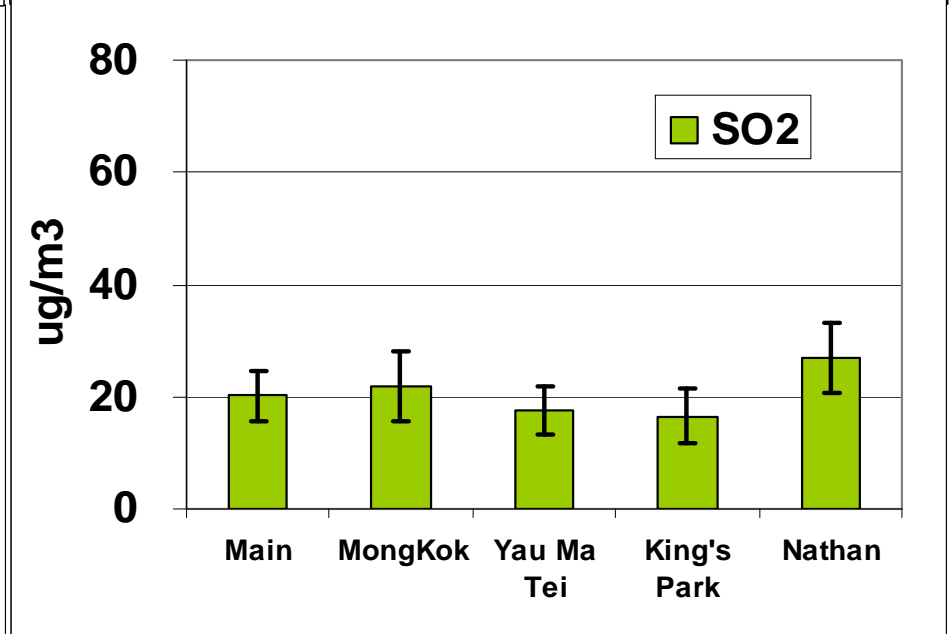
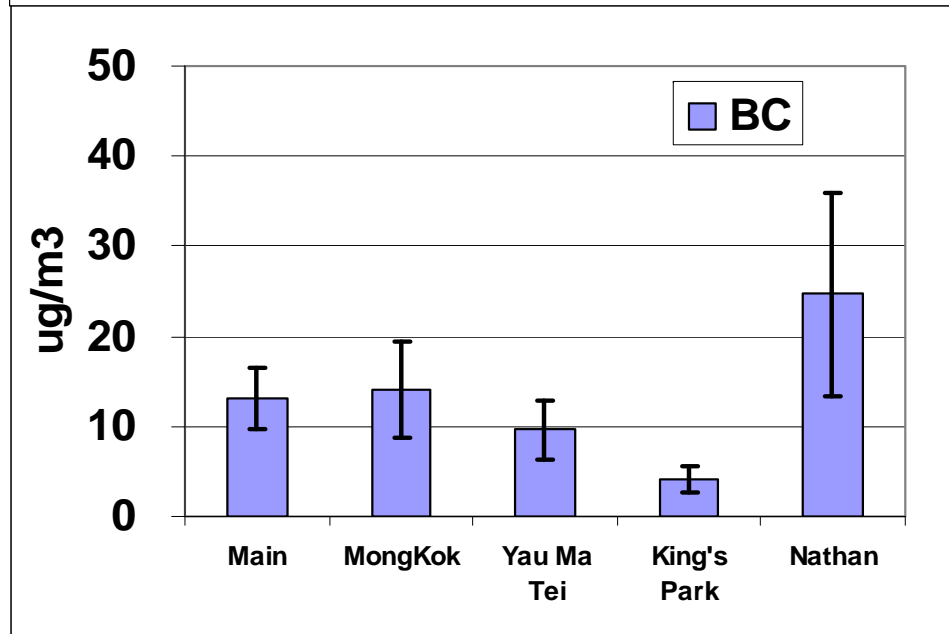
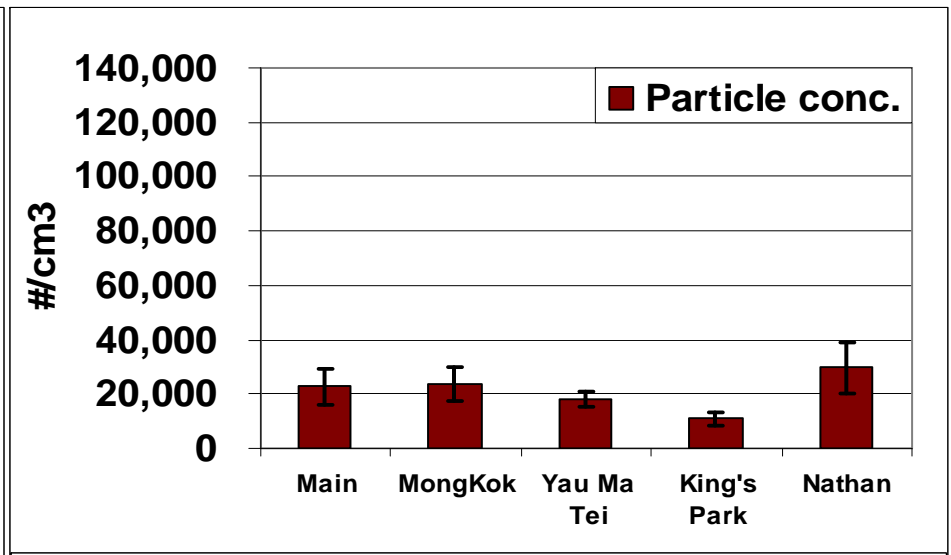
