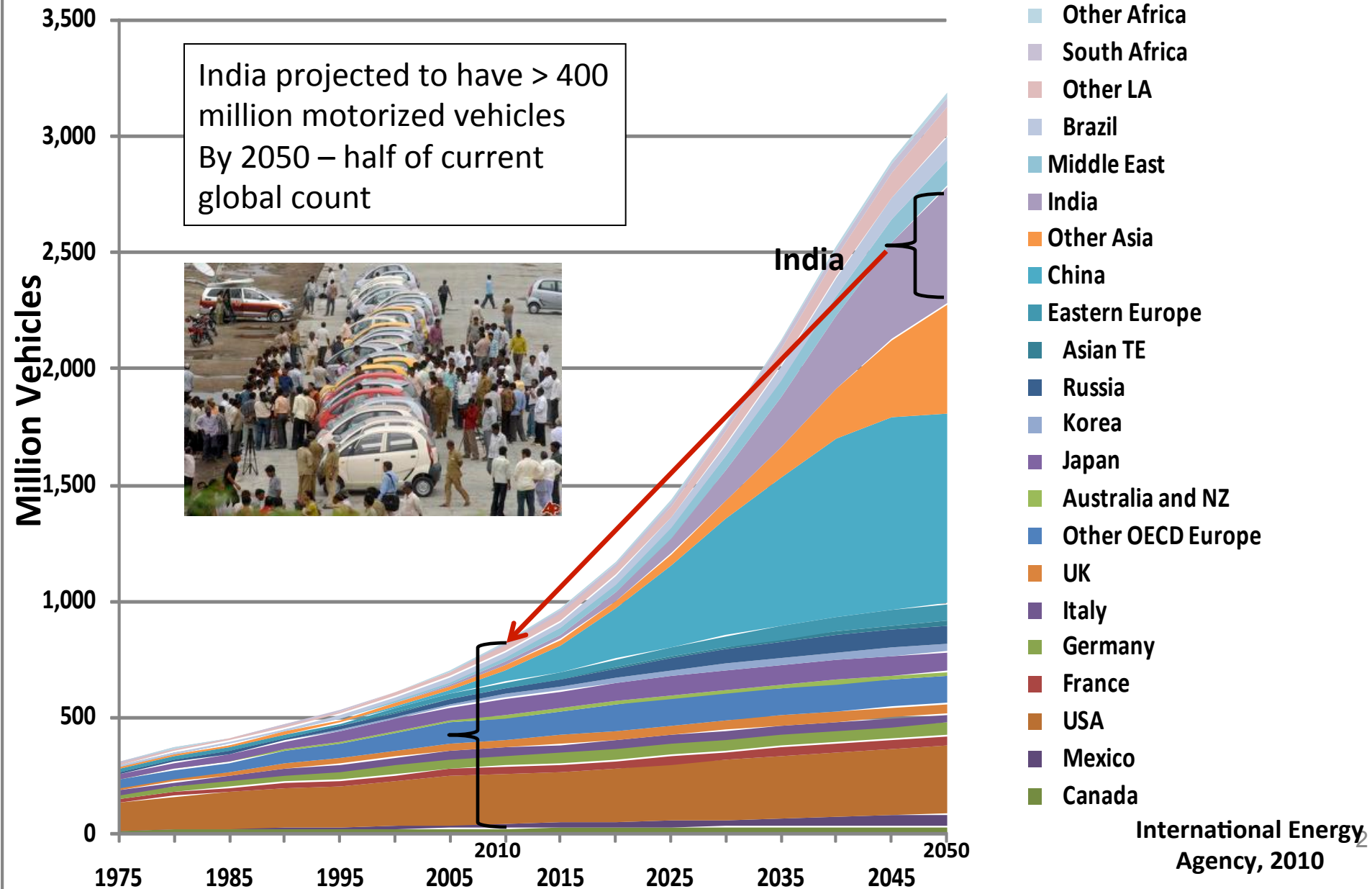


# Public Transport Challenges in Rapidly Urbanizing Cities

Robert Cervero



# Global Vehicle Ownership Projections



# Transport & Motorization

- **Traffic congestion:** bottleneck to economic growth, lowering GDP by 3.5% to 7% *<time loss, energy waste, accidents>*
- **Externalities:** adding unwanted by-products (local & global pollution) raises to 6.5% to 12% of GDP



# Public Transport (2% vehicles; >50% motorized trips)

## ■ Poor public transit

- Road-based services get stuck in traffic
- **Public monopolies:** shortages of buses; overused; old, tattered vehicles; shortages of spares; overheat in hot climates; low wages = poor morale; staff shortages



