Presentation on Integrated Land use - Transport Planning framework at Local Area level: Case study - Delhi

Presentation by
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Project no. 14

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Master Plan / Zonal Plans are guiding policies and plans which aim at providing direction of spatial planned development.

The Primary objectives of Master plans is to provide guidelines for planned development of city and local areas.

The Strategies / policies of development as per present practice follow top down approach.

Local Area Plans are the actual plans that will be implemented on ground & hence its mobility requirements needs be formulated along with city level /zonal level.
Concerns related to Transportation in Local Plans

- Landuse and Transportation are intrinsically inter linked
- Transport Master Plans are prepared at city level wherein zonal / local area level transportation plan details are missing.
- Absence of sustainable mobility plans at local level affects the overall city sustainable mobility.
- Existing practice of city level transport planning neglects the local level needs of mobility options such as Walking, Cycling and NMV etc.
Project Aim and Objectives

➢ **AIM:**

✓ To evolve integrated Landuse transport planning framework at local area - Delhi

➢ **OBJECTIVES:**

✓ To appreciate the importance of integrated Landuse – transport planning at local level

✓ To review a best practices of integrated Landuse – transport planning practices at local area / micro level.

✓ To propose a planning framework for integrated Landuse transport planning at local level.
Case studies on Integrated Land use - Transport Development - Attempts of New Towns in India

Transit Oriented Development in Naya Raipur

High Access corridor Development in Dholera
Case studies on Integrated Land use - Transport Development- Attempts of New Towns in India

- Town center at the intersection of two sub-arterials
- Dedicated MRT/BRT corridor along Sub-arterials
- Prioritized NMT network
- Mixed use developments
- Transit station
- Interconnected streets
- Pedestrian friendly environment
- Continuous NMT Corridors
- Street facing buildings
- Streetscape design
- Safety and security

Amaravati Town ship development
Case studies on Integrated Land use - Transport Development – International Experiences

Integration of housing and metro in Singapore

Transit Oriented Development along BRTS in Curitiba
Ahmedabad:

- City has well-defined road hierarchy and adequate ring and radial roads, river crossings.
- Well-defined and comprehensive network along with city’s mixed landuse development.
- Well-integrated transit and land development create urban forms and spaces that reduce the need for travel by private motorized vehicles (ATL 7-8 KM).
- Areas with good access to public transit and well-designed urban spaces – leading to attractive places for

  - People to live
  - Work
  - Learn
  - Play and
  - Interact
Ahmedabad Town Planning Scheme: Equitable Development

- Urban expansion managed through structures process - TPS
- Landuse Planning integrated with service provisions at peripheral areas
- TPS is pooling and readjustment of lands
- Appropriating part of land for public purpose
- Widely used after amendments to Gujarat State Town Planning and Urban Development Act - 1999
- Enables negotiations between Local Planning Authorities and Landowners

TPS salient features:

- More equitable allocation of urban land
- Reserving land for public purpose
  - Low Income housing
  - Open spaces
  - Road s
  - Utility infrastructures
  - Social amenities
Literature Review

✓ Private landowners benefit in two ways:
  ▪ Compensation payment for land acquired
  ▪ Rise in land prices after development of trunk infrastructure

Ahmedabad Town Planning Scheme:

✓ Landowners receive a reduced area after the appropriations
✓ Appropriated land reserved for various public purposes
✓ Participation of landowners through local level negotiations and flexible in terms of accommodating existing informal settlements
Profile of Case City of Delhi

- Delhi, the National Capital Territory (NCT) of India is a large metropolitan area in India: 1483 Sq. KM
- 5th most populous city of the World
- Migration: 2 to 3 lakh every year

- Literacy rate: 86%
- Vehicular growth – 19 lakhs to 1 crore (in last 26 years)
- Metro operational length 373 KM
For the planning purpose Delhi is divided into 15 Zones as MPD 2021

Zonal development for all zones were notified

5 zones were identified as urbanisable area (Zone K-I, L, N, P-II and J zones

Area available for urbanisable 30,000 Ha

19,000 Ha of net available for development

17 L housing and its facilities are to be designed
Government 40%

- Similar to TPS scheme of Gujarat
- *Infra cost* would be born by land owners as per actual expenditure
- Additional 15% of FAR for Social Housing
Regulations of LPS

