

GREEN ECONOMY POLICIES IN TRANSPORT PROSPECTS AND CHALLENGES

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Outline

- What is a 'green economy'?
- Trends in transport sector (not just urban transport)
- Policies for greening transport sector
- Prospects and challenges

Issues for discussion

- What opportunities will Asian countries have in the transport sector in making a transition towards green economy?
- What kind of partnerships among central government, city government, business and industry, and civil society could be effective in making such a transition?
- How can green economy policies in the transport sector contribute to the employment creation and decent work?

Green economy?

- Relation to sustainability/sustainable development
- Issues of energy consumption and energy intensity
- Emissions of local pollutants (PM, SO₂, Nox, etc.)
- Emissions of global pollutants (GHGs)

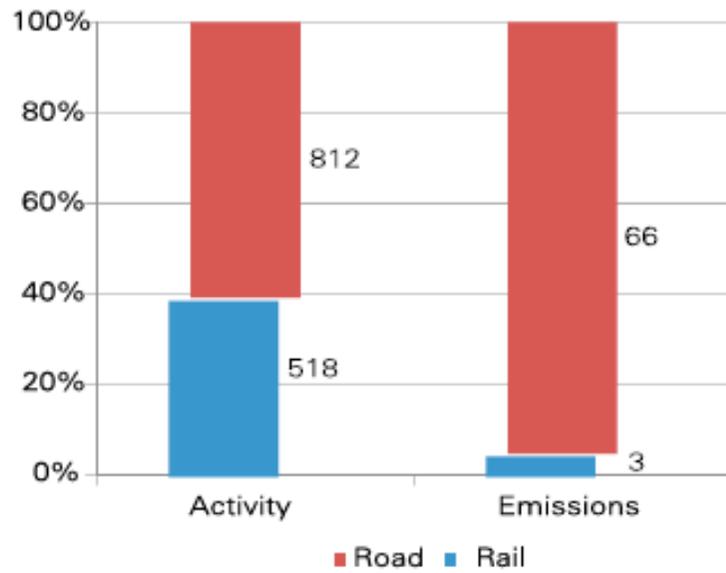
Transport sector in India

- Second largest contributor to GHG emissions in India
- Share increased from 6.4% (1994) to 7.5% (2007)
[NATCOM 2007]
- Impact on local air quality
- Other externalities—accidents, congestion
- India imports about 80% of its petroleum requirements
- Steady increase in
 - quantity of imports
 - unit cost
 - share of transport fuels (petrol, diesel, ATF) in petroleum basket

Transport sector

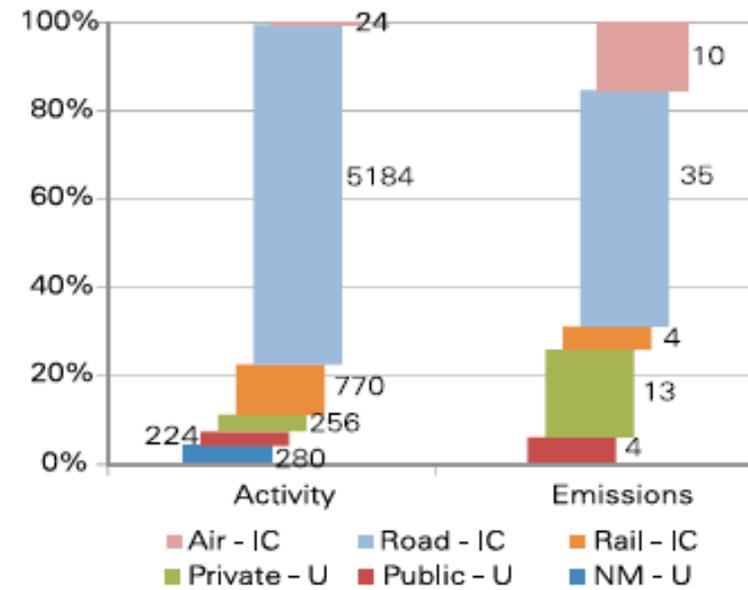
- Different (overlapping) ways of looking at it
 - by mode -- road (motorised & not), rail, air
 - inter-city (IC) / intra-city (urban)
 - public / private
- Road:
 - 88% of GHG emissions
 - 60% of freight (ton-km)
 - 83% of passengers (passenger-km)
- Rail:
 - 5% of GHG emissions
 - 40% of freight
 - 12% of passengers
- Air:
 - 7% of GHG emissions
 - 1% of passengers