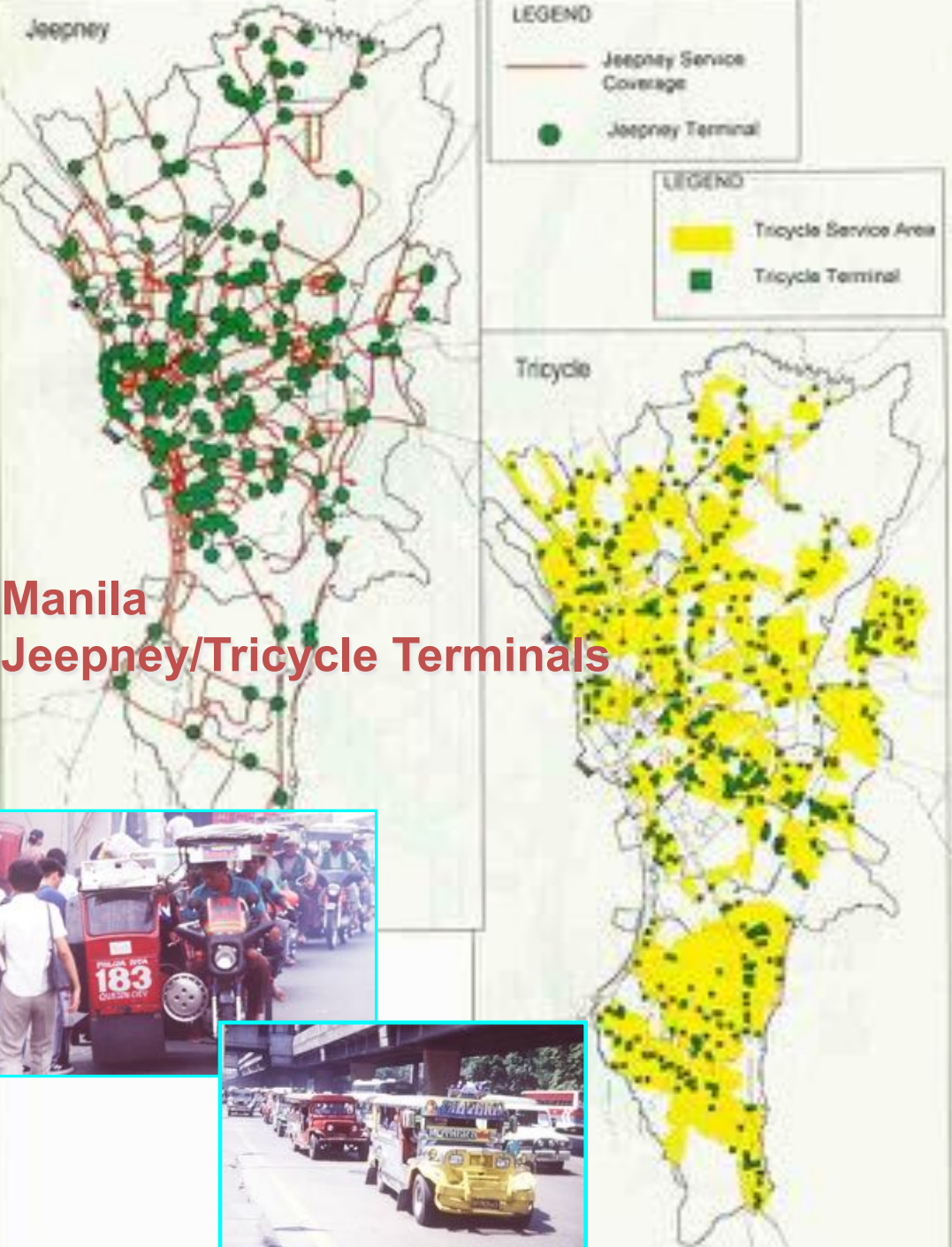
## ■ Paratransit/Informal transit as gap-fillers

- Unregulated/minimally regulated
- Labor surplus leads to oversupply/over-competition
- CON: Source of congestion, pollution, safety problems
- PRO: Source of employment, access, and service-price choices

# Costs: The Collective Action Dilemma



# Providing Terminal Staging Areas



**Manila  
Jeepney/Tricycle Terminals**



**Fortazela, Brazil  
Motor-Taxi Terminals**



**San Juan, Puerto Rico  
Off-Street Terminals**



# Urban Planning Matters: Transit/Land-Use Integration



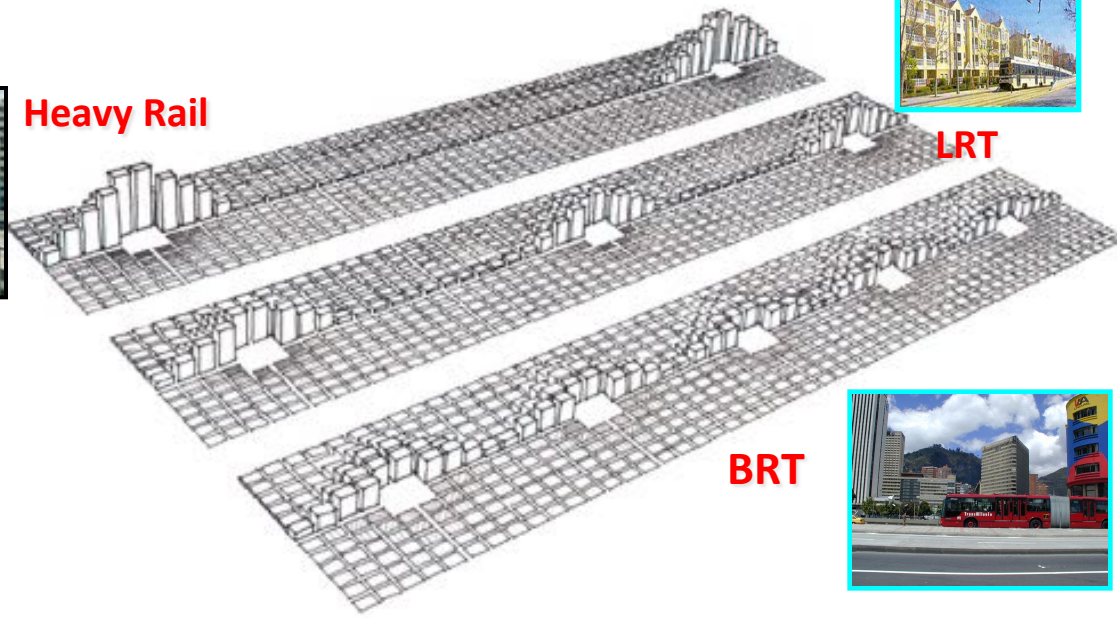
Population	
3 mill.	16 mill.
Transit Trips/ Capita	
355	330



