

# Urban Transport in Asia: Towards Climate Change Mitigation



**Jamie Leather**  
**Asian Development Bank**  
**4th Regional EST Forum in Asia**  
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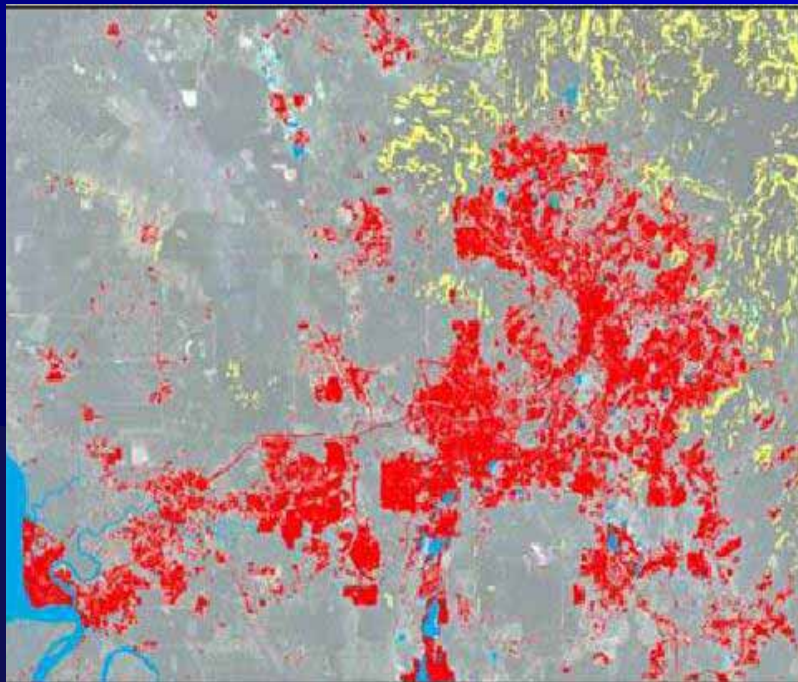
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# Urban Expansion

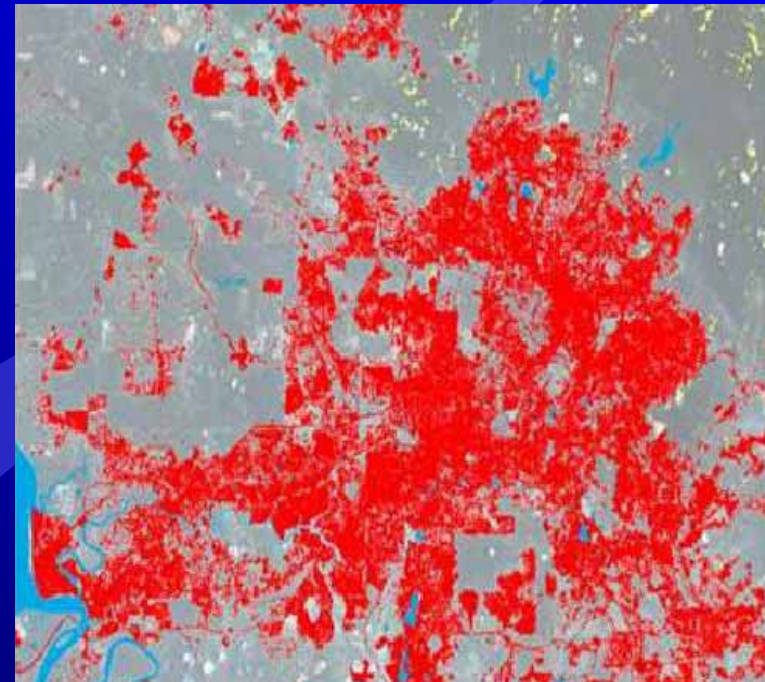
## The evidence

### Kuala Lumpur

- Built up area doubled (1989-2001) 385 to 805 sq km
- Population increase 2.7 to 5 million
- Density decrease 7,130 to 6,160 per sq km



