
Towards Sustainable Cities: Addressing sustainability concerns in basic urban service delivery

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Sustainable cities

- No standard accepted definition of a sustainable city
- Characterized by its ability to feed and power itself ; minimal reliance on resources outside its boundaries ; ability to create the smallest possible ecological footprint
- Varied initiatives; C40 cities, SCP, LA21, Bogota, Santa Monica, etc.
 - Multisector indicators vs. single sector improvement approach
- Sustainable cities to include:
 - Economic growth
 - Health
 - Education
 - Safety, security
 - Transport
 - Water and sanitation
 - Food
 - Housing
 - Governance
 - Etc..

Task of tall order to create framework including all!

Sustainable cities

- Lessons emerging:
 - well functioning infrastructure
 - empowerment of city authorities
 - good monitoring processes, targets
 - well-coordinated institutional & governance mechanisms
 - unified bodies enabling implementation
 - strong political leadership and will
 - a vision

Sustainable basic urban services



Study objectives

- Identify parameters to make water, solid waste management, transport, buildings and power service provision sustainable
- Recommend technical, policy, institutional, legal, organizational, data and capacity related interventions necessary to operationalize the suggested parameters
- Address governance issues that affect service provision in these sectors

The Study Approach

1. **Define** what sustainable service provision would mean in each sector
2. A **review** of national and international literature to see how sustainability has been achieved in these sectors
3. **Understand** policies relating to urban services and typical practices adopted to deliver these urban services in Indian cities, and, identify gaps or deficiencies in delivery
4. **Prepare a checklist** of parameters which any city should consider adopting in order to make these services sustainable

The Study Approach (cont'd)

5. Select a few Indian cities as case studies
 - Hyderabad (5.53 million): large sized, rapidly expanding metropolis, state capital, cultural and tourist city, IT hub
 - Surat (2.81 million): medium sized, industrial and trade city
 - Shillong (0.25 million): small sized, hilly, tourist destination & state capital

through stakeholder interviews validate findings with regards to:

- Extent to which these cities are addressing the parameters
 - Issues/impediments to sustainability
 - Extent feasibility of implementation
 - Good practices on sustainability for replication in other cities
6. Recommend ways to operationalize the sustainability parameters in cities
 - Technical, operational, planning, capacity, institutional and organizational changes required

Some common parameters for measuring sustainability

- Adequate supply of services
- Equitable access and distribution
- Pricing/cost recovery
- Reliability of service
- Quality
- Improved efficiency
- Minimum environmental burden and energy use
- Community participation, transparency, accountability

Supporting policy, institutional, organizational, data and capacity related reforms

Sectoral Highlights

A photograph of a water supply network database, showing a large number of white plastic water tanks lined up in a row, with a water tap visible in the background.

Water

Availability, access, quality, continuity, cost recovery, conservation, collection efficiency of waste water

- Integrated comprehensive water supply network database
- Reduction of unaccounted for water using district metered areas
- Two part tariff structures
- Rainwater harvesting, groundwater monitoring, water audits
- Standards for quality
- Wastewater management practices to control water pollution
- Institutional mechanisms, capacity building
- Regularization in slums
- Supply through tankers

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Solid Waste Management

Integrated waste management systems, waste segregation, recycling, reuse, process efficiency, citizen satisfaction, adherence to MSW rules by ULBs, service cost recovery

- Zero littering policy for urban areas
- Formalization of informal waste pickers
- Monitoring and reporting systems, fines, etc.
- Transportation and treatment
- Municipal accounting reforms and cost recovery

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Buildings

Reduce energy consumption in buildings, manage water and waste efficiently, ensure indoor environmental quality and encourage use of ecologically sustainable building materials

- Bye-laws incorporating green building codes,
- Procuring legislations for energy and water saving equipment
- Adherence to green building principles, energy and water audits
- Waste and sewerage management
- Energy efficiency cells in ULBs
- Capacity building, development of course curricula
- Market transformation towards use of green products, services
- Role of ULB, corporates, financial institutions
- Baseline development on building typologies in cities

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Power

Ensuring equitable access to electricity for all sections of society, energy efficiency in power services, use of renewable energy sources