Freight Activity (ton-km) & Emissions (MT CO₂) - 2007



Freight Transport

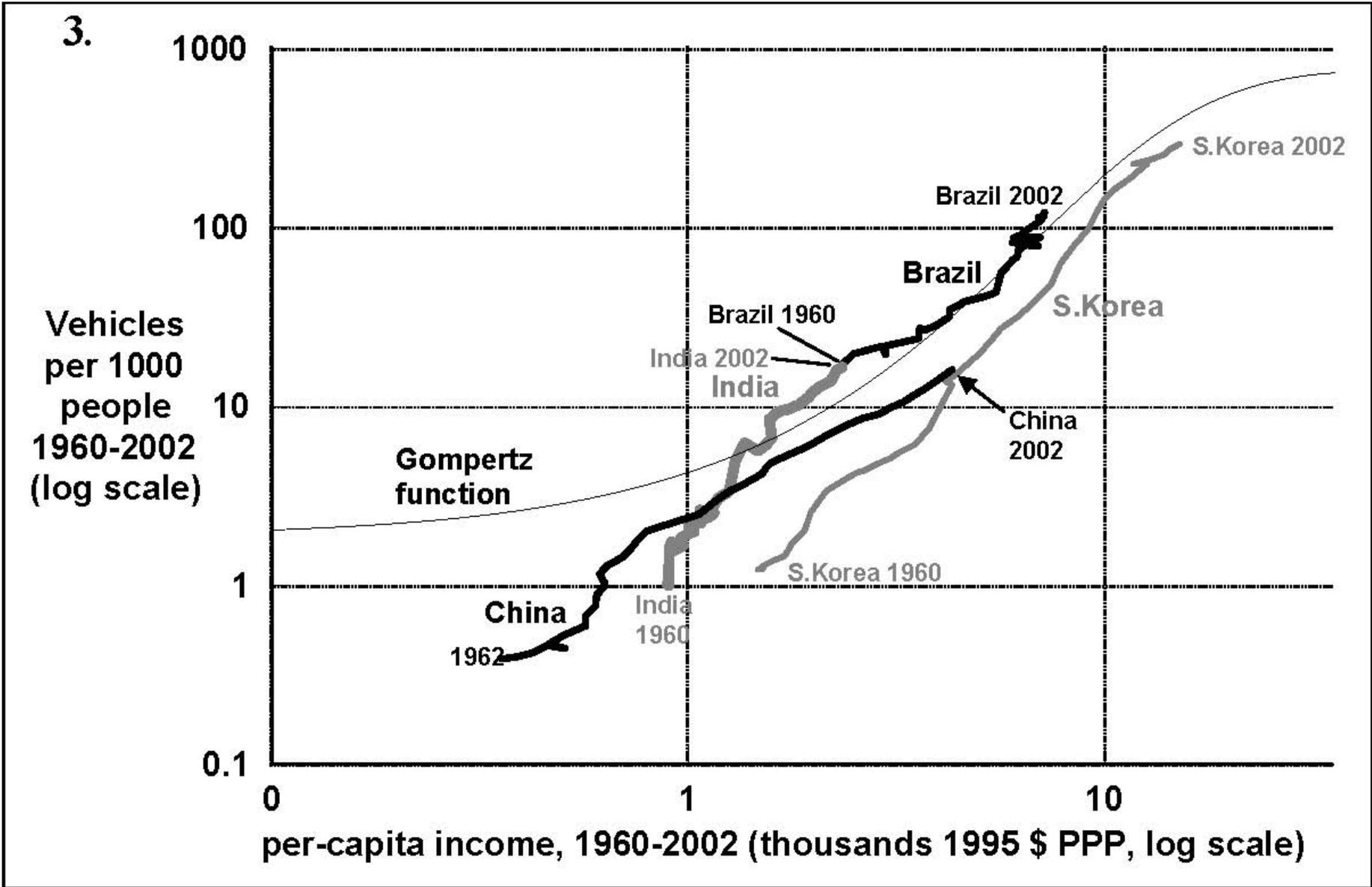
Passenger Activity (passenger-km) & Emissions (MT CO₂) - 2007



Passenger Transport

Desirable (green) trends in Transport

- Less energy intensive and more cost-effective
- Shift from road & air to rail & water-- both freight and passengers (but in reality it's the opposite...)
- Improve fuel (and other) efficiency within sectors
- In road sector -- increased share of public and NMT (but reality is opposite...)