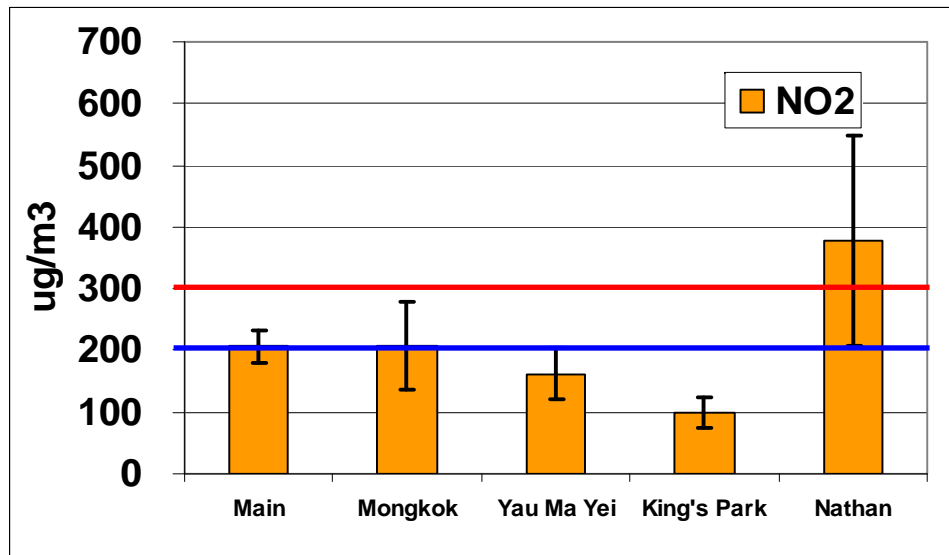
- Air Quality Tracker Historical Series:
- PM₁₀
 - NO₂**
 - SO₂
 - O₃
- Hedley Index Historical Series