- Role of ULBs in facilitating improvement in the delivery of electricity services; institutional, structural and fiscal reforms- in line with JNNURM objectives
 - energy efficient consumers- DSM cell
 - link city planning and utility activities; Pre-paid metering for slum electrification; use of smart cards
 - promote renewable energy sources; property tax rebates
 - spread consumer awareness- EE, power thefts, etc.
 - grievance cell
 - Capacity building in ULBs for above
- [Sustainable cities report Executive summary.pdf](#)

Governance

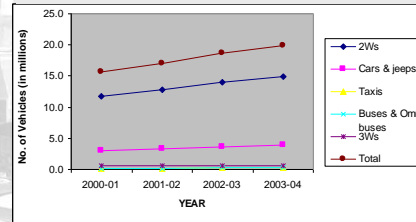
A good governance system to ensure provision of services in a transparent, accountable, equitable, inclusive and participatory manner

- Role of municipal bodies in planning transport and power services
- Ensuring quality of services in peri-urban areas is at par with those municipal area
- Private participation options
- Comprehensive needs assessment of ULBs; enhancing financial and technical capacities
- Enactment of municipal disclosure law, community participation bill by states
- E-governance initiatives, smart cards, consumer grievance
- Competitive rating of performance of municipal bodies, citizen report card

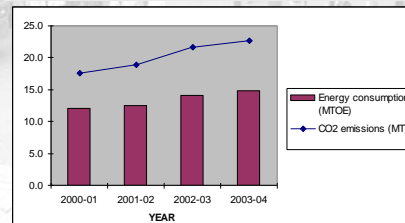
Transport

- **Urban public transport in India has been neglected**
- **Share of buses in overall fleet declining**
- **Financial, managerial, planning and operational and quality challenges**
- **Only a few cities have formal public transport systems; rest are a mix of formal and informal modes plying without much regulatory oversight**
- **Rapidly losing share to personal modes**
- **Severe implications for energy and emissions in the future**

Registered vehicles in million plus cities



Energy consumption and CO₂ emissions from passenger transport activities in million plus cities



Transport (cont'd)

Providing good quality, affordable, safe, reliable and accessible public transport services

- **State level urban transport policy; Constitution of a transport cell in the ULB**
- **Improving the share of public transport and NMT in the city by addressing aspects like:**
 - Service norms for availability, accessibility, affordability, reliability and acceptability of the city's existing and proposed system (given the new JNNURM buses)
 - Special focus on travel needs of the urban poor, other captive rider groups
 - Introduction of demand management practices and norms to restrain usage of personal modes in the city and encourage modal shifts
- **Regulation and better management of IPT modes by addressing issues of:**
 - Permits
 - Safety, affordability, comfort, technologies, etc.
 - Complimentarity and competition with formal modes

Parameter	Indicator
Availability	<ul style="list-style-type: none"> Number of buses per 1000 people (0.5-1.2) Percentage modal share of bus trips (70-80%)
Affordability	<ul style="list-style-type: none"> Share of monthly household income spent on transport (7-9%)
Accessibility	<ul style="list-style-type: none"> A walk of 500 meters or less to or from the nearest bus stop (70-80% coverage) Ensuring all households in a city are within 30 minutes of travel time by public transport from key trip generators and attractors like schools, hospitals, employment centres, colleges, shopping areas, etc. Differentiated services Low floor buses, facilities for the disabled Providing easy to understand and quick access to information regarding schedules, delays, etc.
Safety, Security, Reliability, comfort	<ul style="list-style-type: none"> Reducing congestion/overcrowding in buses, incidents of eve teasing, thefts, assaults, etc. in buses, accidents of buses, passenger complaints (target zero) Ensuring well kept and clean buses, bus stand premises and polite crew behaviour Ensuring 80% of all services run at a headway of not more than 15 minutes during week day peak periods. Reducing waiting time in peak hours to 5-7 minutes.
Operations management	Reducing the cost of operation, bringing down the breakdown rate, increasing fare collection efficiency, reducing employees' absenteeism, increasing fuel efficiency, Improving fleet utilization