Vehicle Ownership and Per-capita Income for South Korea, Brazil, China, and India, with the Same Illustrative Gompertz Function, 1960-2002

Figure 8. Long-run Gompertz Functions for Six Selected Countries, and the Implied Income Elasticity of Vehicle Ownership

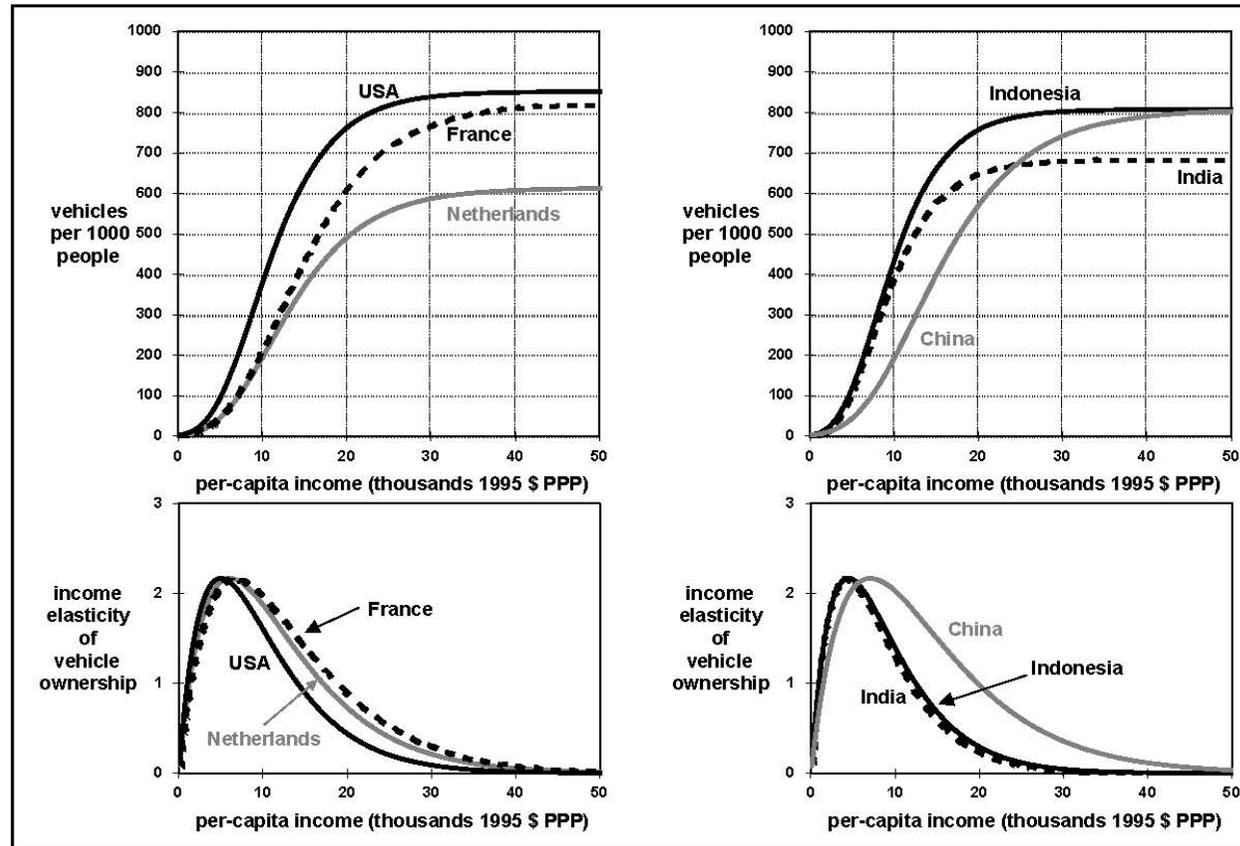
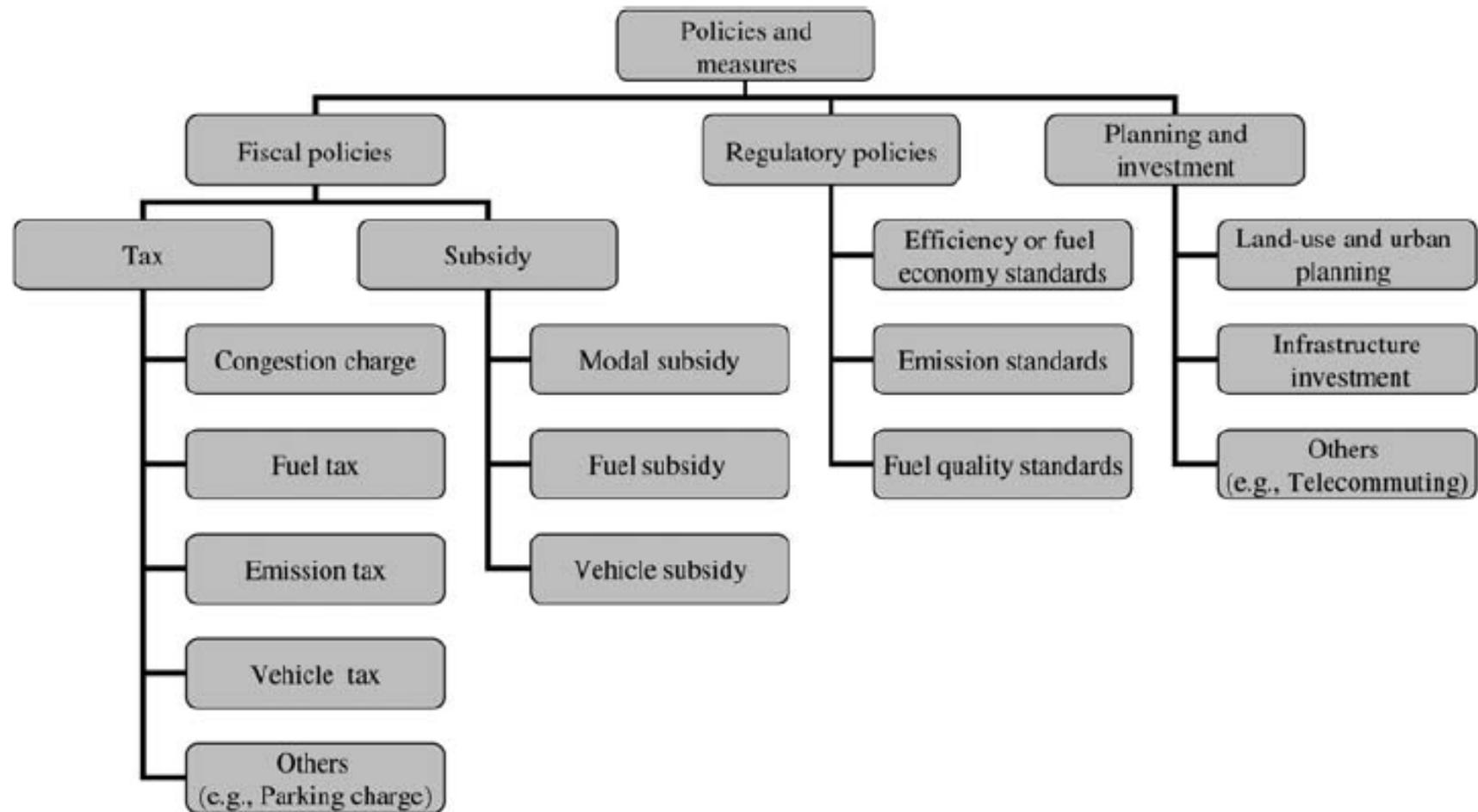