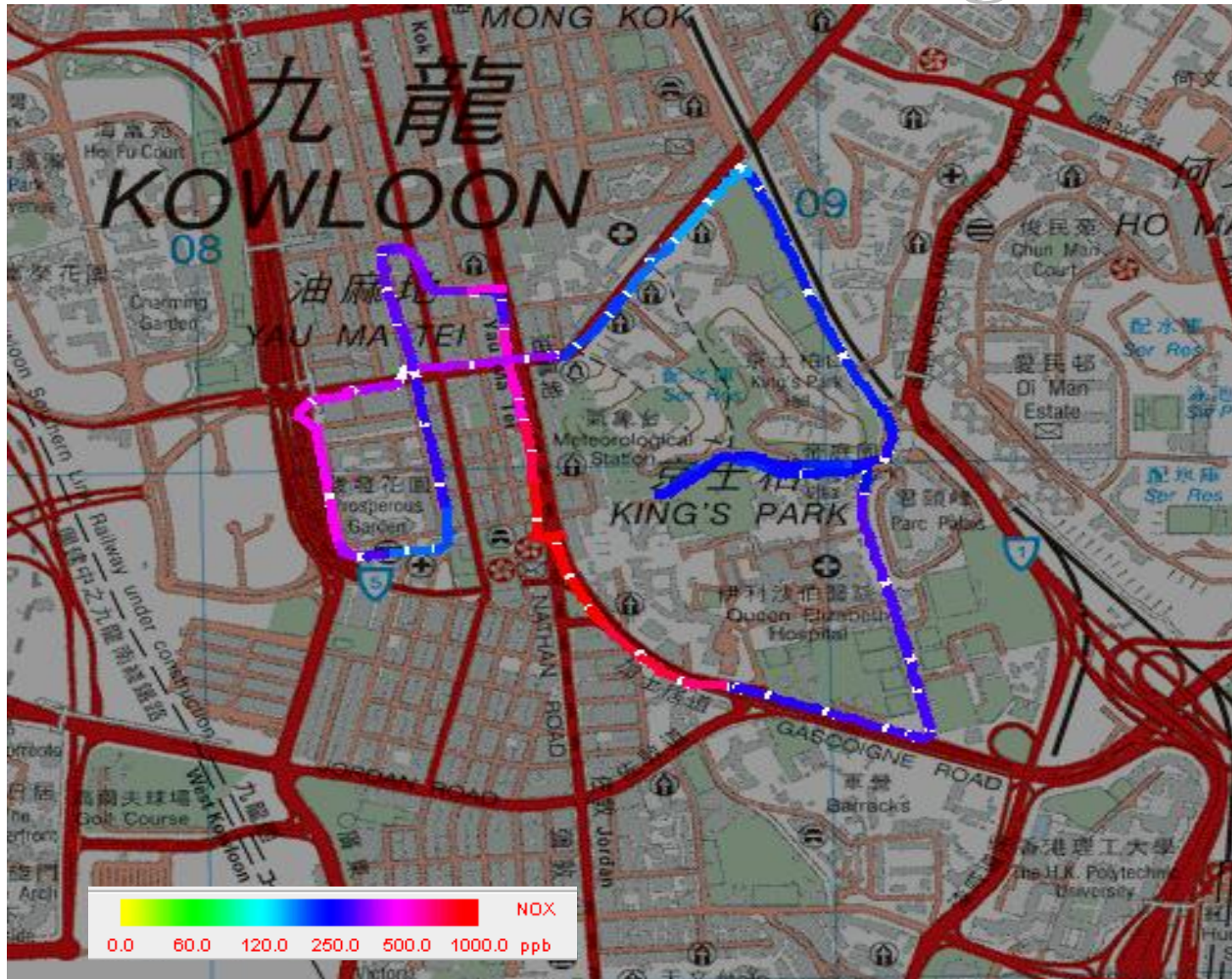
(b) NOx



Roadside: not all areas are equal



Yau Tsim Mong



Historical Series -NO₂

Air Quality Tracker
Historical Series:

