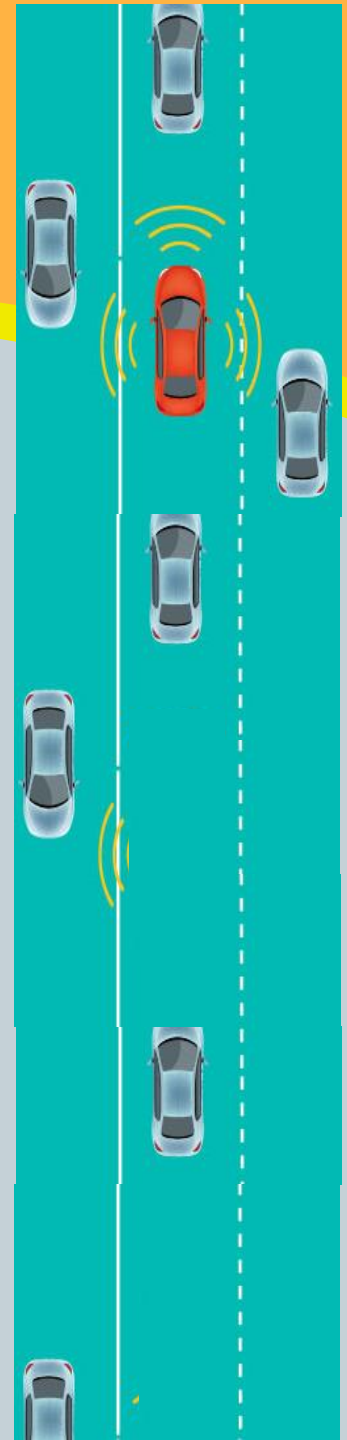


ROAD PRICING

A TRAVEL DEMAND MANAGEMENT TOOL



Structure

- Context
- Policies
- Indian Practices
- Issues
- International Case Studies
- Lessons learned
- Suggested Framework at National, State and City level

Context

Road pricing is a general term which may be used for any system where the driver pays directly for use of a particular roadway or road network in a particular city, region or nation.

Road Pricing can be implemented at various scales:

City

Area

Corridor

Facility



Electronic Road Pricing Gantry at North Bridge Road, Singapore



Congestion Pricing zone in London

Types of Road Pricing

High road taxes

Area / congestion/
corridor pricing

Distance-based
charges

Fuel based tax

Priced parking and
time limits

Unbundled parking

Parking taxation on
building in
commercial and
institutional areas

Emission fee based
on fuel used



Need for Road Pricing

- ❖ Increase in usage of private vehicles in India
- ❖ Falling share of pedestrians, cyclists and NMT users
- ❖ Decline in usage of Public Transport
- ❖ Alarming Environmental issues

Therefore, in order to control it, an innovative method of Travel Demand Management like Road Pricing

Benefits

Less traffic jams

Additional revenue generation

Shift towards sustainable modes of transport

Minimize consumption of fuel

Positive effects on the economy

Reduction in pollution

Policies

- National Urban Transport Policy, 2006
- National Transport Development Policy Committee

‘Avoid, Shift and Improve’

12th Five Year Plan (2012 – 2017)

1. **Transport Demand Management:** congestion pricing, parking fee and transit tariff.
2. **Control of Personal Motorised Vehicles:** Economic instruments
3. Suggestion- **Pilot schemes** to reduce the use of personal motorized vehicles should be taken up by MoUD/IUT

Advisories by MoUD:

1. ***Introduction of Congestion Charging in Central Business Areas / Congested Areas in Indian Cities***
2. ***Reserving a lane for public transport/high capacity bus system/high occupancy vehicles on all new road links or widened roads***

Indian Practices

Odd – Even



Parking District Management

Parking Charges

Road Toll

NMT Policy

Major Issues

- ❑ High Vehicle registration
- ❑ One time vehicle tax
- ❑ Minimal vehicle tax
- ❑ Inadequate public transport availability
- ❑ Encroachment on roads
- ❑ Lack of enforcement
- ❑ High rate of accident
- ❑ Inadequate Parking



International Case Studies

Stockholm

Scheme: congestion charges (around inner city), 2007

Population : 1.252 million (2007)

Density : 3313 person/ km²



Area of zone: 21 km²
Inhabitants : 330 000

Timing: 7:30-8:30 &
16:00-17:30



Charge: SEK 20 (during charge timing)
SEK 15 (Shoulder timing 30 mins)
SEK 10 (other time 6.30 – 18.30)

Results:

- 22% reduction across the cordon during the charged period
- Reduced traffic through the bottlenecks located at the arterials road leading to the inner city



Stockholm congestion charging control area, Porön TX Square

Singapore

Scheme: congestion charging

Population : 3.92 million (1998)

Area Licensing Scheme (1975-1998)

- CBD Area – 2 sq. miles
- Timing: 7.30 – 9.30 am (10.15 & all day) & then to PM peak hrs.