1989



2001

DB

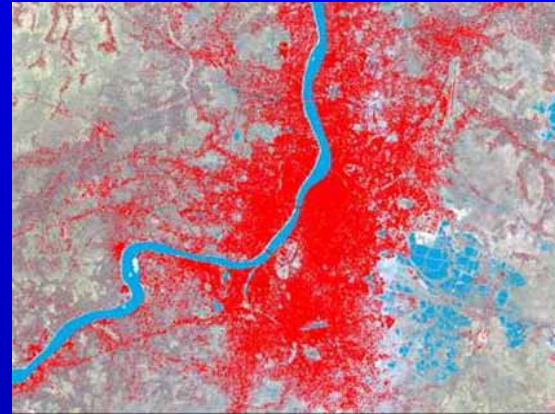
# Urban Expansion The Future

## Kolkata

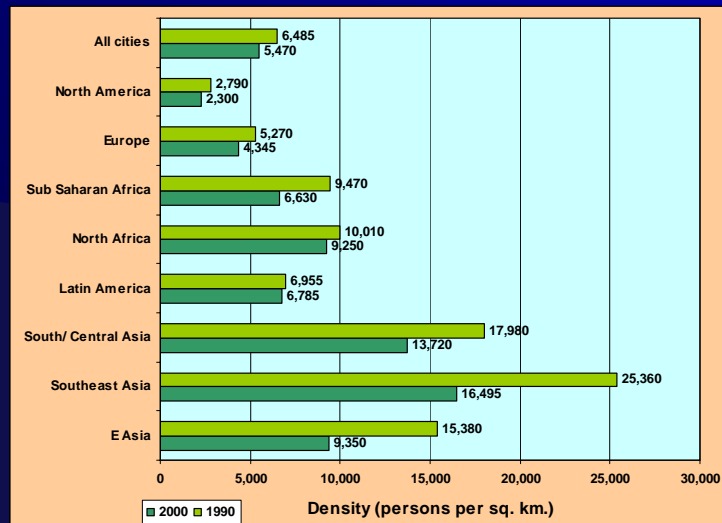
- Pop: 7.8 million
- Density 16,200 per sq. km
- Built up area: 480 sq. kms

If

- Density decrease (3,000/sq.km)
- Population increase



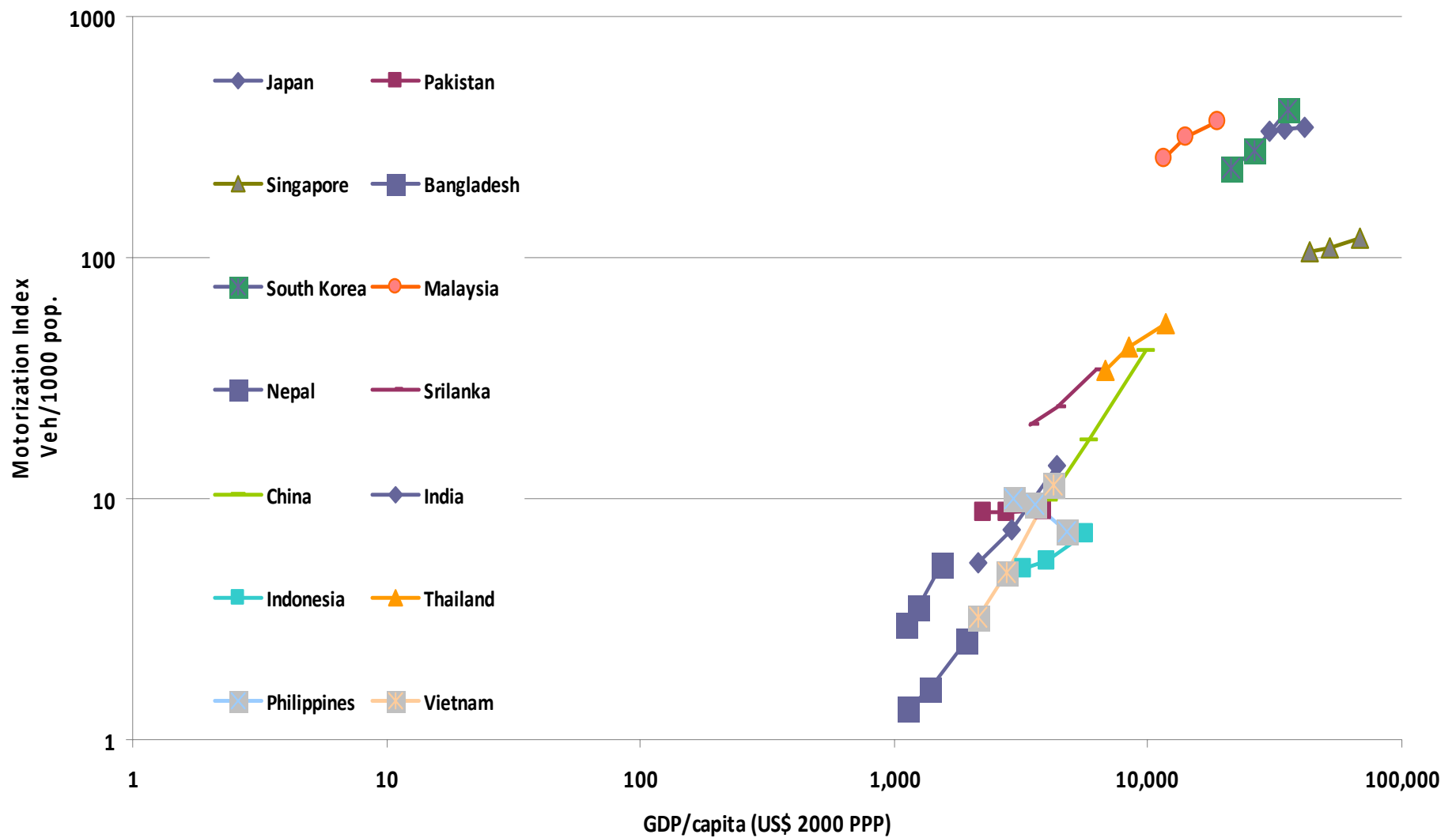
What transport systems are planned for this expansion?