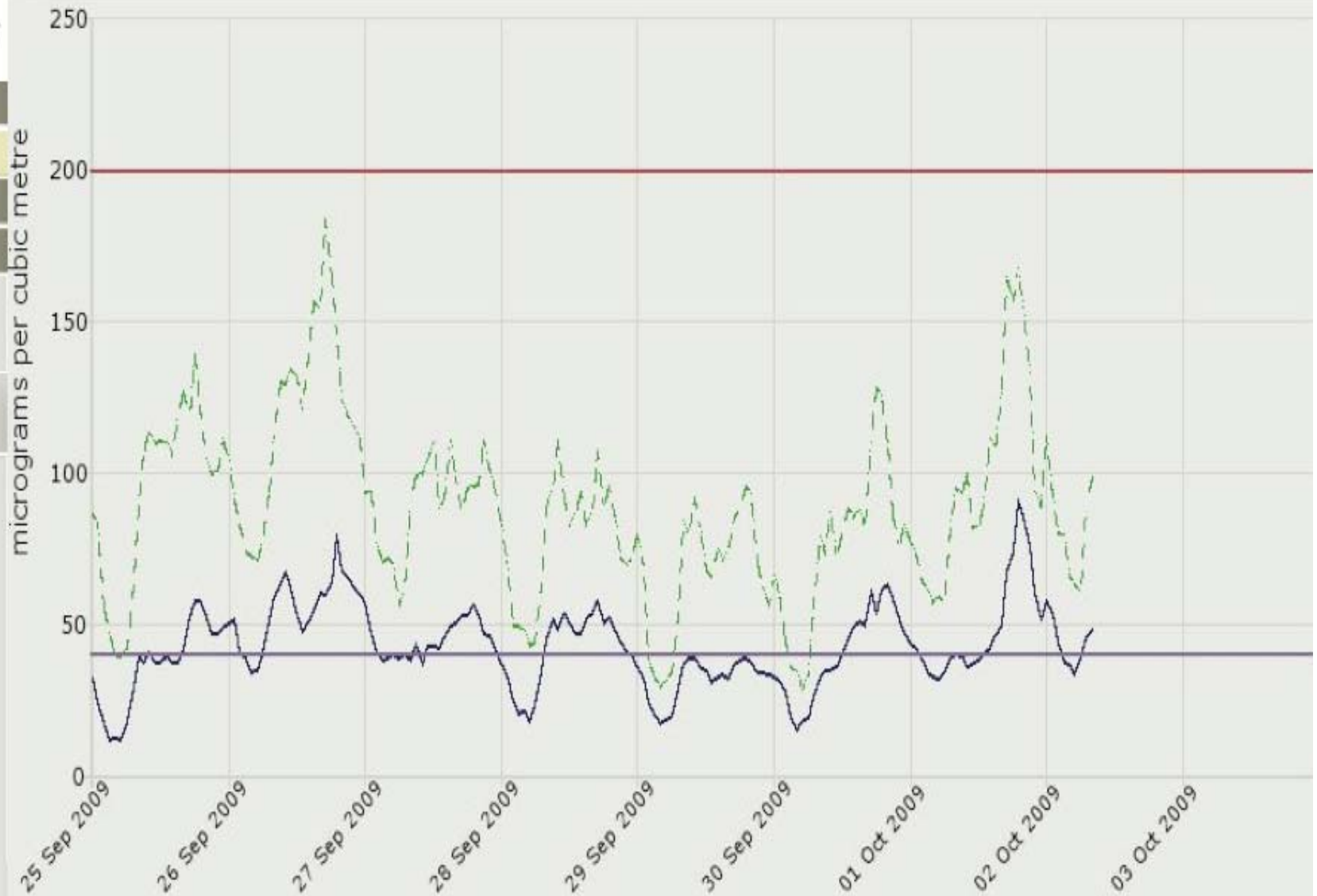
PM₁₀

NO₂

SO₂

O₃

Hedley Index
Historical Series



? How does this work?

Key: WHO Guideline (1 hr) ——— WHO Guideline (Annual) ——— General Stations Average ——— Roadside Stations Average - - - -

The shape of the problem - The vehicle mix

Type of vehicle	No. of vehicles	NO _x		RSP	
		Tonnes	kg/vehicle	Tonnes	kg/vehicle
All road vehicles	643,371	20,900	32	1,680	2.6
Diesel commercial vehicles	130,703	15,884	121	1,478	11.3
Nonroadmobile machinery	13,500	6,800	500	600	44

Various sources in Civic Exchange July 2010



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The shape of the problem - the mindset

“Emissions from NRMMs account for about 7% and 11% of the local emissions of NOx and RSP respectively. If all NRMMs in local use are replaced with ones meeting the proposed emission standards, local emissions of NOx and RSP can be reduced by 4.7% and 9% respectively.”

“The proposed revised control framework is as follows-

(a) Emission Standards

EPD will formulate emission standards making reference to the US, the EU and Japan