Summary of findings

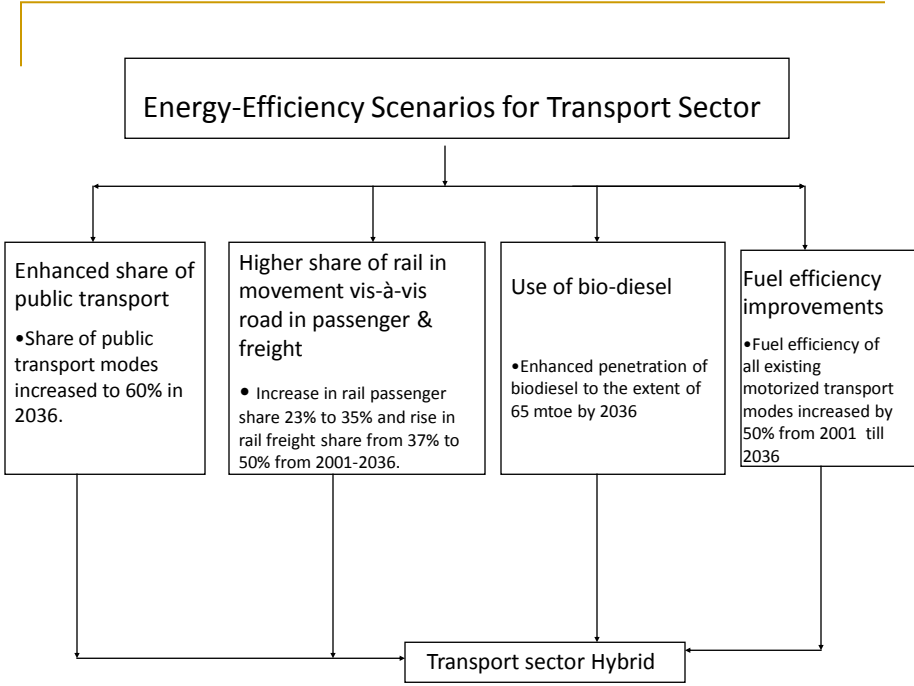
- Huge data gaps at the city level leading to unscientific and ad hoc decisions
- No baselines to chart out the way ahead
- Inadequate capacity and skills
- Lack of integrated planning and coordination
- Inadequate attention to growing suburbs and their service needs
- Lack of demand management
- City authorities not empowered to plan/manage key services like energy and transport

Way forward..

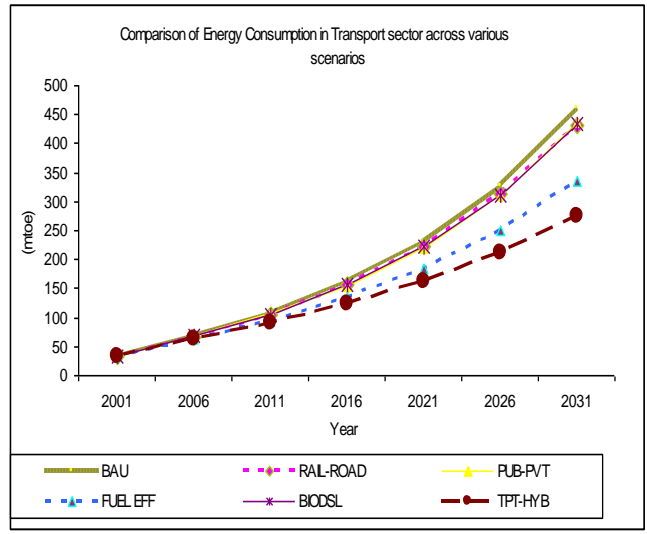
Given this background and knowledge on realities of Indian cities and TERI's interest to undertake city level modelling exercises focusing on the urban sector, a **City Level Modeling Approach** could be developed to offer a more robust basis for policy formulation and easily measurable outcomes.

Eg. transport

- Now there is a great emphasis on promoting rail and road based public transport and NMT in large and medium sized Indian cities- picture could change significantly in the coming decade, with more people using public transport and making more trips.
- User, transport and city characteristics influencing modal choices and transportation patterns are bound to change.
- Developing city specific urban transport-land-use planning and development, and, transport-energy-emission models has become necessary
- To design and measure impact of appropriate strategies for increasing share of public transport, reducing overall need to travel, integrating land use and transport planning, ensuring equity and safety and reducing GHG emissions from urban transport systems



Scope of Significant Energy Reduction in the Transport Sector





Thank you