Source: Angel 2005

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# Motorization



“We are nourishing at immense cost a monster of great potential destructiveness, and yet we love him dearly.”

## The motor car

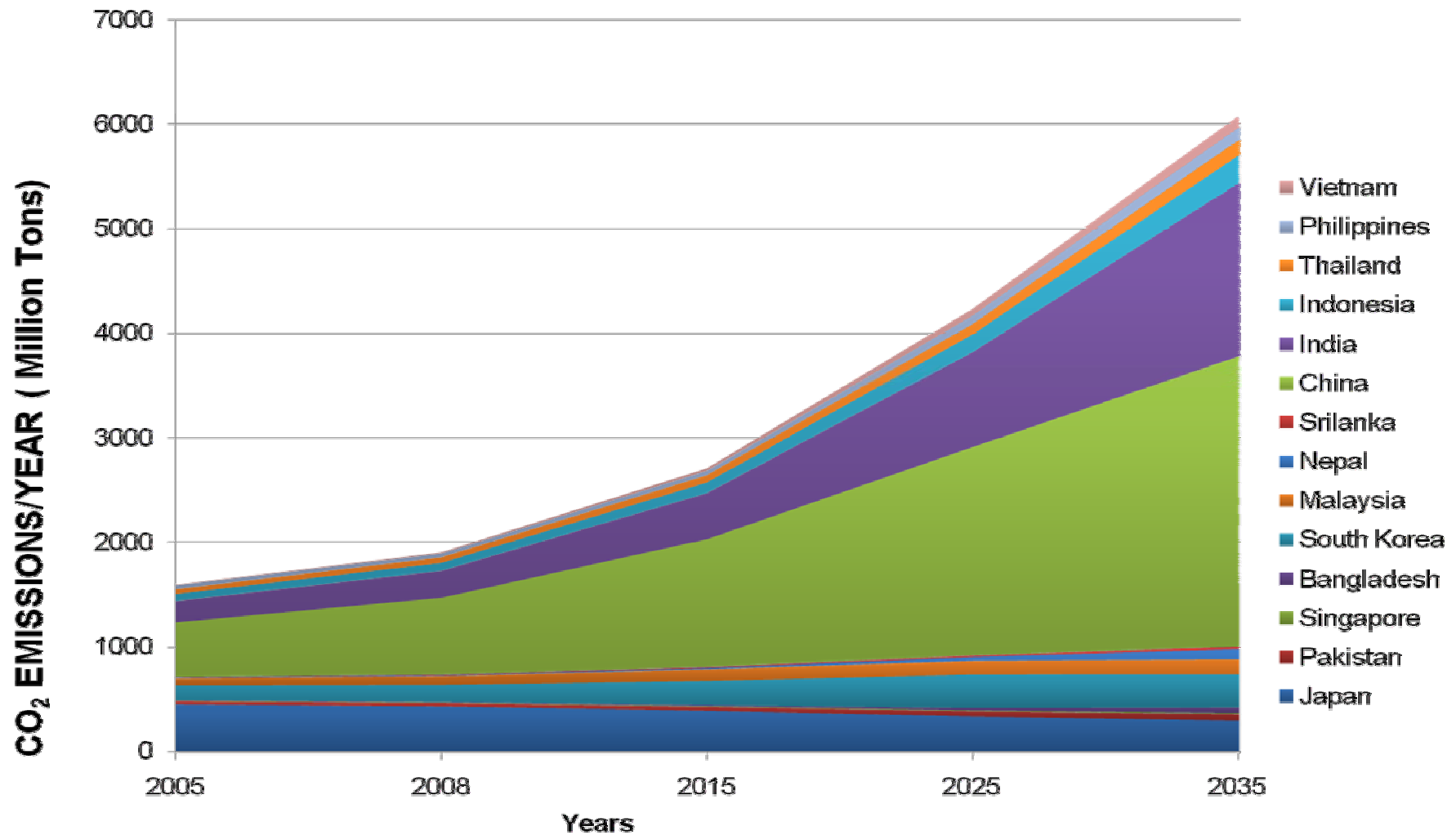
Professor Sir Colin Buchanan

Traffic in Towns

Penguin Books in association with HMSO (1963)

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# Transport CO2 Emissions in Asia



# Increasing Transport Energy Use

Energy Use	=	Number of Vehicles	x	Utilization	÷	Fuel Efficiency	x	Fuel Energy Intensity
KJ		units		km/yr		km/L		KJ/L