**Heavy Rail**



**LRT**

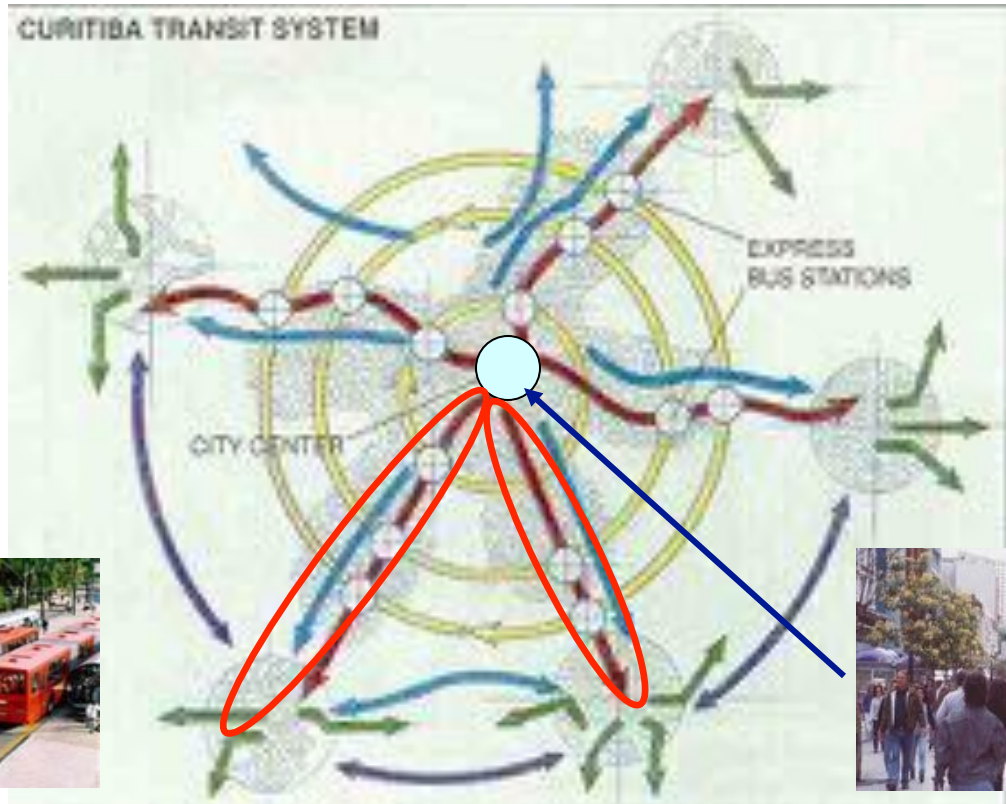
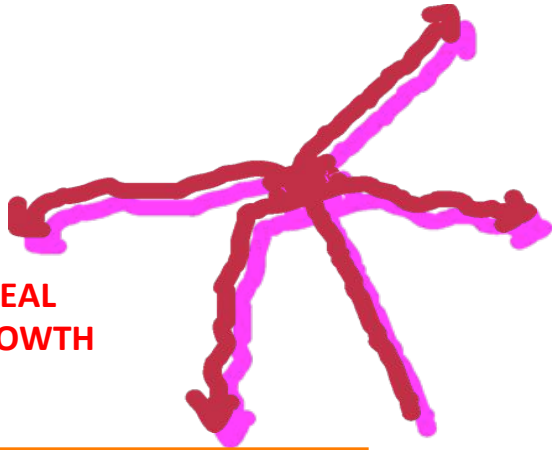


**BRT**



# Curitiba: Cities for People

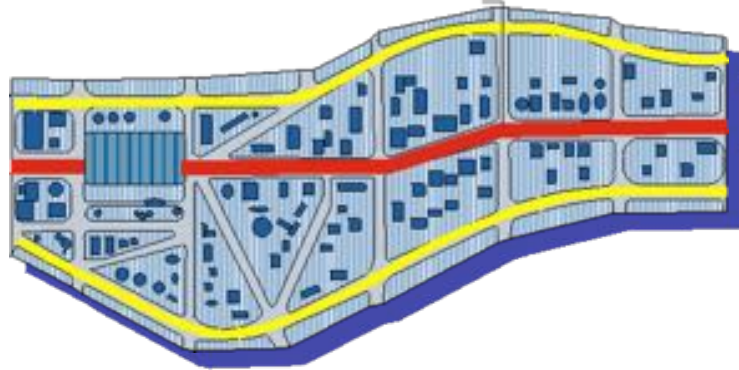
LINEAL  
GROWTH



**Trinary: High Rise Mixed Use Corridors**





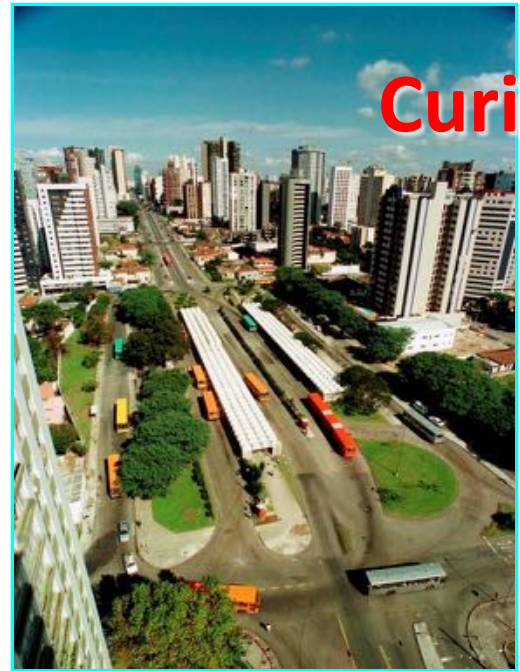


# Curitiba's Bus-Based TOD

	<b>Curitiba</b>	<b>Brasília</b>
<b>Persons/km<sup>2</sup></b>	<b>3,470</b>	<b>420</b>
<b>Transit trips/capita/year</b>	<b>355</b>	<b>97</b>
<b>VKT/capita/year</b>	<b>7,900</b>	<b>16,700</b>



