MULTI MODAL TRANSPORT SYSTEM IN URBAN INDIA

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Urban India (2001)

- **Total Urban Population**
  
  = 286.11 million

  = 27.78% of total population of India

  = 10.02% of World urban population

  = 21.10% of Asia’s urban population

  = Larger than total population of small countries like France and Germany.

  = Larger than total population of countries like Brazil and USA.
• No. of Million plus Cities
  = 23 (1991)
  = 35 (2001)
  = 50 (estimated for 2011).

Total Population of 35 Million plus Cities
  = 107.88 million
  = 37.8% of total urban population
  = these 35 million plus cities belong to large group of 206 million plus cities of Asia.
Public Transport

• Transport Demand is a function of land use.

• Public transport plays very important role in development of any towns/city.

• It is one of the major modes of transport for passenger movements.

• Mass of the city residents use public transport in their daily movements.
Road based Public Transport

- Bus,
- Mini Bus,
- Double Decker
- Tram.
Rail based Public Transport
- Metro
- Sub-urban Trains
- Ring Rail
- Light Rail Transit
- Mono Rail
<table>
<thead>
<tr>
<th>S.N.</th>
<th>City</th>
<th>Walk</th>
<th>Cycle</th>
<th>Two wheelers</th>
<th>Public Transport</th>
<th>Car</th>
<th>IPT</th>
<th>Total in %</th>
</tr>
</thead>
<tbody>
<tr>
<td>i.</td>
<td>Delhi</td>
<td>21</td>
<td>12</td>
<td>5</td>
<td>43</td>
<td>14</td>
<td>6</td>
<td>100</td>
</tr>
<tr>
<td>ii.</td>
<td>Mumbai</td>
<td>27</td>
<td>6</td>
<td>7</td>
<td>45</td>
<td>8</td>
<td>7</td>
<td>100</td>
</tr>
<tr>
<td>iii.</td>
<td>Kolkata</td>
<td>19</td>
<td>11</td>
<td>4</td>
<td>54</td>
<td>8</td>
<td>4</td>
<td>100</td>
</tr>
<tr>
<td>iv.</td>
<td>Chennai</td>
<td>22</td>
<td>9</td>
<td>20</td>
<td>31</td>
<td>10</td>
<td>8</td>
<td>100</td>
</tr>
<tr>
<td>v.</td>
<td>Bangalore</td>
<td>26</td>
<td>7</td>
<td>17</td>
<td>35</td>
<td>8</td>
<td>7</td>
<td>100</td>
</tr>
<tr>
<td>vi.</td>
<td>Hyderabad</td>
<td>22</td>
<td>9</td>
<td>19</td>
<td>35</td>
<td>9</td>
<td>7</td>
<td>100</td>
</tr>
<tr>
<td>vii.</td>
<td>Kochi</td>
<td>16</td>
<td>5</td>
<td>14</td>
<td>51</td>
<td>9</td>
<td>6</td>
<td>100</td>
</tr>
</tbody>
</table>

Kolkata has the highest share of public transport followed by Kochi.
Share of Public Transport in Selected Metro Cities

Public Transport Share(%) vs Metro Cities

- Delhi
- Mumbai
- Kolkata
- Chennai
- Bangalore
- Hyderabad
- Kochi

Series 1
There is need to enhance Public Transport Share.

- Road capacity = Saturated
- Rail capacity = Underutilized
- Single Mode of transport= Neither viable nor economical & efficient.

Hence
- Sustainable public transport is required.

Integration of various modes such as
- Metro
- Bus
- LRT
- Monorail

is required to evolve Multi Modal Transport System.

- Aim: To ensure safe, affordable, quick, comfortable, reliable and sustainable access for public transport to the commuters within cities.

- One of the objectives

  “enabling the establishment of quality focused multi-modal public transport systems that are well integrated, providing seamless travel across modes”.