China: 6 - 9% per year

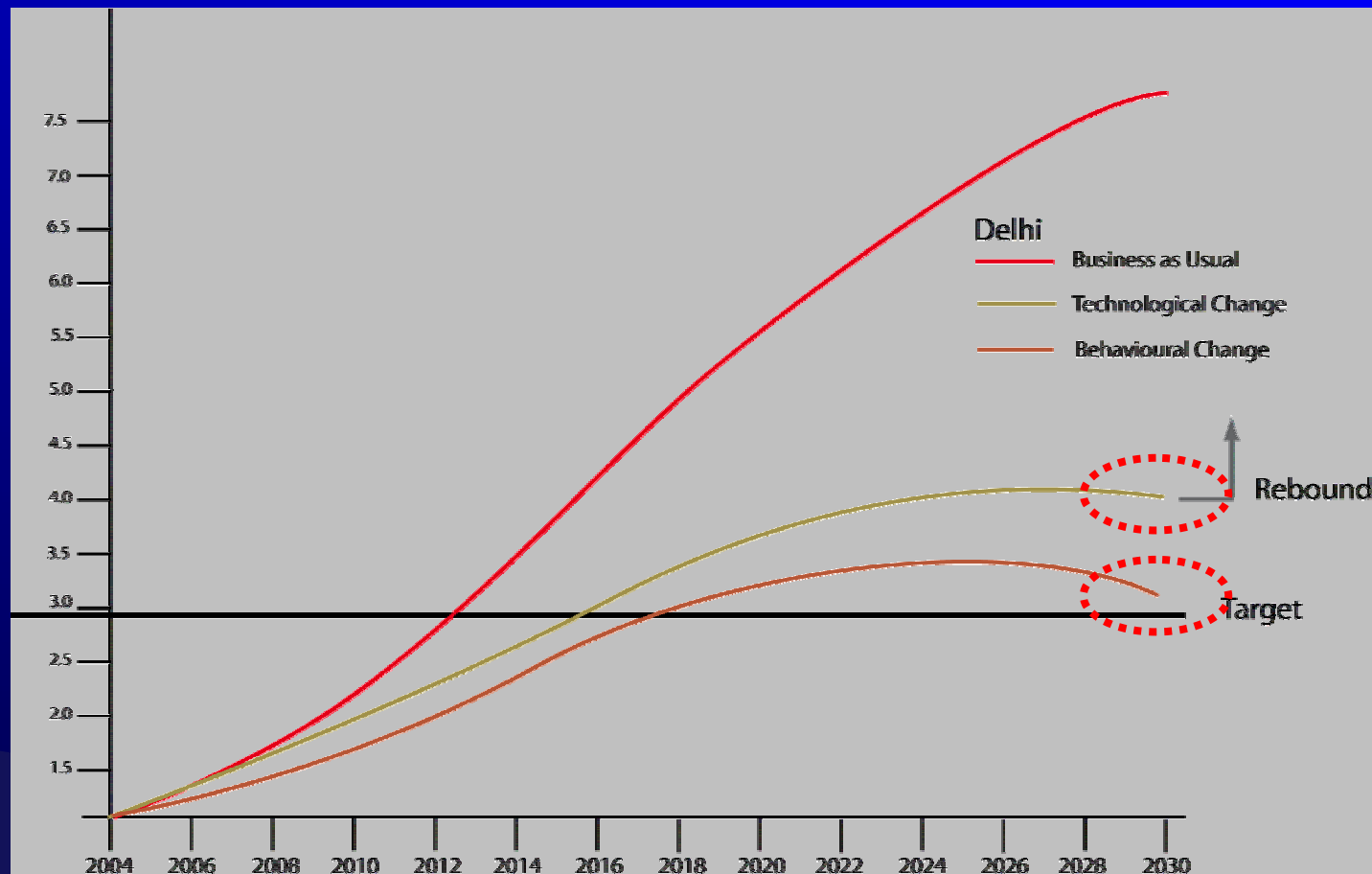
India: 5 - 8 % per year

6% per year  
for 20 years is  
over 300% !!

Emerging Asia will demand 45% of  