(b) Approval prior to sale, lease and supply for local use

(c) Exemption for existing NRMMs

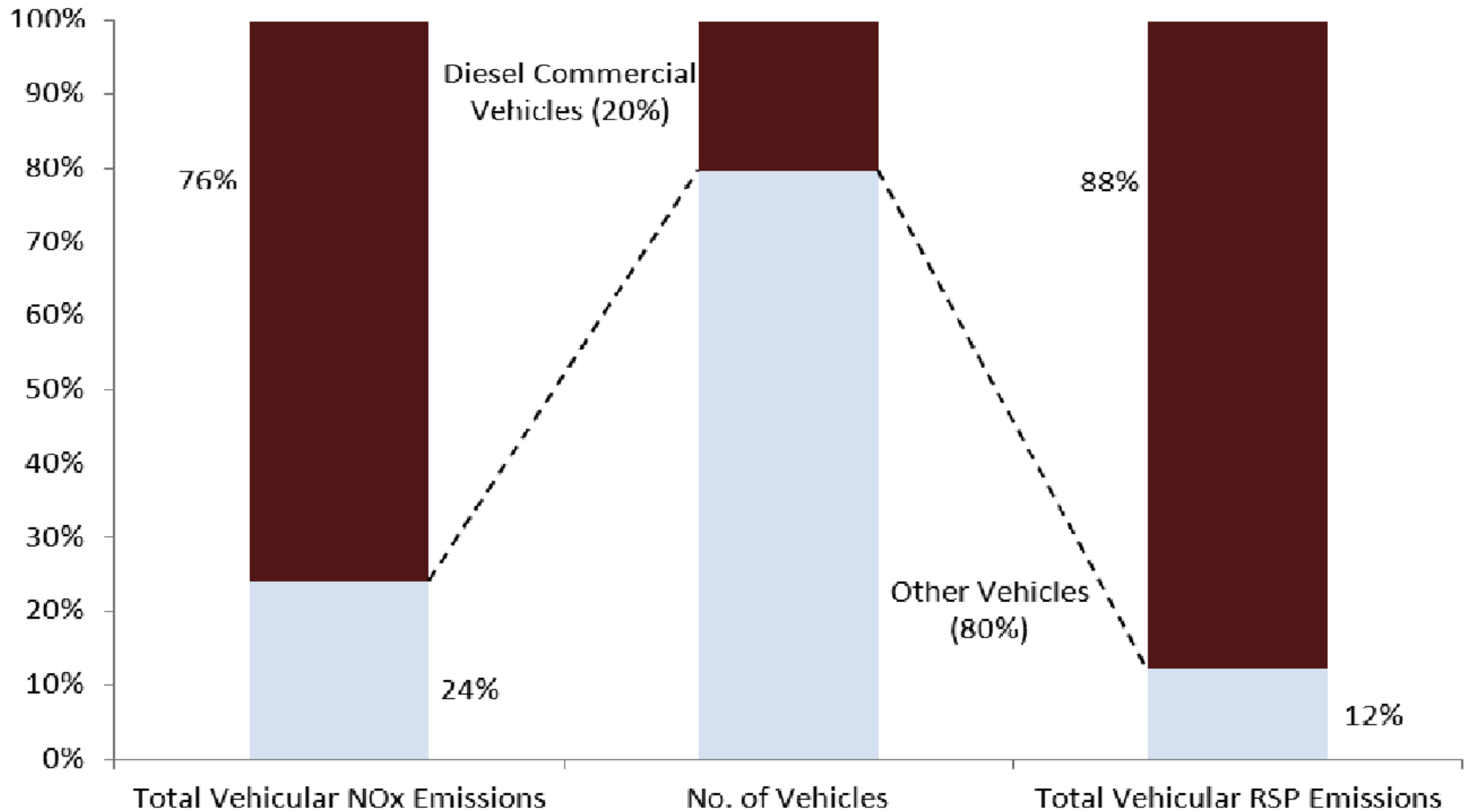
(d) Prohibition of the use of NRMMs without approval or exemption labels”