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## Recommended Modal Split by Public Transport Modes

<table>
<thead>
<tr>
<th>S.N</th>
<th>City Size (Population)</th>
<th>Recommended Modal Split</th>
</tr>
</thead>
<tbody>
<tr>
<td>i.</td>
<td>Less than 1 million</td>
<td>30%</td>
</tr>
<tr>
<td>ii.</td>
<td>Around 1 million</td>
<td>35%</td>
</tr>
<tr>
<td>iii.</td>
<td>1.5 million</td>
<td>40% plus</td>
</tr>
<tr>
<td>iv.</td>
<td>3.0 million</td>
<td>50% plus</td>
</tr>
<tr>
<td>v.</td>
<td>6.0 million</td>
<td>70% plus</td>
</tr>
<tr>
<td>vi.</td>
<td>9.0 million</td>
<td>75% plus (85% with mass transit system)</td>
</tr>
</tbody>
</table>

Source: UDPFI Guideline, M/O Urban Affairs & Employment, August 1996.
Multi Modal Transport System

- Two or more different modes are used for single trip between which the commuter has to make a transfer.
- Transfer is an essential part of multimodal trip and commuters have to change modes at interchange.
- Seamless travel is an important parameter of MMTS.
Choice of Public Transport

• The choice between public transport and private transport is an individual decision which is further influenced by:
  - Govt. policies and
  - Urban Local Bodies (ULBs) decisions. (parking fees, vehicle tax, etc.)

• Public transport provides satisfaction to collective well beings than individual desires/needs.
Individual Choice

Viability and Affordability

Public Transport

Pvt. Transport

Techniques for Priorities

Multi Modal Integration
Components of MMTS

- Metro
- BRT
- Monorail
- LRT
- HCBS
Planning Approach

- Integration of Land use and Transport

Transit Oriented Development

- Transit Oriented Development (TOD) is a relatively new initiative which strives for development focused in a 400-800 metre radius of a transit node.

- TOD envisages developing mixed use (residential and commercial) areas designed to maximize access to public transport, and incorporate features to encourage transit ridership.
• TOD has assumed significance after constitution of UTTIPEC (Unified Traffic & Transportation Infrastructure Planning and Engineering Centre). Source: DDA

• Influence Zone (500 mt. wide on both sides of the transport corridor) is to be developed as Intensive Development Zone as per TOD Guidelines of UTTIPEC (Draft).

• UTTIPEC has framed draft guidelines for TOD based on scheme of redevelopment, layout plan and provision of higher FAR.
• MPD-2021 also recommended that metro corridors up to a certain depth would require selective redevelopment and re-densification/intensification of existing land uses based on site conditions.

• It is proposed that comprehensive redevelopment schemes of the influence area of MRTS stations be prepared.
Integration of Bus and Metro

- More than 50% of total motorized trips in urban areas are by buses.
- Bus demand is more due to:
  - Trip length (mostly upto 10 Km.)
  - Network demand
  - Cost effective
  - Frequency
  - Wide catchment area
  - At-grade & more passenger friendly.

There is need to integrate:
- Bus
- BRT
- Metro
<table>
<thead>
<tr>
<th>S.N.</th>
<th>Integration</th>
<th>Characteristics</th>
</tr>
</thead>
</table>
| i.   | Network Integration     | • Integration of bus network with MRT & LRT reduces wasteful duplication of services.  
                              • Enhance to meet commuters’ needs.                                                  |
| ii.  | Fare Integration        | • Integrated ticketing system to allow passengers to travel on MRT, LRT and buses.                                                               |
| iii. | Information Integration | • Traveler Information Services (TIS) to provide complete real time information on public transport system at MRT stations, major bus stops, interchange nodes, etc. |
| iv.  | Physical Integration    | • Provision of transfer facilities such as covered link ways, overhead bridges, under passed, bus shelters, taxi stands, etc.                  |
| v.   | Financial Integration   | • Sharing of budget allocation and cost sharing among various agencies.                                                                          |
| vi.  | Institutional Integration | • Integration among different agencies, operators, etc.  
                                       • One Controlling Authority above all.                                                   |
In MMTS, integration of various modes should be in such a way that

- most of commuters do not have to walk more than 500 mt. to reach public transport.