the total world increase in fuel use

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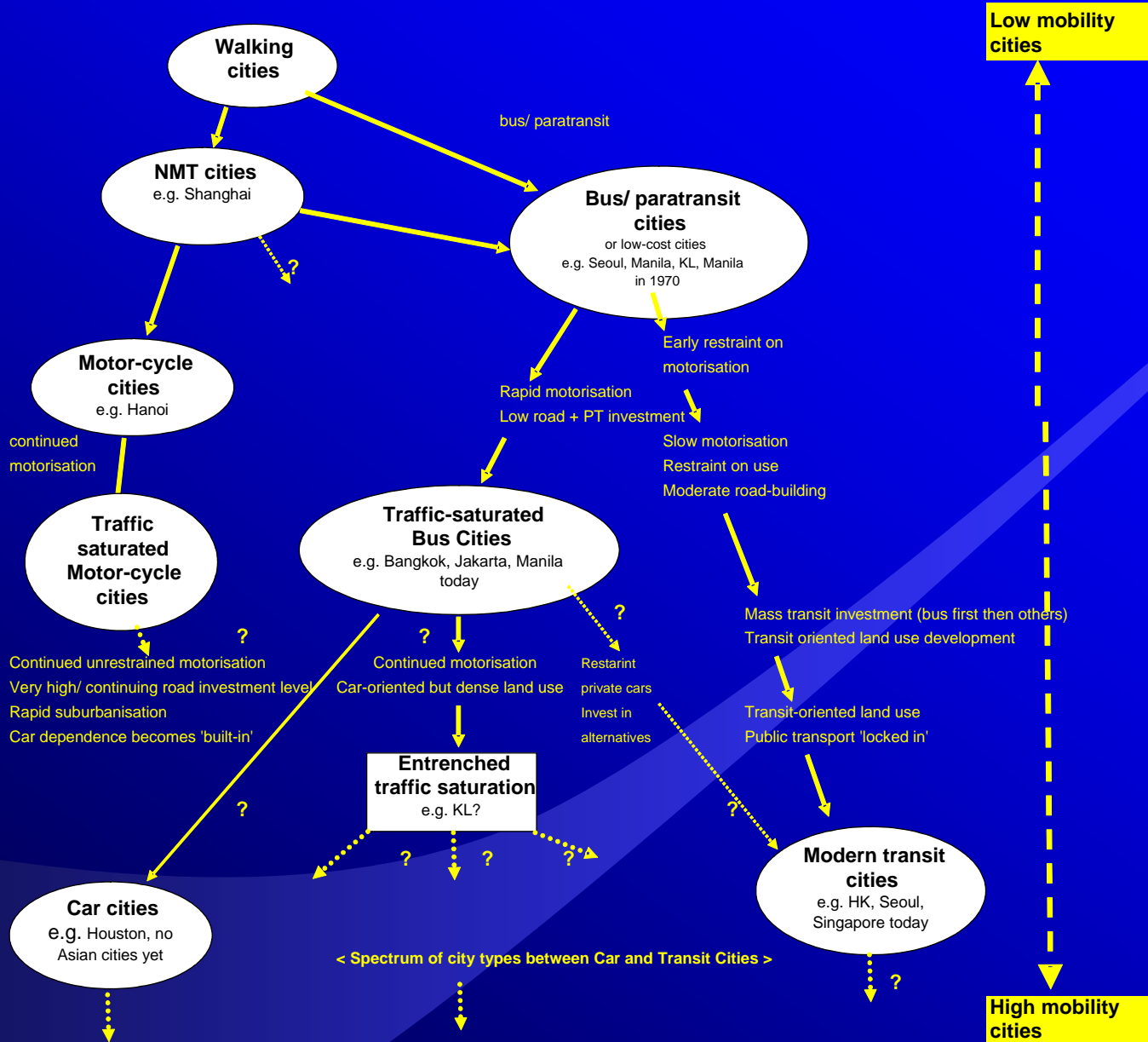
# Delhi Transport





