The World Bank’s
Urban Transport Strategy Review
2001

Gerhard Menckhoff
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New York, 26 April 2001
Importance of urban transport in developing countries

- Urban sector accounts for at least 50% of the gross national product
- 5 to 10% of urban household income is spent on transport -- and more than 25% for the poorest households in very large cities
- 15 to 25% of city budgets is typically for transport
- One third of city infrastructure investment is for transport
- Even though private capital is now getting involved in the financing of urban transport infrastructure, most investments will still have to come through the city budget.
Key factors and concerns

- Population growth
- Motorization
- Congestion
- Pollution
- Traffic safety and personal security
- Mobility of the urban poor
Key factors and concerns

- Population growth
Population growth of selected cities

Urban Population Growth

Population (millions - 1995)

- Dhaka: 8.5
- Lagos: 10.3
- Jinan: 3.5
- Mumbai: 15.1
- Jakarta: 8.6
- Metro Manila: 9.3
- Bangkok: 6.5
- Lima: 6.7
- Sao Paulo: 16.5
- Miami: 2.1
- Madrid: 4.1
- Toronto: 4.3
- Tokyo: 27.0
- Los Angeles: 12.4
- Sydney: 3.6
- Milan: 4.3
- Chicago: 6.8
- Paris: 9.5
- New York: 16.3
- London: 7.6

Annual Growth Rate 1991-1995 (%)
Key factors and concerns

- Population growth
- Motorization
Motorization and Incomes: Growth of Cars vs Growth of Per Capita Incomes in France, Japan, Spain and United Kingdom (1950s - '95) and Relative Position of Selected other Countries in 1995
Key factors and concerns

- Population growth
- Motorization
- Congestion
Traffic in Cairo
Performance of city transport systems

Downtown weekday traffic speeds are reported to average

•  8kph or less
  – Seoul
  – Shanghai
•  10 kph or less
  – Bangkok
  – Manila
  – Mexico
•  15 kph or less
  – Kuala Lumpur
  – Sao Paulo.

• Average journey to work times of over 75 minutes
  – Bucharest
  – Jakarta
  – Kinshasa
  – Lagos
  – Manila

• Most developing countries have less than 100 cars per thousand people, compared with 400 or more in the richer industrialized countries,
Key factors and concerns

- Population growth
- Motorization
- Congestion
- Pollution
Air pollution in San José, Costa Rica
# The air pollution problem

<table>
<thead>
<tr>
<th>Cities</th>
<th>Pollutants</th>
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<tbody>
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<td>CO</td>
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<td>London</td>
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<td>Los Angeles</td>
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<td>Tokyo</td>
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<td>Beijing</td>
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<td>Bangkok</td>
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<td>Manila</td>
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<td><strong>South Asia</strong></td>
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<td>Karachi</td>
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<td>Bombay</td>
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<td>Delhi</td>
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<td><strong>Latin America</strong></td>
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<td>Mexico City</td>
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<td>Sao Paulo</td>
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<td>Buenos Aires</td>
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<td>Rio de Janeiro</td>
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<td><strong>Central Asia, Africa &amp; Europe</strong></td>
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<td>Tehran</td>
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<td>Cairo</td>
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<td>Lagos</td>
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<td>Moscow</td>
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- **Low pollution**  WHO guidelines are normally met (short-term guidelines may be exceeded occasionally).
- **Moderate to heavy pollution**  WHO guidelines exceeded by up to a factor of two (short-term guidelines exceeded on a regular basis at certain locations).
- **Serious problem**  WHO guidelines exceeded by more than a factor of two.
Key factors and concerns

• Population growth
• Motorization
• Congestion
• Pollution
• Traffic safety and personal security
The scale of the urban road safety problem

• Human cost
  – Between 750,000 and 880,000 deaths worldwide in 1999.
  – 85% in the developing and transitional economies.
  – 50% in urban areas.
  – Between 25 and 35 million people were injured world-wide,
  – 75 percent were in urban areas.

• Economic cost
  – Annual cost US$ 65 billion.
  – Between 1% and 2% of GDP.
  – In Bangladesh, 50% of hospital beds occupied by accident victims
Key factors and concerns

- Population growth
- Motorization
- Congestion
- Pollution
- Traffic safety and personal security
- Mobility of the urban poor
Mobility of the urban poor

- Economic deprivation and social exclusion
- Access to jobs, schools, clinics, social interaction
- Most affordable modes: bus - bicycle - walking
- Effects of motorization
  - congestion causes buses to become slower and costlier
  - non-motorized movement becomes dangerous and unpleasant
  - people get crowded out by cars

unmanaged motorization makes many poor even poorer
Cities on the Move

Calcutta street scene
The urban transport paradox

• Supply vs. Demand: -- travel demand keeps growing -- supply hardly grows -- even with heavy private sector involvement
  
  why can’t commercial initiative replicate what has been achieved in telecommunications, water supply and energy??