- spend too much time at interchange.
Interchange Design

Commuter should not negotiate more than two interchanges to reach their origin/destination.
Integration of IPT with MMTS

• The role of Intermediate Para Transit such as
  - minibus,
  - matador type vans,
  - auto-rickshaws,
  - phut-phut,
  - shared taxi, etc. should be encouraged for generation and
distribution to feed metro and other constituent modes of
MMTS.
Role of NMT

• BRT system must take into account of
  - Slow moving vehicles and
  - NMVs

as trip of every mode of MMTS involves access trip
either by non-motorized vehicles or slow moving vehicles.
Role of ULBs

- restricting on-street parking,
- prohibiting entry of low occupancy vehicles in congested areas/roads,
- higher penalty charges for violation,
- increasing tax on personalized vehicles, etc

may help to reduce personalized modes MMTS corridors.
Feeder Service for MMTS

• Feeder bus service to pick up and drop the passengers from MMT stations to CBD/major work centre will also promote multi modal transport.
MMTS in Delhi

- The Government of NCT of Delhi (2006) has developed an Integrated Multi Modal Public Transport Network for NCTD using modes such as
  - Bus Rapid Transit,
  - Light Rail and
  - Monorail in addition to the
  - metro rail and the present DTC bus services integrated through multimodal interchange points.

- This project has been approved by GNCTD for phased implementation by 2020.
• The total length of the public transit network including 250 km of Metro will be 750 km.

• To implement this project, the Government of NCT Delhi has set up a ‘Special Purpose Vehicle’ under the name of **Delhi Integrated Multi Modal Transit System (DIMMTS) Limited** on 19th April, 2006.

• DIMMTS Ltd. will be responsible for all aspects of implementation, operation and maintenance of the proposed multimodal network i.e. planning, design, financing, implementation, operation and maintenance of services and associated infrastructure.
MMTS in Hyderabad

• Multi Modal Transport System (MMTS) is commuter rail system in the city of Hyderabad.

• Transport in Hyderabad is classified into two categories namely

  i) MMTS stations in Hyderabad

  ii) Railways stations in Hyderabad.
• The Falaknuma – Hyderabad (FH) is a rapid transit service of the Multi-Modal Transport System of Hyderabad.

• It covers 17 stations and runs between Falaknuma and Nampally (Hyderabad). It is operated by South Central Railway.

• There is a combined pass issued by the state-owned APSRTC and MMTS.
• Buying a single pass helps in traveling by bus as well as the train.

• It is a preferred public transport for people working in and around HiTech City, Madhapur, Kondapur & Gachibowli.

• All major IT companies run shuttle service for their employees to and from HiTech city.
Concluding Remarks

• It is emphasized that utilization of full capacity of MMTS depends on mobility of NMT and intermediate para transit. Hence, better, safe and efficient transport infrastructure must be provided to meet the requirements of these modes.

• Travel Behavior must be changed.

  - We plan that others should travel either by DTC, HCBS or
    Metro but we travel by own car.
  - Nano car likely to be in market.
  - Reduce Personalized modes then only share of Public transport will increase.
  - Need to integrate DTC/HCBS/Metro.
• TOD will growth and redevelopment to take place along with the transit corridors.
• By incorporating **land use** and **transport** in the form of TOD will significantly contribute towards achieving the objectives of NUTP 2006.
• In mixed land use areas and intensive development zones, there is need to prepare integrated land use transport plan as per availability and operation of constituent modes of MMTS.

• Fare policy and unified ticketing system for MMTS must be based on affordability and socio-economic characteristics of mass users.
Thank you