Private modes dominate

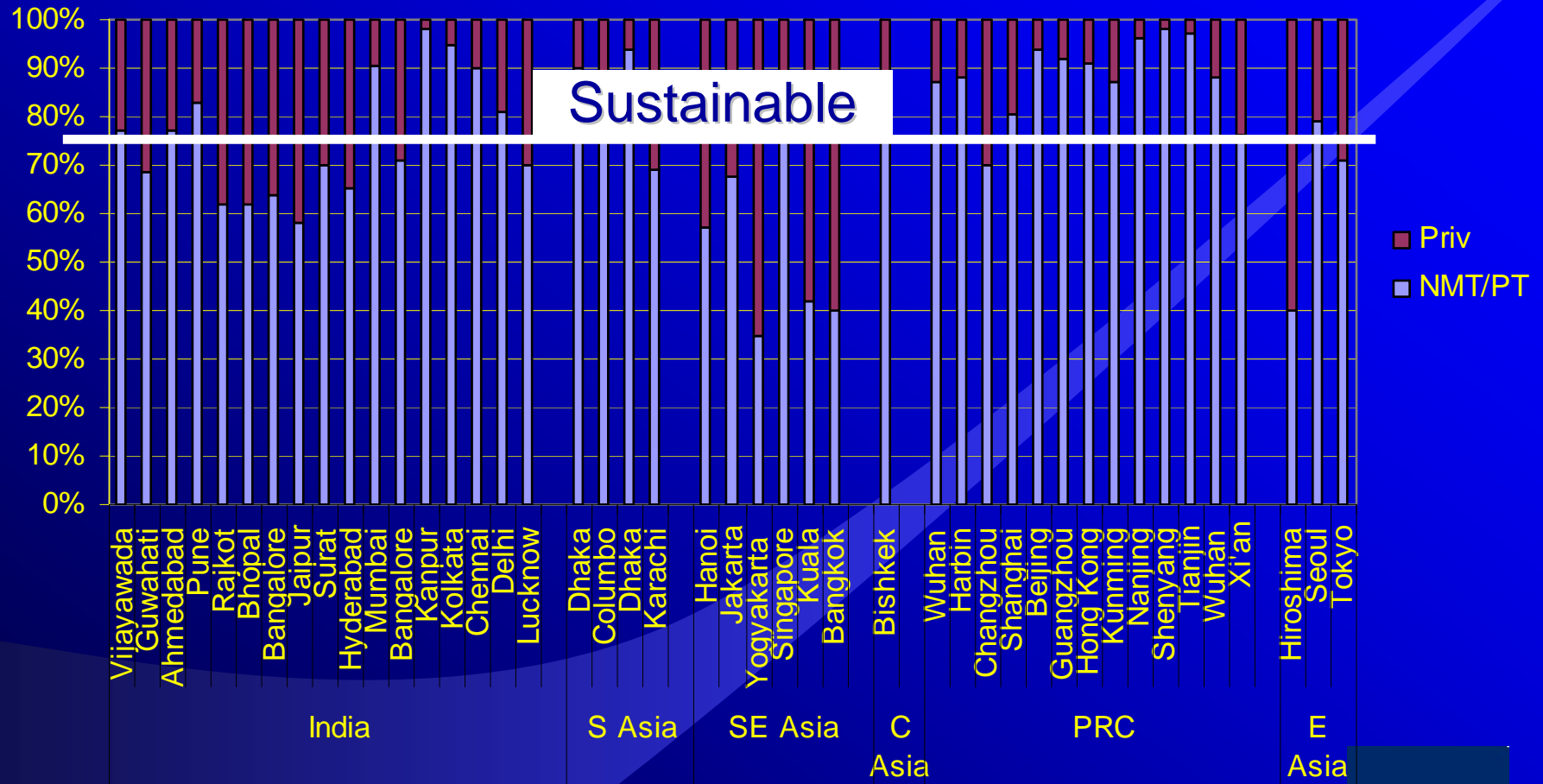
Public modes dominate



Note Shows intended or potential transport development paths for developing cities  
 Source: Barter, 2004  
 Key: ??? - empirical evidence to date unclear



# Asian City Transport Mode Share



# ADB Transport Sector

ADB is aligning its transport portfolio to focus on sustainable transport:

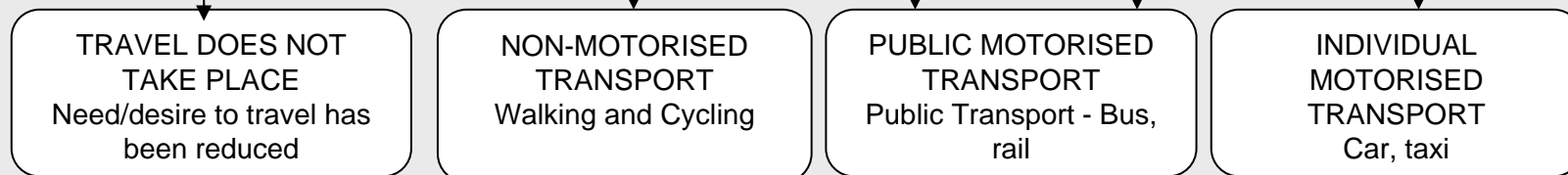
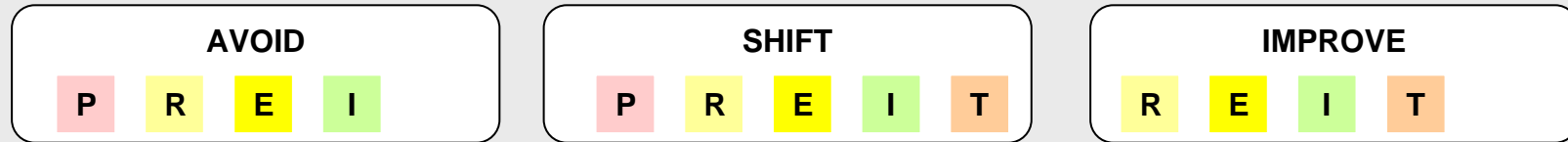
- i. road sector (inter-urban and rural roads)
- ii. urban transport (pedestrian, nonmotorized, public transport, missing road links, fiscal/physical restraint of private vehicles, equitable allocation of road space, fleet renewal, TDM, TOD)