- Eligibility
  - Minimum 70% to be pooled
  - Contiguous land
  - At least minimum 30 m wide road

- Zonal Plans were notified, but for participation under pooling
  Landuse is not the criteria and there is no minimum size of land to participate

- DDA will prepare spatial distribution of 60 : 40 and developer will prepare the 60% land utilization plan based on Master Plan and get the Provisional development license

- On payment of External development charges, developer will get the Final Development License to execute the development as per the approved Layout plan and building plans.

- Completion/Occupancy certificate shall be issued.

- Entire process will be done through Single window system for smooth function of the development.
Concerns in the LPS with Reference to Transport

- Development Controls are as per Master / Zonal Plans which are rigid in nature
- FAR is uniform based on Landuse,
- There is no entropy
- Segregated land use will increase the local motorized trips, dependence on motorized trips leads to congestion and pollution
- Macro level network is defined but micro level is to be proposed by developers, but there is no clarity how it is to be developed – affect the accessibility
- Land-uses along proposed Transit corridors are not defined, which may leads to non utilization of potential of the corridors.
- No additional benefits for Green certified buildings
- Parking norms are rigid for all types of development
- Environmental Sensitivity analysis is absent at Zonal level
Proposed Transport Sector planning norms

- Major Regional and City level connectivity by Urban Extension roads and laying of Major Trunk lines
- Each zone is divided into Sectors
- Development shall be as per modules of Sectors, and is bounded by minimum **30 m roads**
- Hierarchy of road network:
  - Urban Extension road 80 – 100 M (segregated space reserved for Trunk Infra and Mass transportation corridor)
  - Arterial road 60 – 45 M
  - Sub-Arterial road 30-24 M
  - **Local street** – not defined
  - **Collector streets** – not defined
  - Pedestrian / NMV only street – not defined.
- Micro level network is for 60 % of land to be developed and to be defined at Layout levels.
Interventions required for Local Area Plan in terms of Transport network

- Micro level *hierarchy of road network* to be introduced from 6,12,18 and 24 m road network in preparation of LAP – *Accessibility*

- Mandate green corridors by introduction of exclusive pedestrian and Cycle only roads at Neighborhood and Community level development and connecting transit stations – *Walkability*.

- Encourage non- motorized network – segregated lanes for NMV at 24m and above roads

- Additional *development control* norms for Mass transit corridors

- Flexibility of allowing *FAR utilization* within the sector

- Mixing of uses at Neighborhood and Community level and at Transit stations – *bringing entropy*

- *Parking norms* for individual buildings shall be as per the public transport accessibility criteria

Layout development should respect the local flora and fauna
Relation between Road width, FAR for different land use

<table>
<thead>
<tr>
<th>Road width in metres</th>
<th>Residential</th>
<th>Commercial</th>
<th>Public &amp; Semi-public, T&amp;T, Public utility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 9</td>
<td>1.50</td>
<td>1.50</td>
<td>1.25</td>
</tr>
<tr>
<td>Over 9</td>
<td>1.75</td>
<td>1.75</td>
<td>1.50</td>
</tr>
<tr>
<td>Over 12</td>
<td>2.00</td>
<td>2.00</td>
<td>1.75</td>
</tr>
<tr>
<td>Over 18</td>
<td>2.25</td>
<td>2.50</td>
<td>1.75</td>
</tr>
<tr>
<td>Over 24</td>
<td>2.50</td>
<td>3.00</td>
<td>2.00</td>
</tr>
</tbody>
</table>

Note: Only effluent treatment plant, open to sky swimming pool, car parking are excluded from FAR computations.