**Brasília**



**Curitiba**



# Urban Regeneration & BRT in Seoul, Korea



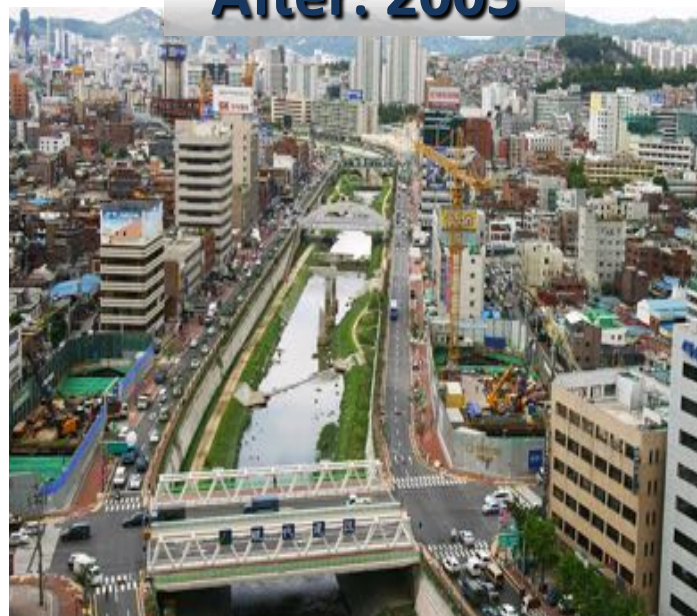
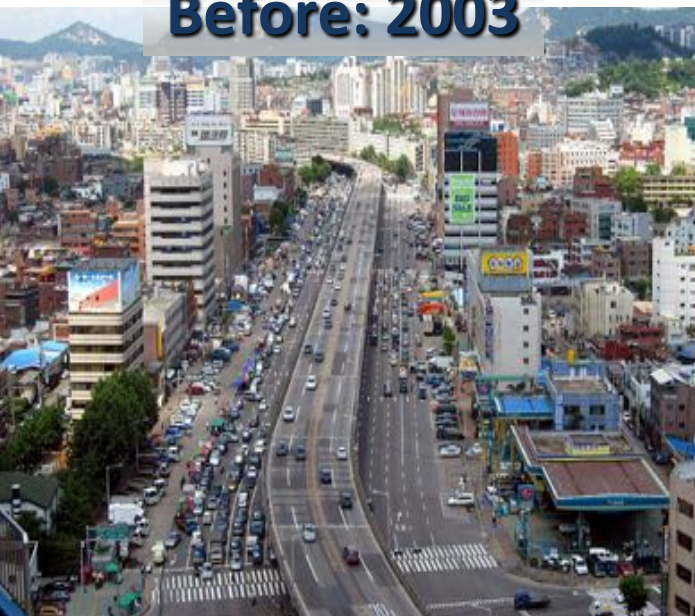
**Before: 2003**