- iii. long distance transport (integrated systems: road/rail/waterways)
- iv. policy/advisory assistance on environmentally sustainable and energy efficient transport (land-use, vehicle/fuel technologies, integrated transport systems)

**New Paradigm**  
**Manage demand to supply**

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# Sustainable Transport Strategy Responses

## POTENTIAL STRATEGY RESPONSES – REDUCING GHG EMISSIONS

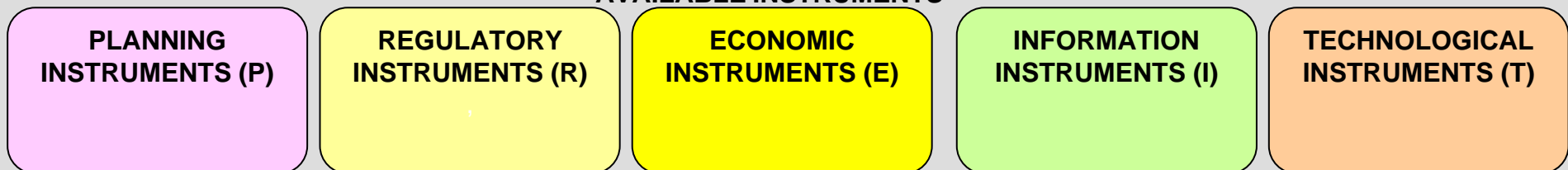


*Decision to travel or not to travel and by which mode affects fuel consumption, and therefore carbon emissions -*

