SUSTAINABLE TRANSPORT FOR SUSTAINABLE CITIES - A WORLD BANK PERSPECTIVE

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“Sustainable Urban Transport”, a local, national and global issue
Cities are drivers of growth and global climate change, also home to the poor

Urbanization and GDP per capita

Economic Growth
- Cities generate 80% of global output (500, 60% of global income growth)
- Growing welfare costs of traffic congestion

Inclusive Development
- Growth of slums (urban poverty, social exclusion)
- Bottom quintile spends disproportionate share of income on public transport

Local & Global Environment
- Urban outdoor pollution linked to 4 million premature deaths
- Cities contribute 70% of energy–related GHG emissions

Source: World Bank, 189 countries. The horizontal axis urbanization rate is the percentage share of population living in cities in 2012. The vertical axis represents the natural log of GDP per capita in 2011 U.S. dollar.

Source: Shyam Menon, World Bank/EMBARQ (WRI), Jan 2007
Emerging trends make “Sustainable Transport” a local, national, global issue.

- **Global**
  - Green House Gas Effect
  - Energy Security / Fuel Prices

- **National**
  - Financial Liabilities
  - Farmland Conversion

- **Local**
  - Traffic Accidents
  - Auto Pollution
  - Traffic Congestion

G-20 Toolkit on Urban Transport
Mexico, 2012
World Bank urban transport portfolio:
At $7.7 bn, large and growing rapidly

Our strategy is to make urban mobility safer, cleaner and more affordable
Evolving “best practice” emphasizes holistic approach, more integrated solutions that balance supply and demand to support sustainable city
Cities where the WB has had significant Urban Transport engagements

Transmilenio, Bogota

TOD, Curitiba
Dominant thrust of Bank support: improve performance of public transport services

• Previous decade:
  – Efficiency of public transport operations within a public-private partnership framework; focus on rapid transit; competition for market; strengthening institutions;
  – Air quality, NMT (especially LAC); traffic management (less than previous decade); road safety; urban road infrastructure (mainly China, Africa)

• 2005-Today:
  – Emphasis on Sustainable/Low Carbon Transport: modal shift to clean public transport; increased urban transport efficiency through greater integration and use of technology while reducing carbon footprint;
  – Metros (LAC); People-centered systems for “smart cities” (LAC, EAP);
  – Global capacity building effort: Leaders in Urban Transport Planning; Data Tool
Focus on rapid transit includes BRTs, Rail, a few Metros, ...

Metro Line Development in Sao Paulo, Brazil

Integrated Transport Corridors, Anhui (medium cities) and Wuhan, China

Bus Rapid Transit in Lagos, Nigeria

PROTRAM, Mexico
...with tangible improvement to system performance and impact on the poor

Sao Paulo, Brazil
Modernization of commute train services

Lima, Peru
Metropolitano BRT
Sustainable cities prioritize public and NMT transport, integrate land use.
Cities facing rapid motorization learned that it is not possible to build way out of congestion.
Supporting physical, operational and fare integration in Bank projects

Quito’s hierarchically integrated transport system: New Metro will integrate all longitudinal and transversal corridors into a network with ample territorial coverage.
Supporting physical, operational and fare integration in Bank projects
Technology enables full integration which maximizes user impact, rationalizes supply

1. Card is system integrator among all modes. Open standards/protocols enable seamless user experience

2. Card allows design of subsidy: Govt Rio pays when user needs multiple transfers

3. Multi-purpose use of card can stimulate use of public transport

4. Subsidy scheme can be linked to social security infrastructure

Bogota SITP fare card

Aadhaar card, India

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Unleashing the power of big data can help governments become “smarter”...