• Affluence vs. quality of life: -- average incomes per capita have been growing -- traffic congestion means slower travel and pollution
  
  why doesn’t rising affluence improve travel quality??
Urban transport impacts on the quality of life

- **Bio-physical effects**
  - air and noise pollution

- **Social effects**
  - traffic safety, personal security
  - occupational redundancy
  - community severance, involuntary resettlement

- **Other effects**
  - on urban form and cultural heritage
  - visual intrusion
  - people are being crowded out by cars
Instruments to manage air quality

- **Fuel policies**
  - Improving existing fuels (removing lead, catalyzation, sulfur in diesel)
  - Introducing alternative fuels (CNG, LPG, ethanol/methanol, hydrogen, electric vehicles)

- **Vehicle policies**
  - Improved vehicle technology, use of existing vehicle stock
  - Options for motorcycles and tricycles

- **Applying environmental standards**

- **Managing the transport system**
Applying environmental standards

- Inspection and maintenance (I/M) programs
- Scrappage programs
- Domestic taxation policies
- Trade policies
- Public expenditure policies
Managing the transport system

- Traffic management
- Transport demand management
- Traffic restraint
Traffic management

- Traffic signal systems
- Improved geometric layouts of streets and intersections
- Enforcement of traffic rules
Transport demand management

- Priority to public transport
- Support to non-motorized transport
- Traffic cells and restrictive one-way street layouts
- Traffic calming
Traffic restraint

- Parking policies
- Vehicle use restrictions
  - during air quality emergencies
  - by license plate number
  - car-free day campaigns
- Congestion pricing
The role of public transport

- Urban rail
- Busways
- Formal bus services
- Paratransit
- Public transport integration
## Financial performance of metros

<table>
<thead>
<tr>
<th>City</th>
<th>Rev/op cost</th>
<th>Rev/Pass (US c)</th>
<th>Cost/pkm (US c)</th>
<th>Corridor Traffic (M/day)</th>
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<tbody>
<tr>
<td>Hong Kong</td>
<td>2.2</td>
<td>40.5</td>
<td>2.0</td>
<td>9.1</td>
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<td>Santiago</td>
<td>1.6</td>
<td>16.8</td>
<td>2.0</td>
<td>2.7</td>
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<tr>
<td>Seoul</td>
<td>1.4</td>
<td>21.5</td>
<td>1.7</td>
<td>12.7</td>
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<tr>
<td>Pusan</td>
<td>1.0</td>
<td>20.7</td>
<td>2.6</td>
<td>3.6</td>
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<tr>
<td>Sao Paulo</td>
<td>0.6</td>
<td>9.1</td>
<td>1.9</td>
<td>11.2</td>
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<td>Rio</td>
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<td>11.3</td>
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<td>4.3</td>
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<td>Mexico City</td>
<td>0.4</td>
<td>4.1</td>
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<td>10.1</td>
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<td>Calcutta</td>
<td>0.4</td>
<td>8.1</td>
<td>3.0</td>
<td>1.0</td>
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Cities on the Move

São Paulo busway
# Forms of Paratransit

<table>
<thead>
<tr>
<th>Vehicle Type</th>
<th>Service Features</th>
<th>Passenger Capacity</th>
<th>Service Niche</th>
<th>Market Regime</th>
<th>Examples</th>
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<tbody>
<tr>
<td></td>
<td>Routes</td>
<td>Schedules</td>
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<tr>
<td>Fixed</td>
<td>Fixed</td>
<td>Large Bus</td>
<td>Line-Haul</td>
<td>Franchised</td>
<td>Buenos Aires, Rostov</td>
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<tr>
<td>Minibus</td>
<td>Fixed</td>
<td>Fixed/Semi-fixed</td>
<td>12-24</td>
<td>Line Haul</td>
<td>Sao Paulo, Bangkok, Harare, Jo’burg</td>
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<tr>
<td>Jeepney</td>
<td>Fixed</td>
<td>Semi-Fixed</td>
<td>12-24</td>
<td>Feeder</td>
<td>Franchised</td>
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<tr>
<td>Microbus/Pick-up</td>
<td>Fixed</td>
<td>Semi-Fixed</td>
<td>4-11</td>
<td>Feeder</td>
<td>Licensed</td>
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<td>-do-</td>
<td>Variable</td>
<td>Variable</td>
<td>4-11</td>
<td>Short trips</td>
<td>Licensed</td>
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<td>3-Wheeler/</td>
<td>Variable</td>
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<td>2-4</td>
<td>Short trips,</td>
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<td>feeder</td>
<td>Phnom Penh, Delhi, Bangkok, Jakarta</td>
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<td>Motorcycle</td>
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<td>longer</td>
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<td>distances</td>
<td>Bangkok, Cotonou, Lome, Douala</td>
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<tr>
<td>Pedicab/Horse-cart</td>
<td>Variable</td>
<td>Variable</td>
<td>1-6</td>
<td>Short trips, Feeder</td>
<td>Unregulated</td>
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<td>Dhaka, Vientiane, Mumbai</td>
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**Urban Transport Strategy Review**
Cities on the Move