Source: Bangalore Local Area Plans guidelines
Integrated Land use Transport approach at Local area Level : Case study Zone P – II : Sector 7

**Zone – P II**

High potential for a sound green-blue infrastructure

Sector area (P-II 07 - 554/237 Ha)

- Presence of a big LDRA and large parcels of forest land.
- Bounded by UER II and III on top and bottom of sector and 45 m on North to South directions
- Proximity to Zone O and presence of Nalas.
Demonstration of Principles

SECTOR CONTEXT - Landuse

ZONE P-II
Sector 07
Total area: 554 Ha
Vacant Area: 237 Ha
Demonstration of Principles.....

**LEGEND**
- Sector area: 554 Ha
- Forest Land
- LDRA
- Village Abadi Area
- HT Line
- Developable Land Area: 237 Ha
- Existing Nala and Water Bodies
- Nala Buffer

**DEVELOPABLE LAND** (237 Ha)

**BREAK-UP OF 60% LAND**

<table>
<thead>
<tr>
<th>Component Description</th>
<th>Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>53% land component for residential (Gross Residential)</td>
<td>125.61 Ha</td>
</tr>
<tr>
<td>5% of land component for commercial</td>
<td>11.85 Ha</td>
</tr>
<tr>
<td>2% of land component for public-semi public</td>
<td>4.74 Ha</td>
</tr>
</tbody>
</table>

60% Land Component for Developer Consortium (142.20 Ha)

40% Land Component for City level amenities (94.80 Ha)

40% Land would be utilized for provision of roads, greens, City-level PSP, Utilities etc. as per the Notified policy.
Development scenario

BREAK-UP OF GROSS RESIDENTIAL LAND (125.61Ha)

<table>
<thead>
<tr>
<th>Description</th>
<th>Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net Residential (55% of Gross Residential)</td>
<td>69.09 Ha</td>
</tr>
<tr>
<td>Land for Neighbourhood facilities, green and roads (45% of Gross Residential)</td>
<td>56.52 Ha</td>
</tr>
</tbody>
</table>

FAR AND BUILT-UP CALCULATIONS FOR NET RESIDENTIAL

<table>
<thead>
<tr>
<th>Description</th>
<th>Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net residential area</td>
<td>69.09 Ha</td>
</tr>
<tr>
<td>Built-up Area (FAR 2)</td>
<td>1381710 Sq.m.</td>
</tr>
<tr>
<td>Additional EWS Built-up (15% of the net residential built-up area)</td>
<td>207256.50 sqm</td>
</tr>
<tr>
<td><strong>Total Built-up Area</strong></td>
<td>1588966.50 sqm</td>
</tr>
</tbody>
</table>

Assumption

Average size of DU – 100sqm
Size of EWS – 32 sqm.

POPULATION CALCULATIONS

<table>
<thead>
<tr>
<th>Description</th>
<th>Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estimated Population</td>
<td>91,322</td>
</tr>
<tr>
<td>Existing Population +VILLAGE ABADI</td>
<td>16,971</td>
</tr>
<tr>
<td>LDRA</td>
<td>12,652</td>
</tr>
<tr>
<td><strong>Total Population (including existing)</strong></td>
<td>1,20,946</td>
</tr>
</tbody>
</table>

8 NEIGHBORHOODS (13,000 population / neighborhood)
Entropy Analysis of Proposed Landuse mix

- Entropy is a measure to check the mixing of land uses. Higher entropy implies higher mixing.
- In the case study area the entropy index is 0,
- Which indicates there is no mixing of uses leading to generation of local motorised trips.
Planning Approach for Desired Integrated landuse Transport Structure at Local area level

- Development of high **mix of landuses**
- Ensuring centrality of various facilities from all sub areas within LPA in terms of **accessibility**
- Ensure desired transport system development to access different land uses for various purpose in terms of
  - Connectivity
  - Continuity
  - Segregation
  - width,
  - availability,
  - parking infrastructure etc.
Typical proposed road cross sections
Demonstration of Principles

Making pedestrian and cycling interlinkages between neighbourhoods through community greens, that also integrate with Neighborhood Greens through a continuous 6m *pedestrian/ cyclist only* network.
Demonstration of Principles

Locating the Neighbourhood facilities within 500m walking distance in all neighbourhoods and providing access to District and Community facilities from major ROWS.

- People to live
- Work
- Learn
- Play and
- Interact
THANK YOU