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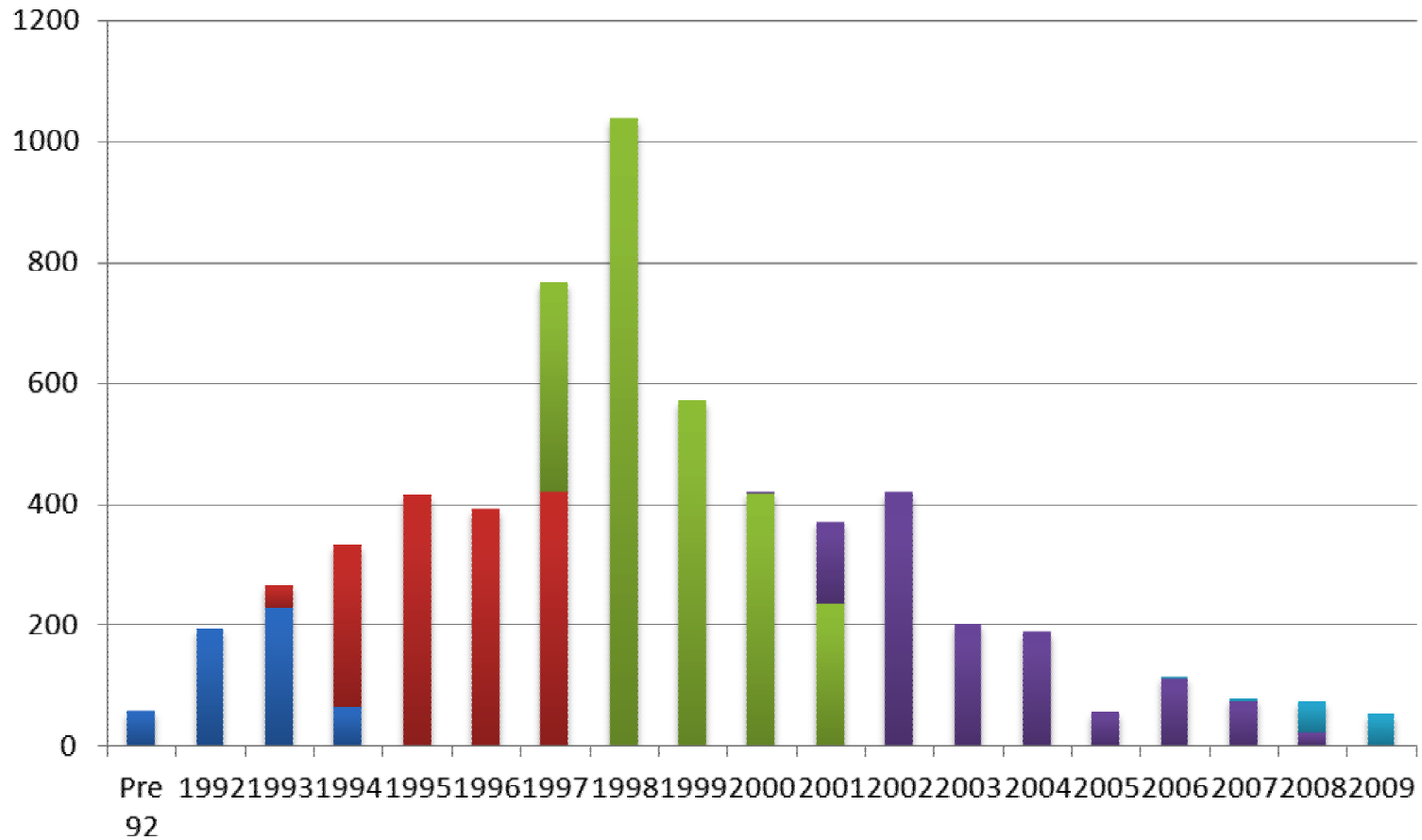
Various sources in Civic Exchange July 2010