**After: 2005**

**Redesign of  
Seoul Plaza  
“Calmed”**

**Traffic with a  
Pedestrian  
Oval**



**Cheong Gye  
Cheon**

**Freeway  
Removal/  
Stream  
Restoration**

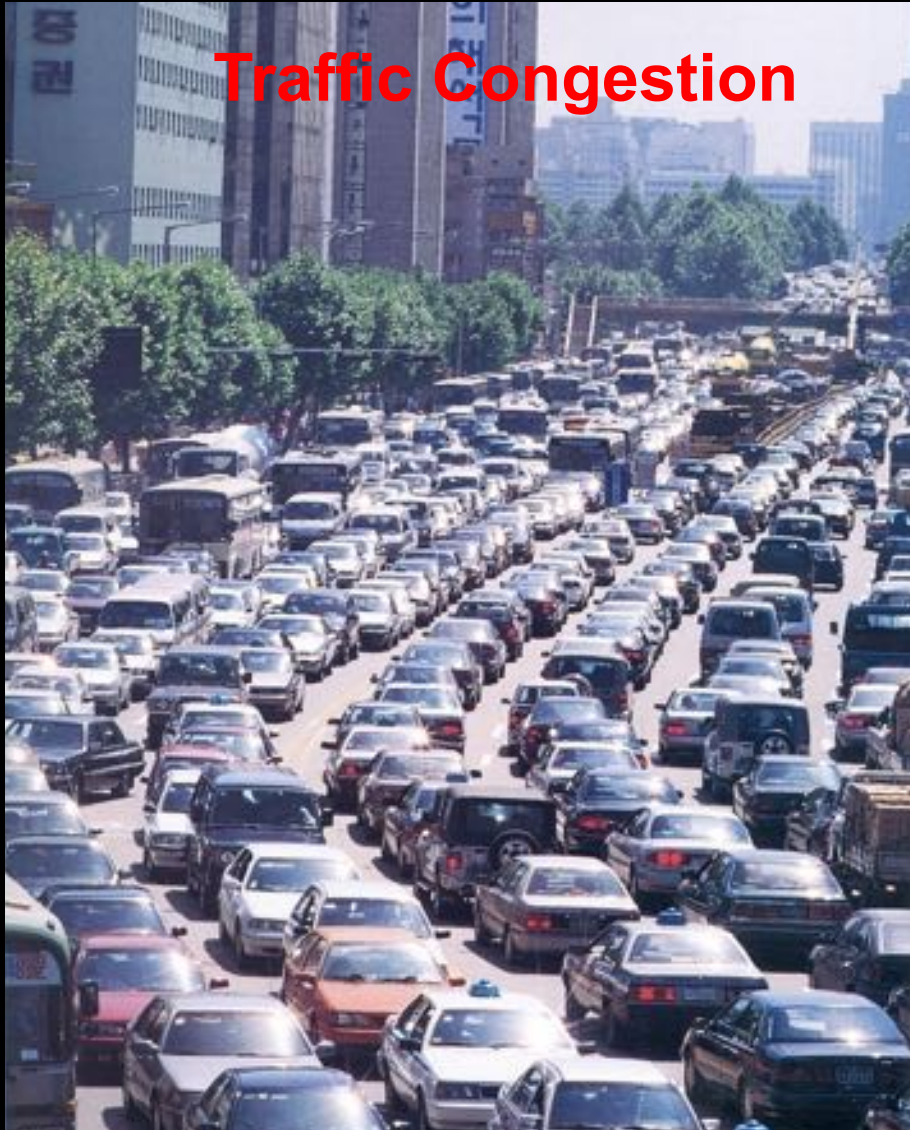
# Poor quality of bus in 60-70's

200 passengers on a bus (60~70 limit)