Tricycles in Chiclayo, Peru
Problems of informal sector

- Dangerous on the road behavior
- Criminal exploitation
- Urban congestion and pollution
- Undermining the basic bus system
Non-motorized transport in urban areas

- Pedestrian -- bicycle -- pedicab (also for freight) -- hand cart
- Bicycle: cheaper, faster (< 5-7km), non-polluting, healthier

So, why is bicycle use decreasing in most poor cities??
- Increased road traffic crowds out bicycles (accident risk, pollution)
- Fear of theft and assault
- Cultural and climatic factors
- Bureaucrats often dislike bicycles (symbol of underdevelopment, trained in car-oriented road design). **BUT:** Mayors tend to like it. **AND:** bicycle use is increasing in many OECD countries.
Percentage of travel modes for six Asian cities

- Dhaka
- Shanghai
- Jakarta
- Kuala L.
- Manila
- Bangkok

- other
- paratransit
- bus
- bicycles
- walking
Cities on the Move

Mixed traffic in Guangzhou
Cities on the Move

Bikeway in Lima

Urban Transport Strategy Review
Bike parking at suburban rail station (Tokyo)
A strategy on charges for road infrastructure

- Road use charged at short run marginal cost, or more
- Cordon pricing and tolling an interim solution
- Electronic road pricing the long term solution
- Fuel taxes and vehicle license duties structured to reflect their relative contributions to urban air pollution
- Parking should NEVER be subsidized (off- or on-street)
A strategy on public transport pricing

- Public transport priced as part of an integrated urban strategy
- Full cost recovery from fares is desirable but not a must
- Arrange possible subsidies on a contractual basis consistent with optimal pricing strategies
- Operators should face competition
- Non-commercial objectives imposed on operators should be compensated directly and transparently
A strategy on urban transport financing

- Pool urban transport financial resources within an urban transport fund administered by the strategic transport authority
- Inter-governmental transfers to the fund should be structured to avoid distorting allocation of resources
- Private sector financing for transport infrastructure should be raised through competitive tendering of concessions
- Concessions may be supported by public contributions, so long as these have been subject to proper cost benefit analysis -- beware of long-term contingent liabilities!
The Strategic Inputs

National Plan and Budget

Municipal Planning/Organization Plan/Program/Budget

Local Plan/Agenda

The Planning Documents

20 year structural plan
5 year rolling plan
Annual plan and program

The Administrative Organization

Direct Work Execution
Economic Regulation and Procurement
Technical Regulation and Enforcement
Public Transport Operations
Addressing the urban transport paradox

• Supply/Demand -- Affluence/Quality of Life

  We must (and can!!) achieve a balance

• Urban transport must be approached as an integrated system

  – streets and public space, transport modes (public transport, cars, goods vehicles, NMT)
  – integration with urban development policy

  Urban transport fund, administered by a strategic transport authority
Concluding remarks

• Integrating urban transport financing and decision-making - how realistic is this?

• There are examples:
  – Zurich -- Singapore -- Santiago de Chile

• Examples of effective political leadership:
  – Curitiba
  – Quito -- Bogotá

• We should learn from these experiences !!
1- Introduction
2- Urban Transport and City Development
3- Urban Transport and Poverty Reduction
4- Transport and the Urban Environment
5- Urban Transport Safety and Security
6- The Urban Road System
7- The Role of Public Transport
8- Mass Rapid Transit
Chapters of Strategy Review Paper (2)

9- The Role of Non-Motorized Transport
10- Urban Transport Pricing and Finance
11- Strengthening Urban Transport Institutions
12- Meeting the Development Challenges: How can the Bank Contribute?

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