The shape of the problem - road vehicles



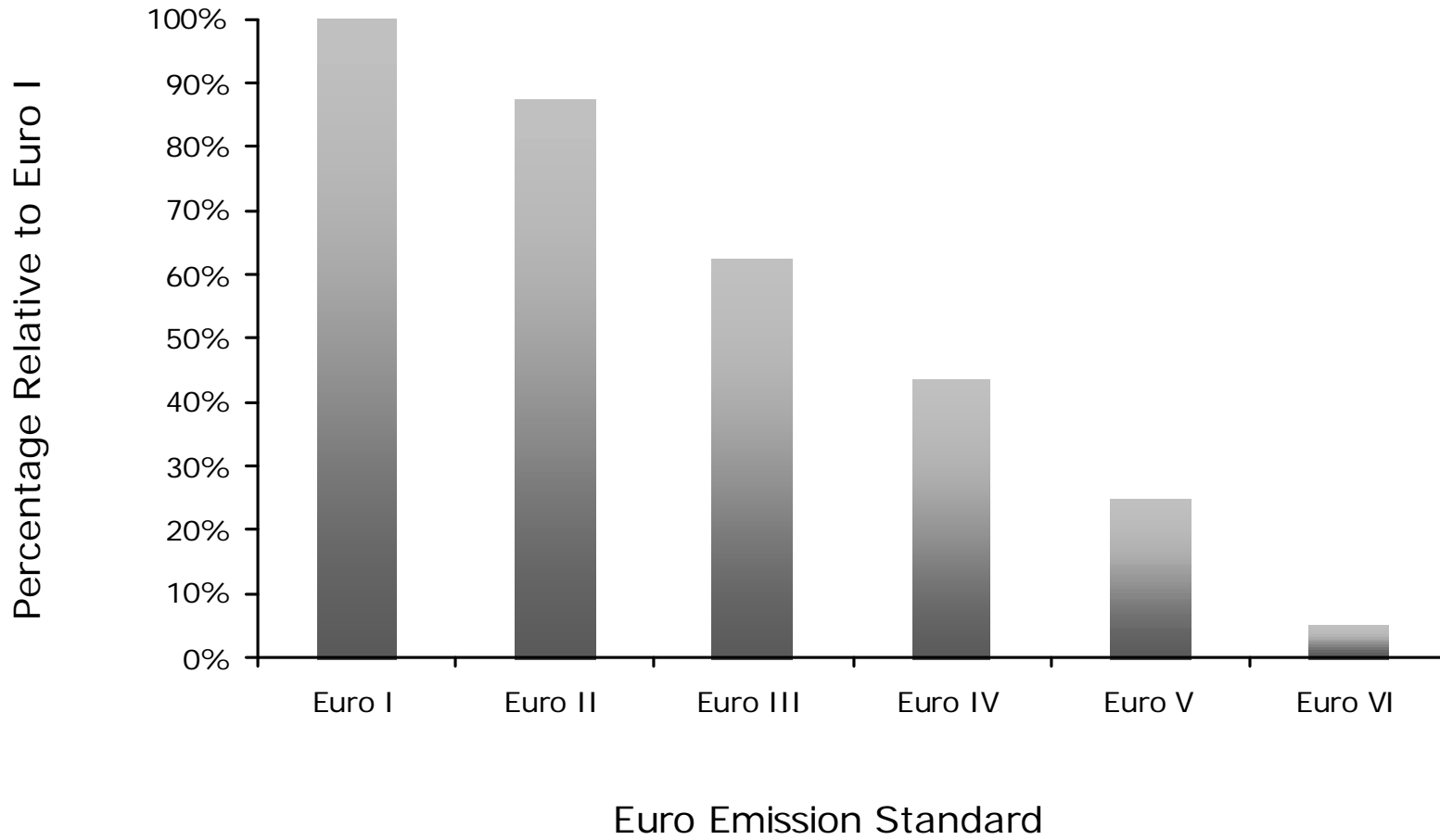
Hong Kong Bus Fleet by Emission Certification

■ Pre-Euro ■ Euro 1 ■ Euro 2 ■ Euro 3 ■ Euro 4



	Bus company						Total	
	Kowloon Motor Bus Company Limited	Citybus Limited (Franchise 1) [Note 1]	New World First Bus Services Limited	Long Win Bus Company Limited	Citybus Limited (Franchise 2) [Note 1]	New Lantao Bus Company Limited	No.	Cumulative (%)
Pre-Euro	371	48	34	3	0	0	456	7.9%
Euro I	938	312	82	0	4	2	1,338	31.1%
Euro II	1,487	370	475	136	167	53	2,688	77.7%
Euro III	1,099	10	72	18	0	34	1,233	99.1%
Euro IV	7 [Note 2]	13	18	0	0	15	53	0.9%
Total	3,902	750	681	157	171	104	5,768	100%

Percentage Comparison of Euro Emission Standards (NOx)



Attempted Solutions

1. Environmental Protection Department
 1. Switch of taxis & minibuses to LPG
 2. Incentive schemes (diesel commercial vehicles)
 3. Progressively tightened fuel standards
 4. DPF/catalytic converter retrofit
 5. Idling engine legislation

1. Transport Department
 1. Bus franchises (replacement requirements)
 2. Inspection and maintenance

Impediments

1. Decades of weak legislation & standards
2. Powerful transport lobby
3. “Silent epidemic”
4. Misallocation of authority in Government
5. Convenience-focused public attitude
6. Increasing wealth gap
7. Fragmented market (trucks & non-fran. buses)

Possible solutions

1. Accelerated replacement of diesel buses (G)
2. Planned and structured systemic change (G)
3. Low emission zones (e.g. airport) (G)
4. Get back on the tram (G, B)
5. Tender conditions (G, B)
6. Improved inspection & maintenance (G)
7. Customized ownership packages (B)
8. Stimulating new voices (NGO)

QuickTime™ and a
decompressor
are needed to see this picture.