Planning people-centered services

Buenos Aires, Argentina: GPS data to analyze jobs accessible by transit within 60min

Rio, Brazil: Cell phone records trace data for planning. WB finance ITS Center to process real-time data from Metro, Train, Buses and Ferries

Sao Paulo, Brazil: Bus Dashboard using historic real-time data from buses’ Automatic Vehicle Location. Portrayal of bus speeds along routes

Monitoring performance of transit system in real time
... and citizens and businesses engage in co-creating solutions

Promoting behavior change and “demand management” schemes

**Mexico, Mexico:** Transit App integrates in real time transit data with Ecobici bike-sharing

**Sao Paulo, Brazil.** Nudging technology influences behavior: Commuter Engag’ment Website tracks trips to provide rewards and suggestions for different routes

Crowdsourcing problems and solutions

**China Citizen Engagement Pilot.** Citizens collaborate in identifying issues and needs

Rapid growth of “Peers-Incorporated” collaborative mobility services:

- Car sharing: Zipcar, Flexicar, Car2Go
- Carpools: Carpooling, BlaBlaCar
- Traffic info sharing: Waze, DiDi
- Bike sharing: (numerous)
- Taxi sharing: Uber, Hailo, GobiCab
The people-centered transport system for the “smart city”: a framework

Citizen-centered
- Trip planners, real-time information to enhance public transport experience
- Smart Cards, smart subsidies
- User-feedback loops
- Crowdsourcing/co-creation

Integration for maximum impact
- Opening data
- Efficient delivery of services that meet needs of citizens and businesses
- Traffic optimization
- Nudging and behavior change

Smart Government
- Enabling ecosystem for innovation deployment of new technologies
- Data standards/interoperable protocols
- Smart regulation based on defined public interest
- Opening data
- Efficient delivery of services that meet needs of citizens and businesses
- Traffic optimization
- Nudging and behavior change
Challenges, old and new, have gotten bigger. So the opportunities. Now is the time for bold action before cities lock into inefficient, unsustainable development paths.
Rapid pace of urbanization: exacerbates institutional and resource constraints

- No time to adjust
- Right choices need to be made early on to avoid lock-in
  - Premature investment in road infrastructure facilitates automobile use before appropriate public/mass transport infrastructure in place
- Need to focus on fast growing mid-size cities

1980 Fishing village of several thousand people

Today City of 9 million, big in electronic manufacturing

Shenzhen, China
Managing car use: Megacities already congested at low motorization rates!

- **Per Capita Income Trends**
  - CHINA
  - INDIA

- **Passenger Cars per 1000 Populations**
  - China
  - India

- **Vehicle Ownership/1000 Persons**

- **GDP per Capita (US$)**

Note: plotted years vary by country depending on data availability. Data source: World Bank, 2014.
Opportunity to address car use while majority of trips use public transport/NMT

China, GEF Project 14 cities and Liaoning province

Percent

NMT  Public transport  Motorcycles
Taxis  Passenger cars  Other trips

Changzhi  Weihai  Jiaozuo  Luoyang  Urumqi  Nanchang  Xian  Guangzhou  Chengging
Sustainability: even a world-class transit system can be troubled by its own success. 

Transmilenio, 1999 - 2014.
Breaking silos: cooperative institutions to integrate across modes and jurisdictions

• More effective and accountable city-level institutions, able to work across boundaries
  – Basis for successful coordination of policies on land use, road provision, traffic management, public transport, parking policies
  – National policy framework help guide cities;
  – Projects across jurisdictions build support for establishing a Metropolitan Authority

• Institutions that learn to adjust to evolving conditions – up-to-date data essential

• Developing local capacity at scale an issue
  – Leaders in Urban Transport Planning: skills for holistic thinking and planning through case studies, participatory problem solving, peer networks
Financing Gap: innovative funding and co-financing schemes to scale up investment

- Mexico: National Program for 18 mass transit systems
  - BRTs and rail systems carrying +220,000 daily trips
  - transport master plan; systems integration at city level; private sector participation;
  - reduction of 2m ton of CO₂ emissions per year; incentives for clean tech./ hybrid buses
  - co-financing sources: Cities; Federal govt.(FONADIN); Clean Technology Fund; WB; GEF-STAQ
Dhanyavaad!
Thank You!