Figure 1. Classification of Policies and Measures to Reduce Urban Road Transportation Externalities



POLICY INSTRUMENTS TO ADDRESS ENVIRONMENTAL IMPACTS OF MOTOR VEHICLES

	Market based incentives		Command and control regulations	
	Direct	Indirect	Direct	Indirect
<i>Vehicle</i>	<ul style="list-style-type: none"> - Emissions fees 	<ul style="list-style-type: none"> - Tradable permits - Differential vehicle taxation - Tax allowances for new vehicles 	<ul style="list-style-type: none"> - Emissions standards 	<ul style="list-style-type: none"> - Inspection and maintenance of emissions control systems - Mandatory use of low polluting vehicles - Compulsory scrappage of old vehicles
<i>Fuel</i>		<ul style="list-style-type: none"> - Differential fuel taxation - High fuel taxes 	<ul style="list-style-type: none"> - Fuel composition - Phasing out of high polluting fuels 	<ul style="list-style-type: none"> - Fuel economy standards - Speed limits
<i>Traffic</i>		<ul style="list-style-type: none"> - Congestion charges - Parking charges - Subsidies for less polluting modes 	<ul style="list-style-type: none"> - Physical restraint of traffic - Designated routes 	<ul style="list-style-type: none"> - Restraints on vehicle use - Bus lanes and other priorities

Urban Road Pricing

A transport policy for charging motorists a fee for using their vehicles within specific areas or on specific roads.