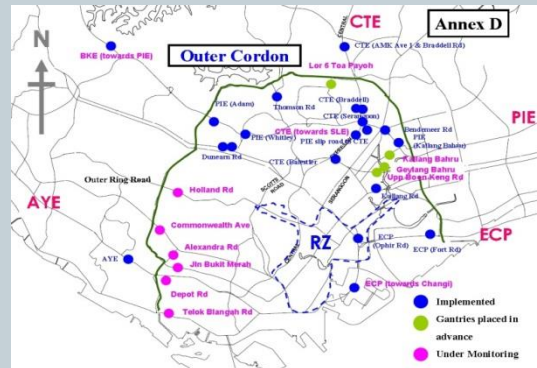
Improvements:

- New Park-and-Ride lots
- Shuttle service into the RZ
- Expanded bus service (33% increase)
- Decrease of 30% in RZ parking rates.

Charge: US\$1.30 - 2.50 (US \$1.50 during rest of the time.)

Results:

- Traffic entering RZ reduced by 44%,
- Speed increased from 15-18KPH to 30 KPH
- PT share 33-69% (AM peak, 1976-1983)



Electronic Road Pricing (ERP) (1998 - Ongoing)

Timing: 7:00 AM to 7:00 PM (RZ)

7:00 AM to 9:30 AM (Express

way and some arterial streets)

Charge: Vary by location, time-of-day and vehicle type

US \$ 0 - 2.00 (RZ)

US \$ 0 - 4.00 (Express way)

US \$ 0 - 0.80 (arterial streets)

Results:

- Traffic entering RZ reduced by 24%,
- Speed increased from 30-35KPH to 40-45 KPH

Milan

Scheme: congestion charging – Area C (Eco-pass from 2008)

Timing: 7:30- 19:30

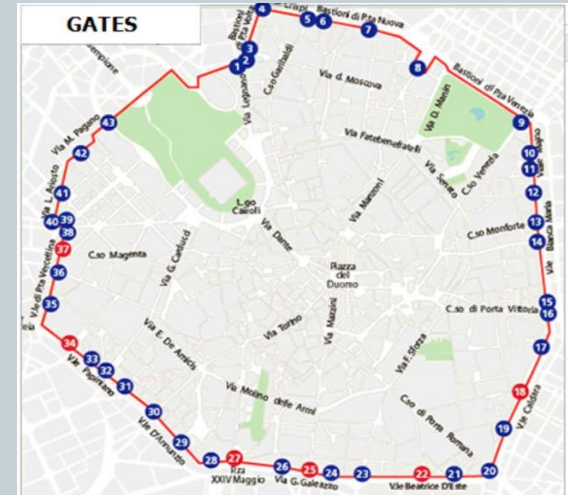
Population: 1.3 million

Density : >7000 persons/ km²

Infrastructure Development for the scheme:

- Doubling the metro network,
- New bus lanes,
- Financing car sharing and
- Cycle paths etc.

Charge: SEK 20 (peak hours)
SEK 15 (Shoulder timing 30 mins)
SEK 10 (other time 6.30 – 18.30)



Results:

- 35% diverted to other roads,
- 17% changed to cars exempted the fee,
- 48% changed to public transport.
- Road accidents were further reduced by 23.8% in 2012 with respect to 2011.

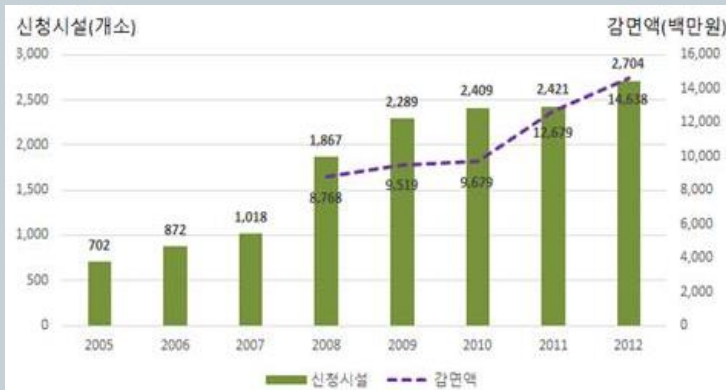
Class	Daily Charge (€)
Class 1	free
Class 2	free
Class 3	€ 2
Class 4	€ 5
Class 5	€ 10

Seoul

Scheme:

1. The Congestion Impact Fee System
2. TDM Policy for Companies
3. Congestion Charge at Namsan Tunnel 1 & 3
4. Parking Threshold
5. Priority for Pedestrians in Urban Transportation Policy

1 & 2. Impact fee system:- 350 or 700 KRW /m² of floor area (above 1000 m²)



Companies Participating in the TDM Program



Parking Threshold Zones in Seoul

3. Timing:- 7:00 – 21:00 (weekday)
7:00 – 15:00 (Saturday)

Charge:- 2000 KRW

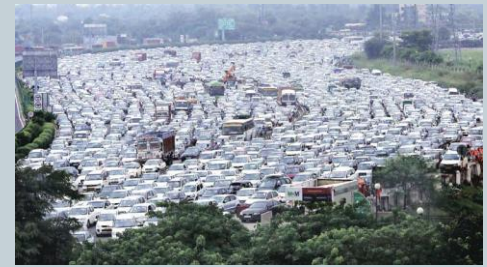
Revenue: KRW 105.542 billion (2013)