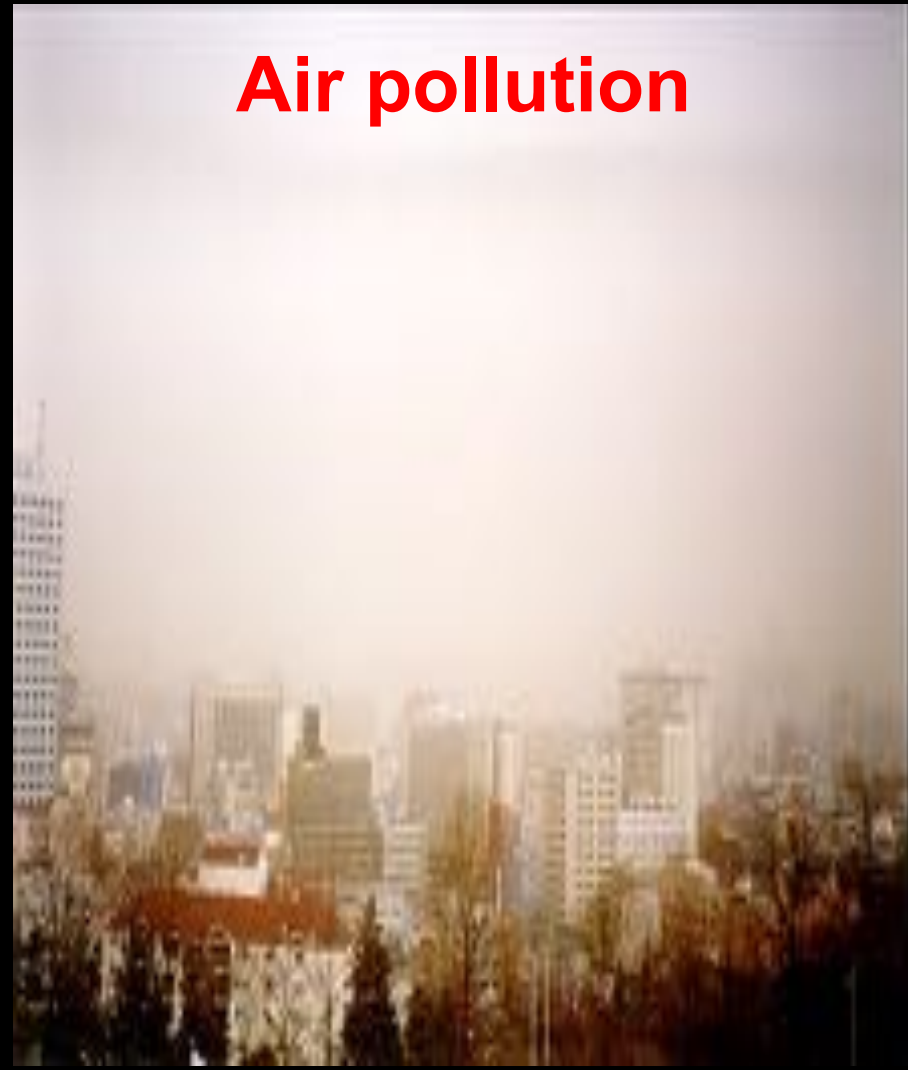


# SEOUL in 90's

**Traffic Congestion**



**Air pollution**



# Seoul: Freeway Removal-Stream Restoration

## Cheong Gye Cheon



**June 2003**  
**Before Restoration**♪



**June 2004**  
**Under Restoration**♪

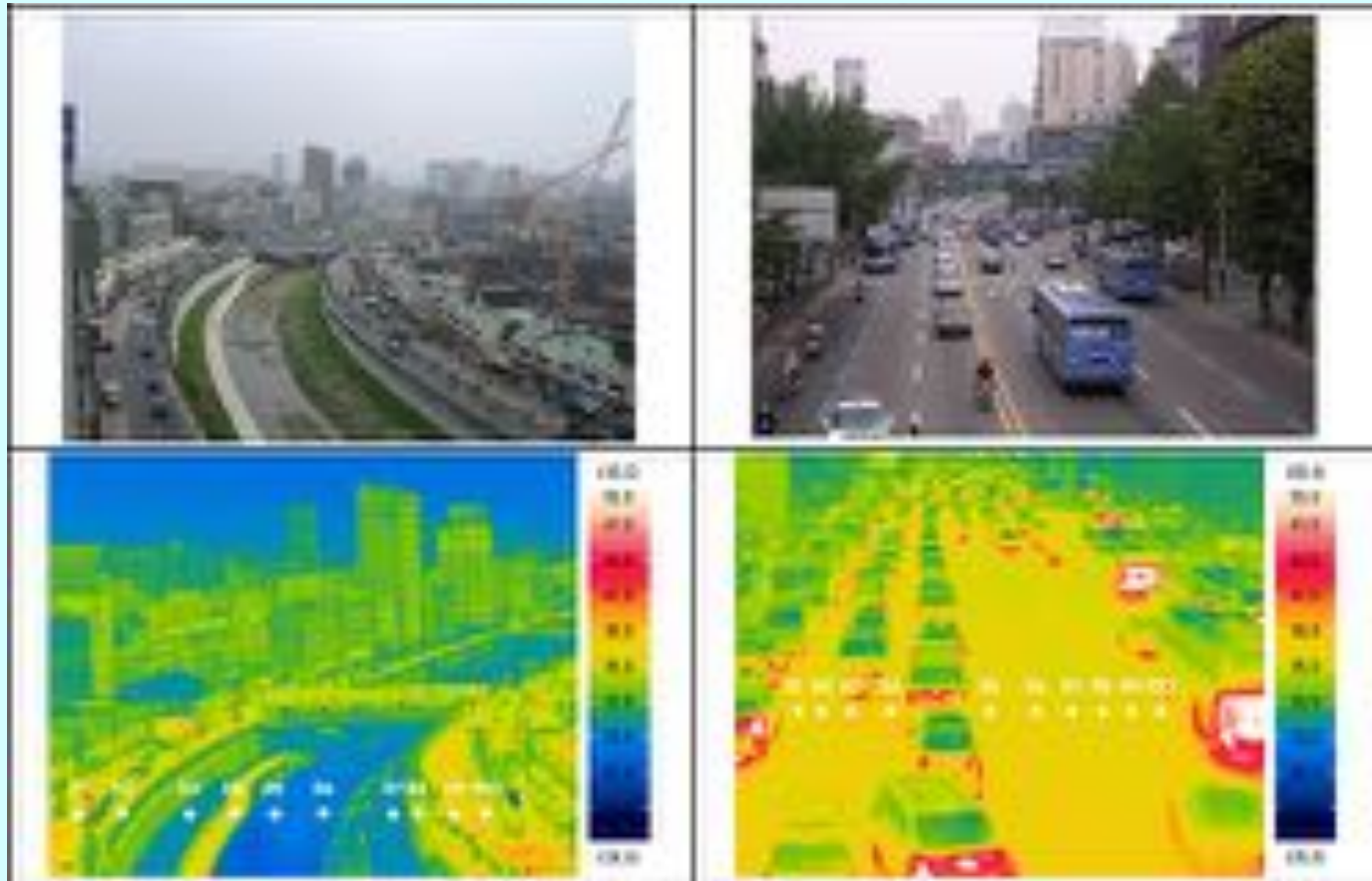


**September 2005**  
**After Restoration**♪



- **Greening of Central Seoul**

## **Thermal Intensity in CBD**

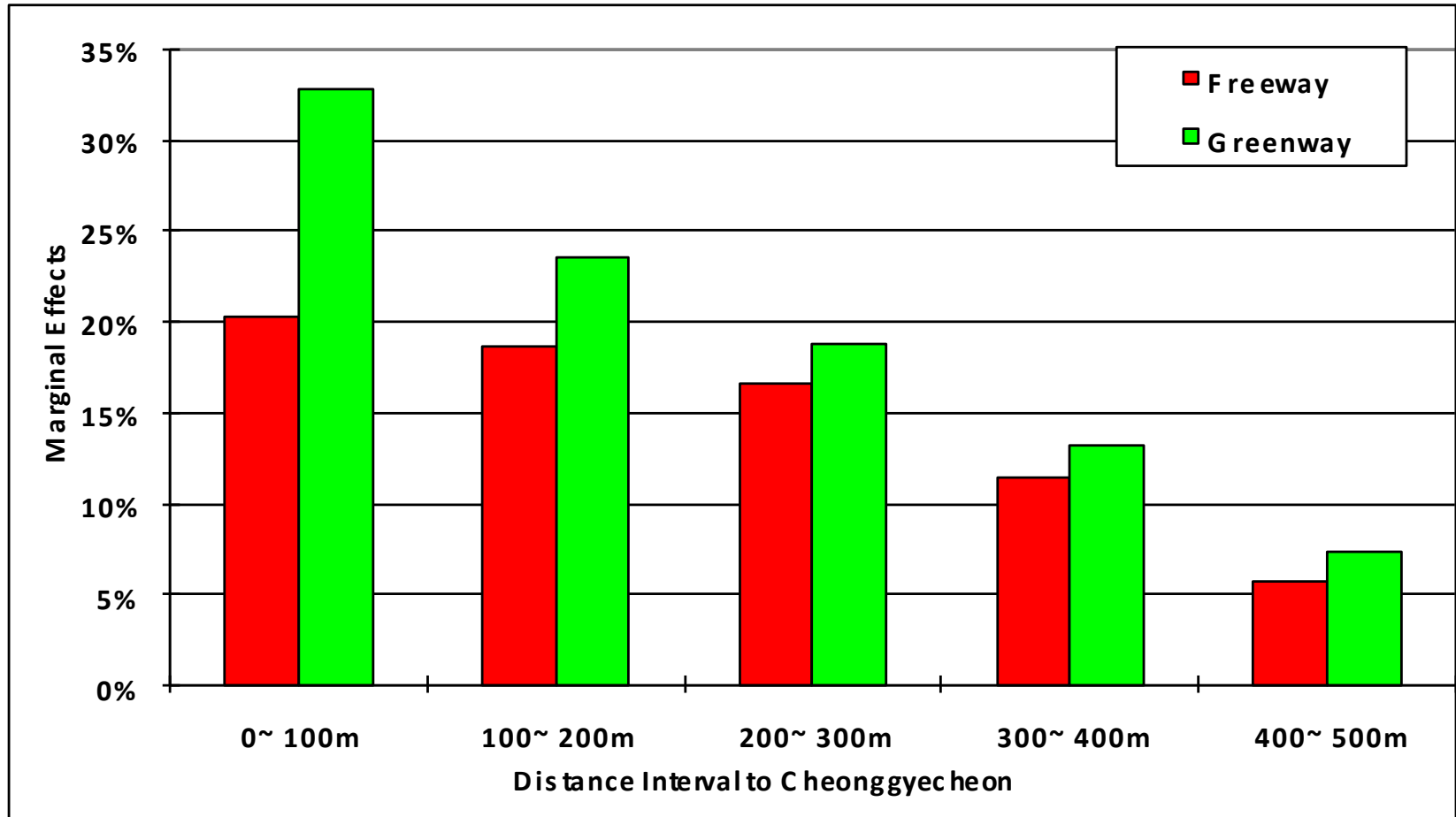


**Average Lowering of Temperature of 2%~5%**



# The Place-Making Premium

## Marginal Effects\*\* of Freeway vs Greenway on Commercial Land Price



\*\* Effects relative to otherwise comparable site > 500m