Other names:

- Road user charging
- Congestion charging
- Congestion pricing
- Other specific terms e.g. road tolling, value pricing, variable pricing and peak period pricing

Why road pricing is interesting

- New sources of revenue for transport projects
- Failure of alternative policies to cope with the growth of traffic congestion

SO

- Road pricing is widely accepted as an effective tool for:
 - alleviating traffic congestion,
 - reducing environmental impacts,
 - generating revenue to finance transport improvements
- **BUT** there are a number of barriers in implementation, e.g. questions of public acceptability and practicability.

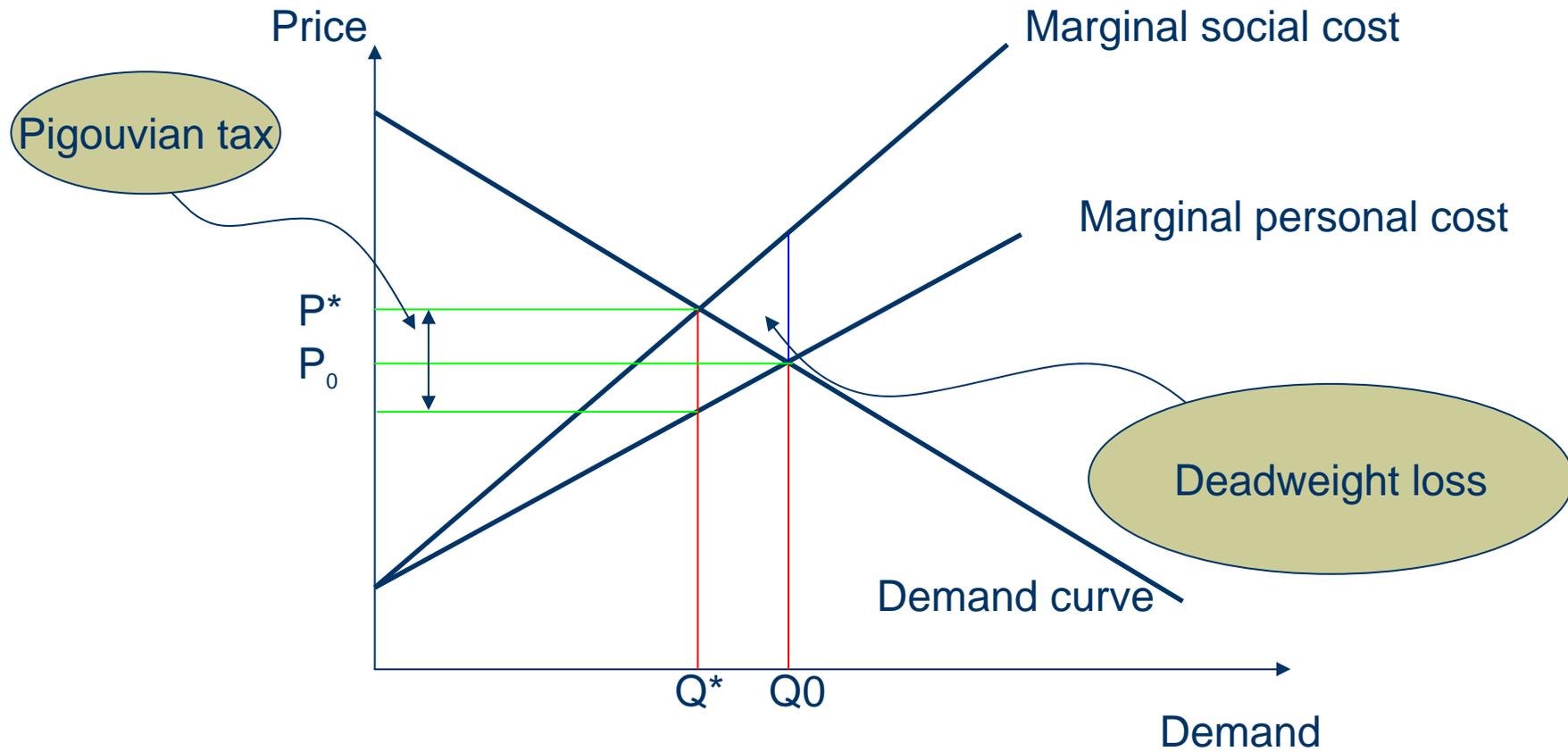
Background (1)