Results:

- Improved air quality
- Increased average travel speed
- Share of personal cars decreased
- Increased share of public transport

Lessons Learnt

- Road pricing strategies are integrated with other schemes
- Strategies modified with the changing transport scenario
- Provision of NMT infrastructure promote modal shift
- Restriction of personal vehicle in institutional level.
- Political and people support necessary for executing the scheme
- Revenue generated through road pricing to be re-invested in Urban Transport
- Necessity of the system to be communicated clearly through awareness programme.



Road Pricing Policy Structure

Background

Review the city transport characteristics

Identify Issues

Structure the type of road pricing required based on location, area, population, density, traffic flow, etc.

Provide alternate route or transport facility to the location / area identified for the road pricing scheme

Fare mechanism

Operation & Maintenance Cost

Institutional Setup

Revenue Generation Mechanism

Environmental benefits

How to achieve Road Pricing

- **Political**

- Education and awareness
- Regulatory framework



- **Legal and enforcement**

- Creation of UMTAs
- Identification of enforcement issues

- **Resource availability**

- **Public acceptance**



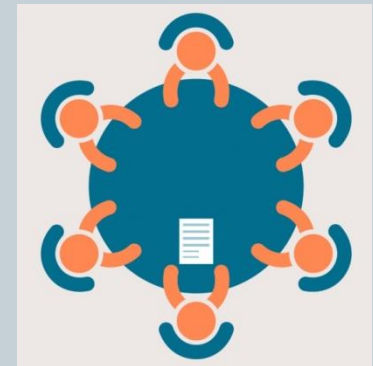
Role of Stakeholders

Central government – a national level policy to be made which could be followed by states, Set the legal basis for allowing road pricing and Financial Support



State government – a policy document on how cities could plan for Road Pricing, roles and responsibilities of various authorities, funds allocation and revenue generation.

City authority – detail study of existing scenario of the city and strategies to be implemented.



Transport operators - provide services to enable access to areas affected by the pricing scheme.

Road Pricing Strategy – Implementation Mechanism



Identification of potential Strategies

		City level	Area level	Corridor level	Employer level
Short term	Parking Management				
	Control Parking passes				
	Access Management				
	Flexi time				
	Higher parking charges for single occupancy vehicles				
	Subsidized transit by employer				
	Fuel tax				
	Ride sharing program				
medium term	Low emission zone				
	Vehicle Use Fees - Distance Based charge				
	Distance-Based Emission Fees				
	Congestion pricing				
	Higher parking charges				
	Priority to public transport at signal				
	Regulate parking use				
	Unbundled parking				

		City level	Area level	Corridor level	Employer level
medium term	First Registration tax				
	Park and ride				
	Tax parking facilities				
Long term	Vehicle related taxes				
	Energy efficiency tax on vehicles based on their fuel consumption rates				
	Annual vehicle license fees				
	Incentives to clean/alternate fuel vehicles				
	Segregated lanes				
	Preferential parking for HOVs				
	Priority to HOV at signal				
	Pay-As-You-Drive Vehicle Insurance				
	HOV Lane				

Screening of potential Strategies

Advantage

- congestion Reduction
- Reduced emissions
- Better livability
- Energy conservation
- Parking management
- Improvements in health
- Improvements in road safety

Ease of implementation

- Low capital cost
- Availability of resources
- Low maintenance requirement
- Presence of institutional mechanisms to implement the proposed strategy

Public acceptance

- Positive perception
- Can be accepted after creating public awareness
- Negative perception

- Set potentiality of the strategies (high / medium / low)
- Score it according to Benefit, Ease of Implementation and public acceptance

Assessment of potential Strategies

- ☐ Reduction in vehicle trips
- ☐ Reduction in travel time
- ☐ Reduction in greenhouse gas (GHG) emissions
- ☐ Improvement in liveability
- ☐ Savings in parking space and cost
- ☐ Savings in road space
- ☐ Reduction in fuel consumption
- ☐ Reduction in road accidents
- ☐ Improvement in mobility
- ☐ Improvement in accessibility
- ☐ Revenue returns
- ☐ Affordability
- ☐ Cost/resource/requirements
- ☐ Issue/ challenges

Conditions for Implementation

Legal framework

taxation system

Political support and campaign

Reuse of revenue

Availability of alternative modes of transport.

Agreement on scheme objectives

Resource availability for implement the scheme

A single agency to implement the scheme



- What are the most feasible strategies
- Any cities looking to take them up?
- What are the key barriers in adoption-i.e. technology, capacity, inter-agency co-ordination?
- Responsible authority for road pricing (Central/ state/ city authority)?
- How can IUT/ MoUD help?



Thank You