# Seoul, Korea

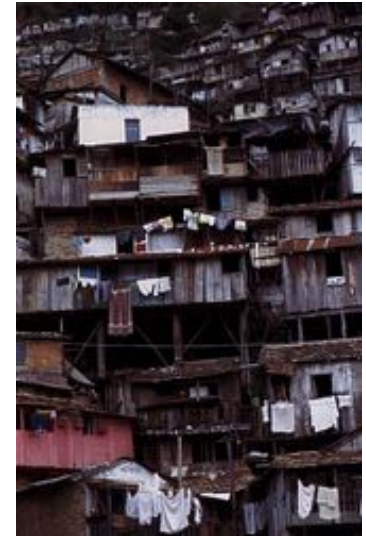
**BRT:** Key to absorbing traffic displaced by road capacity losses



**Exclusive median bus lanes: 7 lines/ 84 km**

**Curbside bus lanes: 293.6 km**

# Cost of Marginalization



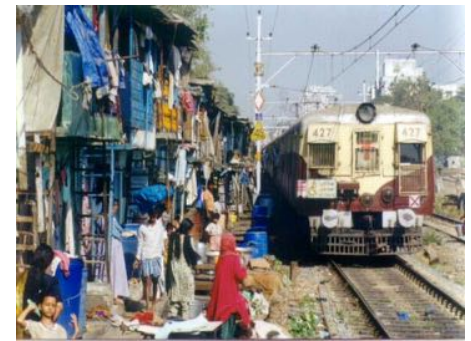
## ■ Non-integrated fares & services:

Transport can consume:

- Mexico City: up to 25% of daily earnings
- Nairobi: 14%-30% of income
- Delhi: 20%-25% of income

## ■ Inaccessibility shrinks job search area & information net:

- When 700,000 squatters resettled on periphery of Delhi, female employment fell 27%; travel time & costs increased 3-fold