- Adam Smith (1776), a Scottish economist, mentioned the principles of efficient provision of 'public good'
- Dupuit (1844), a French engineer, by using a simple example of the imposition of a toll on a footbridge, demonstrated efficiency of pricing
- Pigou (1920) and Knight (1924) introduced the simple two-road example
- Walters (1954) suggested that "motor taxation should be levied so that the marginal private cost of vehicle operation is brought nearer to the marginal social costs and the degree of congestion on our roads is reduced".

Background (2)

- Vickrey (1955) stated that marginal cost should be concerned in an elaboration of any scheme of prices in order to achieve the efficient utilisation of facilities. He believed that in “no other major area are pricing practices so irrational, so out of date, and so conducive to waste as in urban transportation”
- The Smeed report (Ministry of Transport, 1964), in the UK, was the first full contribution of the theory of road pricing to policy implementation

Economic background



Experiences

- **Implementation**

- In **Singapore** in 1975 - the Area Licensing Scheme (ALS) and replaced by Electronic Road Pricing (ERP) in 1998
- In **Norway** - toll rings were installed to raise revenue
 - Bergen in 1986
 - Oslo in 1990
 - Trondheim in 1991
- In **London** on 17 February 2003

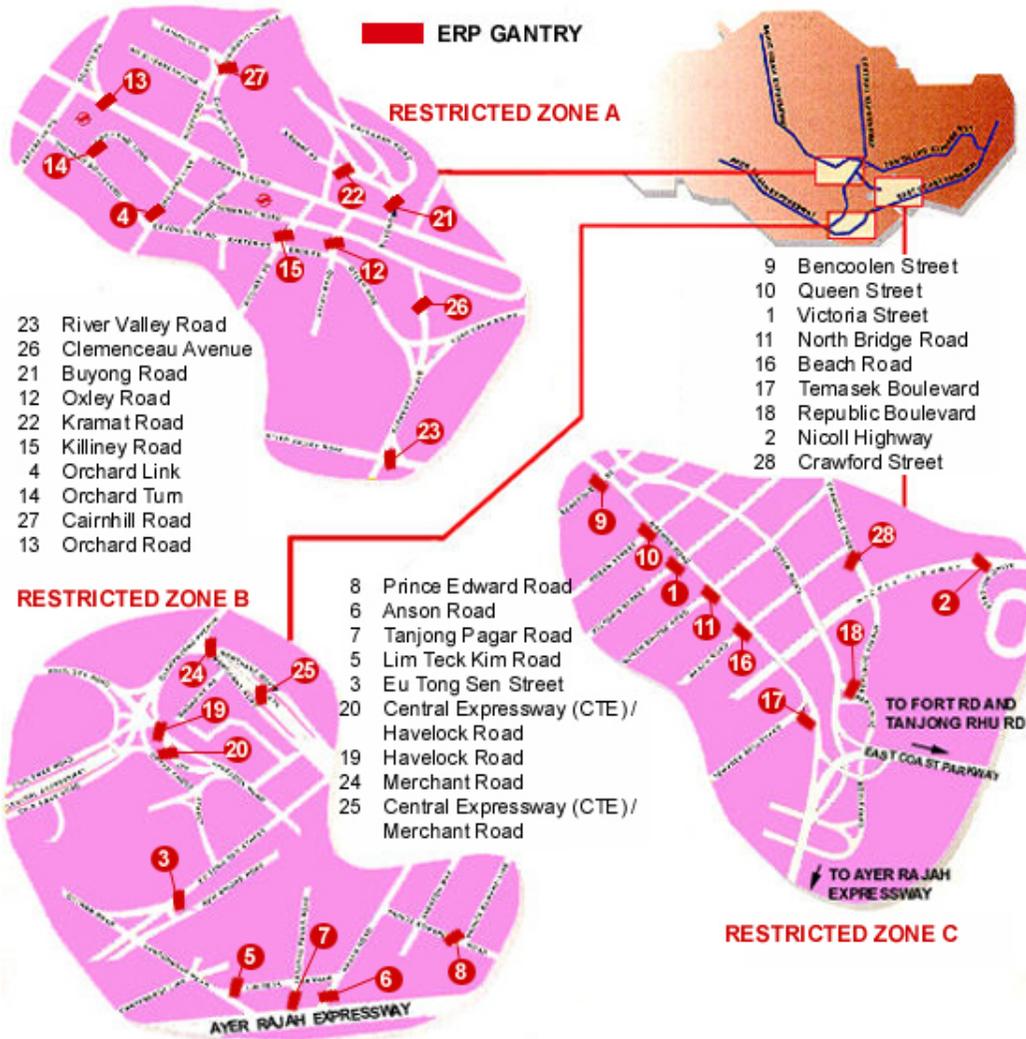
- **Interest**

- Hong Kong, Netherlands, Sweden, USA, AUS, and other cities in Britain e.g. Leeds, Bristol, Edinburgh, Derby, Durham and Leicester

Singapore's road pricing

- Singapore was the first country to introduce urban road user charging.
- the objective was to **restrict traffic** at peak periods into the Central Business District in order to alleviate congestion.
- Initially, the system applied was Area-Licensing Scheme (ALS).
- In 1998, the ALS was replaced by Electronic Road Pricing (ERP).
- The tolls would be varied according to the average speed on the network.
- Prices applied under ERP are subject to maintain traffic speeds of 45-65 km/h on expressways and 20-30 km/h on arterial roads.

Singapore's road pricing



Norwegian's cordon systems

- Cordon pricing schemes
 - Bergen in 1986
 - Oslo in 1990
 - Trondheim in 1991
- The main objective of the toll rings was to **raise revenue** to finance road projects and, to a lesser extent, public transport.