*Number of vehicles, level of congestion, driver behaviour, vehicle condition, fuel type*

**Carbon Emissions**

## AVAILABLE INSTRUMENTS



# Avoid the need for travel

- Integrated land use planning
- Smart growth
- Transit Orientated Design
- Behavioral changes

# Shift to sustainable transport

## Promote

- NMT (pedestrian, cycle)
- integrated PT systems
- inclusive road space allocation

## Manage

- private vehicles (physical and fiscal)
- parking
- user pays full costs

# Improve Vehicle, Engine and Fuel

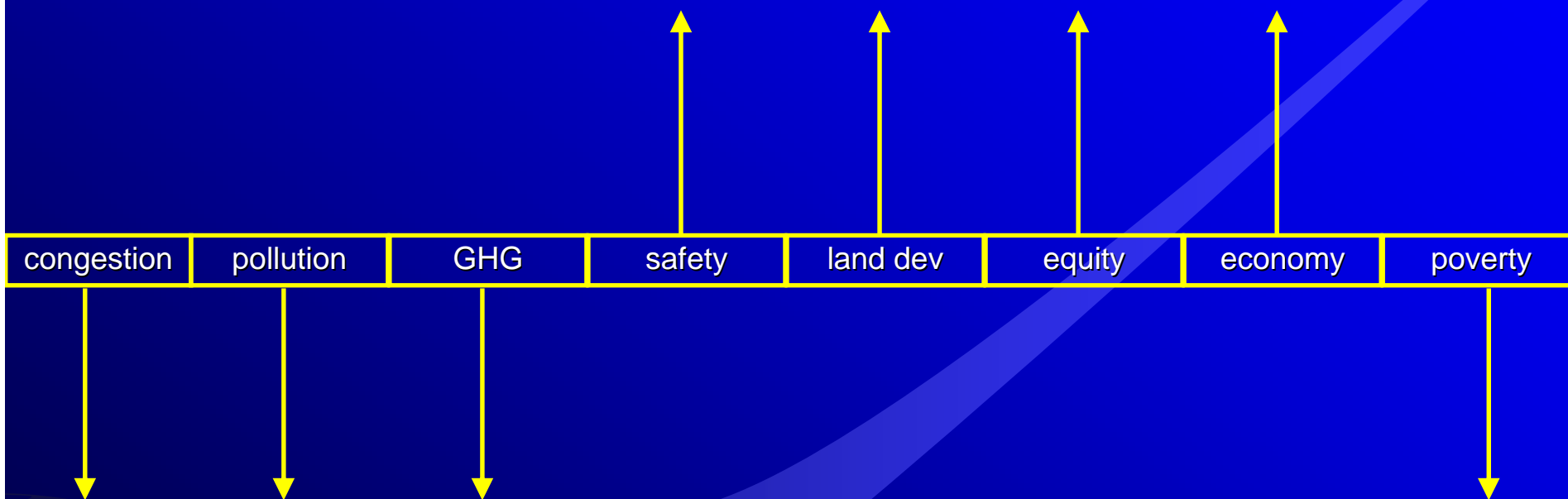
- Promote new vehicle technologies
- Vehicle emissions “world-wide” standards
  - Zero implementation lag in Asia
  - Increased Asian leadership for 2-wheelers
- Vehicle inspection programs rigorously enforced
- Cleaner fuels and sustainable biofuels

# Transport options co-benefits

	Pollution	CO <sub>2</sub>	Congestion
<b>Improve - reduce emissions per kilometer</b>			
Technology/ vehicle change	+++	++	?
Behavioral change (Fleet mng, driver training)	++	+	+
Fuel-switch (CNG, LPG, biofuels)	++	?	?
<b>Shift - reduce emissions per unit transported</b>			
Passenger transport:			
Mode switch	+++	++	+++
Usage of larger units	+	+	++
Improved occupation rates	++	++	++
Freight transport	++	++	++
<b>Avoid - reduce number of trips</b>			
Land-use – Behavioral change	+++	+++	++
TDM/TOD	++	+++	++



# Holistic Co-benefits



Asian City Transport - ACT, act now

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# Thank you

Jamie Leather  
Asian Development Bank  
[jleather@adb.org](mailto:jleather@adb.org)

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