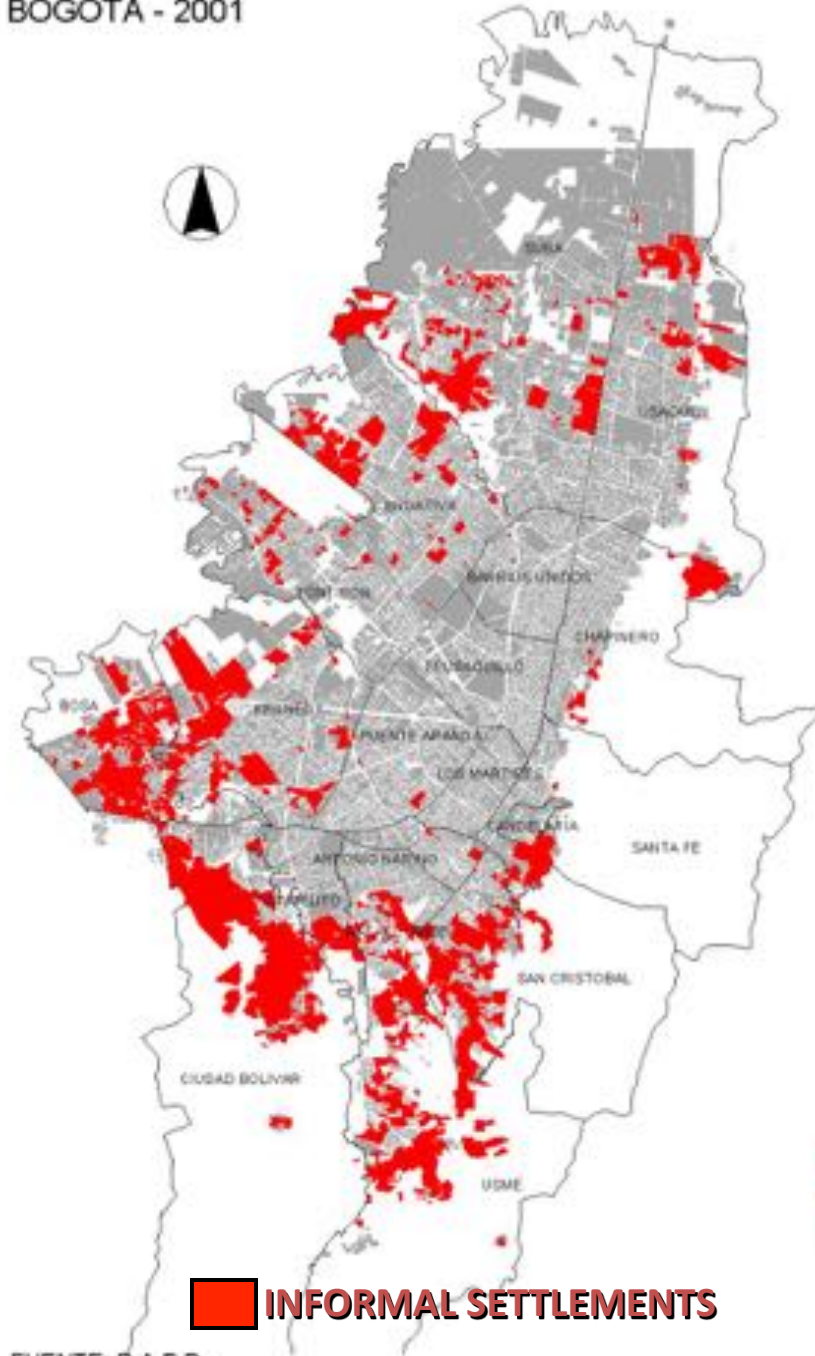
Source: World Bank The World Bank. 1996. *Sustainable Transport: Priorities for Policy Reform*, Washington, D.C.,

## Informal Housing in Bogotá

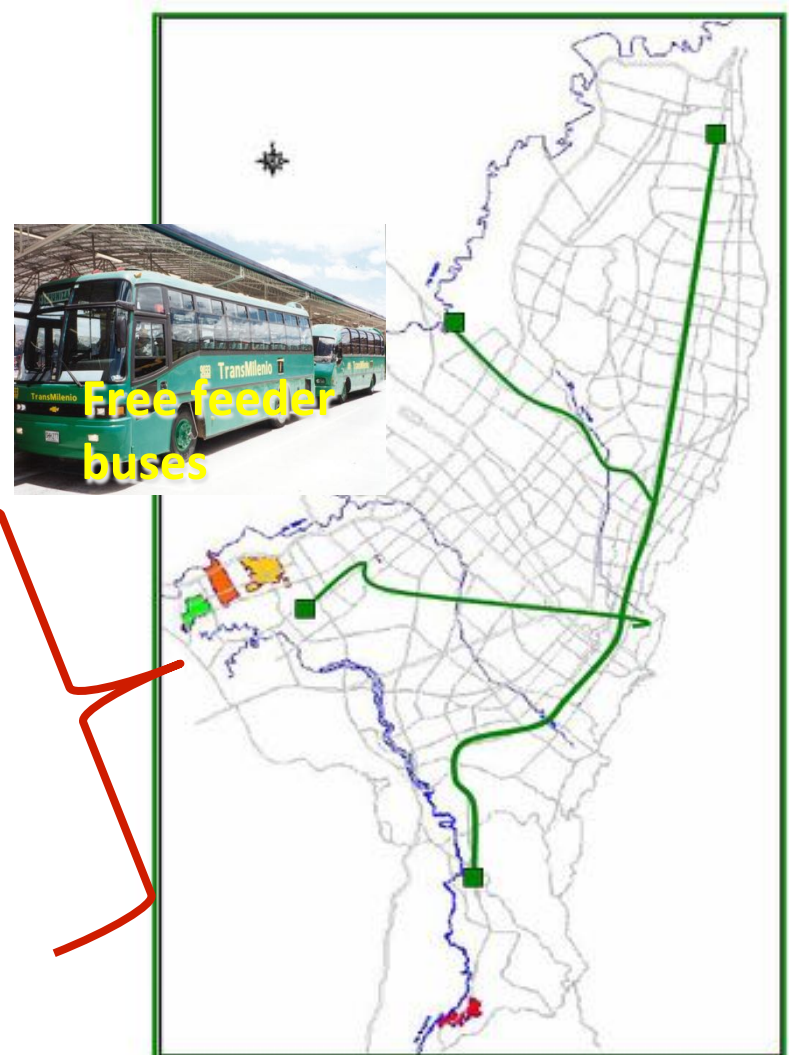
- 2007: 6500 Hectares of land were illegally occupied
- 22% of the population lived in informal settlements in 2000
- Average daily commute time for residents of Bogotá's informal housing > 2 ½ hours; ~20% of income



## ASENTAMIENTOS DE ORIGEN ILEGAL BOGOTÁ - 2001



FUENTE: D.A.P.D.



# Toward Sustainable Mobility and Urbanism in India

1. Shift focus from planning and designing for *mobility* to enhancing *accessibility* – will strengthen transport/land-use link (e.g., TOD)

2. Strengthen institutions: public provisions of trunk-line services; private “economies of scope”; reward integration

3. Transport Demand Management – congestion pricing; parking controls and enforcement; complete streets

4. Basic needs provisions – urban transport as a civil right – e.g., user-side subsidies