- The scheme was not designed to reduce traffic.
- Nevertheless, some impacts on travel behaviour and traffic volume were found.
- The lesson from Oslo shows that acceptance has increased over time after implementation.

London Congestion Charging

Started on 17 February 2003

Objectives

- reduce traffic congestion
- increase journey time reliability
- decrease of air pollution

London Congestion Charging



See Transport for London Web site
(www.tfl.gov.uk)

- Bounded by the Inner Ring Road
- 7am-6:30pm, Mon.-Fri. excluding Public Holidays
- £5 per vehicle per day (£8 from 4 June 2005)
- Discount for e.g. residents who live in the zone, disabled people, taxis, coaches and minibuses
- Exempt for e.g. emergency services on behalf of the NHS, police, fire, ambulance

London Congestion Charging

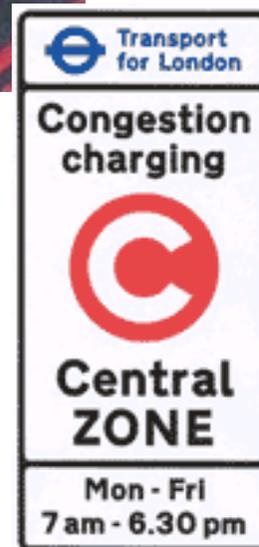
Impacts

- 15 % traffic reduction
- 30% congestion reduction
- 12% pollution reduction (NO_x, PM₁₀)
- Journeys had become more reliable
- Buses significantly gain in reliability
- Substantial reductions in road traffic accidents
- No evidence that increased average traffic speeds have had any noticeable effect on the severity of casualties
- No evidence of any significant adverse traffic impacts from the scheme outside the zone

London Congestion Charging

Impacts

- Neutral impact on the economy of central London
- Small Impacts on individual business sectors, including retail
- Around £50 million of net transport benefit for the first year, mainly through quicker and more reliable journeys for road and bus users.
- Net revenue for the first year is about £68 million and over £90 million in 2004/5, which have been spent largely on improved bus services
- 68 percent of respondents said that they had gained overall from the scheme or that it had made no difference to them.



Making road pricing work

- Existing situation--congestion and pollution must be bad enough.
- Benefits and objectives
- System characteristics
- Revenue allocation
- Equity issues
- Alternative means of travel
- Technology
- Communication and marketing strategy

Prospects and challenges

- Solutions are staring us in the face
- Prospects for implementation – bleak (things will get worse before they get better)
- Challenges – formidable
- Disconnect from reality – policymakers, planners
- Conference reality vs. real life