MUMBAI DEVELOPMENT PLAN (2014-2034)

Non-motorized Transport

17th December 2013

www.embarqindia.org
Objective

NMT Access

- NMT network at city and planning sectors
- Regulations
- Street Design Guidelines
- Gender and Access
Why look at non-motorized transport?

- 51% of all trips are by walking; yet these are the most vulnerable. 58% of all fatalities are pedestrians*
- Walking + public transport trips = ~88%
- 60% of last mile connectivity trips are on foot
- 80% of trips are within 15 minutes

[Source: *Traffic Police]
Comments on Preparatory Studies

» **Strong focus on vehicular congestion.** How will the proposed road projects or road widening projects benefit / improve existing public transport services or non-motorized transport?

» With 56% of NMT, no mention of the percentage of NMT infrastructure as part of total road space

» **Strategy for improving quality of NMT access at city-level and planning sector level is missing**

» No mention of pedestrian fatalities and how they will be addressed

» Gendered perspective of transport and accessibility is missing
Approach

Frame a Transport Strategy for Mumbai within the overall framework of the National Urban Transport Policy (2006)

“People occupy center-stage in our cities and all plans would be for their common benefit and well-being”

NUTP’s objective is to bring about a more equitable allocation of road space with people, rather than vehicles, as its main focus

Emphasis not on mobility but accessibility
Non-motorized Transport Strategy for Mumbai
Suggested Strategies for City

Need for a non-motorized transport strategy for Mumbai

- Vision, Objectives and Targets
- City-level NMT network plan
- Regulations
- Street Design Guidelines
- Institutional Structure

Targets

- Achieving zero fatalities from road accidents
- Increasing pedestrian and bicycle modal shares
- Providing sufficient, safe and comfortable NMT infrastructure (as % increase)
Case Study: Zurich (1977)

Pedestrian plan 1977

Source: City of Zurich, Department of Civil Engineering
Case Study: Zurich (1990)

New transport policy: «blue book»:
- Promote public transport
- Ensure pedestrian and bicycle traffic
- Reduce motorized traffic
- Channel motorized traffic - calm residential areas
- Reduce parking spaces, especially for commuters

Source: City of Zurich, Department of Civil Engineering
Case Study: Zurich (2004)

- Pedestrian Plan (2004)
- City-wide continuous networks
- Pedestrian areas in district centres

Source: City of Zurich, Department of Civil Engineering
Suggested Strategies at City-level

- NMT priority corridors and zones in the Development Plan
  - Criteria for NMT only streets: Through city-level public open spaces connecting to city roads and “green grid”

- Criteria for NMT priority streets: Along public transport corridors (metro-rail, monorail and major bus routes)

- Criteria for NMT priority zones (with 30km/hr speed limits): TOD areas, residential, business and historic neighbourhoods, gaothans / koliwadas, informal settlements, areas around large pedestrian and NMV generators (educational institutions especially pre-and primary schools and amenities etc)
Proposed Strategies for Planning Sectors

- NMT only / priority streets at Planning Sector Scale
  - Existing NMT-only paths
  - Feeder routes to mass transit stations, market streets and local streets in residential neighbourhoods and business districts
Regulations
Regulations

- Land allocation and regulations for amenities which impact access

- Public Toilets
  - Land allocated within 15 minutes walking distance
  - Special attention to areas along high NMT volumes, especially NMT only and priority streets
  - Accessible from public streets of at least 12m width
  - Clearly visible from the streets

- Community bins
  - Land allocation for community garbage bins
Regulations

- Public Reading Rooms / Vachnalayas
  - Allocation of land for public reading rooms
  - Land allocated within 5 minutes walking distance of informal settlements
  - Special attention to areas along high NMT volumes, especially NMT only and priority streets
  - They should be accessible from public streets and porous to the street

- Traffic Police Chowkies
  - Consultation with Traffic Police to identify land allocation and requirements
Regulations

BEST and IPT Chowkies
- Consultation with BEST, Auto and Taxi unions to identify land allocation and requirements

Linear Markets and Informal Service Providers
- Serviced land needs to be allocated for linear markets within proximity of mass transit stations
- Serviced land allocated for informal service providers along large scale generators (educational institutions, hospitals etc)
- These need to be accessed from public roads / streets
- They cannot be allotted a single plot or multistoried structure
Street Design Guidelines
Street Design Guidelines

A well defined, implemented and enforced strategy can help reduce the number of fatalities as proven by ‘vision zero’ action plans by developed countries.

Denmark’s vision zero:
Street Design Guidelines

An accident is a rare, random, multi-factor event

Driver / Pedestrian

Vehicle characteristics

External environment

If one of the factors is corrected, it is likely that the accident would not happen, or at least, its severity would be reduced.
What are these ‘external environment’ factors?

- Road geometry
  - Road width, continuity, curvature, elevation, etc.
  - Junction type, lane alignment, channelization, etc.

- Pavement conditions
  - Potholes, debris, dust, water-logging, etc.

- Signage & lane marking

- Facilities
  - Crossings, U-turns, parking, auto-rickshaws

- Weather

- Lighting

- Visibility

- …and finally, Traffic

Most directly relate to Street-Design and can be solved by well-designed roads.
Street Design Guidelines

Allocates space to ALL road users and uses...democratically

- Private vehicles: 2/4 wheelers
- Public Transport, IPT & parking
- All NMT users
- Ancillary street uses, immovable facilities
# Street Design Guidelines

<table>
<thead>
<tr>
<th>Category</th>
<th>Guidelines</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continuous length</td>
<td>• No frequent gaps in footpath, cycle track, etc</td>
</tr>
<tr>
<td>Constant width</td>
<td>• No bulges or bottlenecks in traffic lanes</td>
</tr>
<tr>
<td>Consistent design</td>
<td>• No “surprises” to the road users / unfamiliar design, in signage, lane markings, signals, etc</td>
</tr>
<tr>
<td>Contextual to the local scenario / land use</td>
<td>• Design differently for local roads, arterial road, neighborhood streets, commercial streets, business districts, etc</td>
</tr>
<tr>
<td>Control excessive speeding</td>
<td>• Design such that all vehicles are induced to travel at a safe speed</td>
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</tbody>
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Street Design Guidelines

Wide refuge area

Defined stop-lines

Placement with max. visibility, min. conflict & nearest transit facility

Dedicated signal phase and warning signage

Ramps for a uniform level

Speed calming for oncoming vehicles
Street Design Guidelines

- Continuous & constant carriageway with 3.5 m lane as basic module
- Buffer area to accommodate all ancillary uses
- Clear difference in treatment: colour, material, height
- Continuous and constant footpath with 1.8m uninterrupted walking space
Street Design Guidelines

- Wide refuge area with tapered carriageway
- Appropriately placed stop lines and traffic calming
- Properly aligned Zebra crossings
- Median division for waiting area with protected refuge island
- Corner kerbs Minimum turning radii with well oriented ramps
- Optimised signal phasing with protected phase for pedestrians
Gender and Access
Gender and Access

- Travel patterns are gendered and vary across income, age
- Trip chaining, more walking and public transport trips, more trips during off-peak hours, more non-work trips
- Women travel more by bus
- Women feel unsafe when boarding / alighting
- Lack of or unmaintained public toilets

Source: World Bank, 2011
Proposed Strategy at the City-level

- Incorporate gender disaggregated data that reveals the travel needs of women
- Holistic approach: **Affordability, Accessibility, Safety & Security, Information and Employment**
- Regulations to encourage “street eyes”: Mixed uses, porous building edges and block sizes, planning for street vendors; and not restricted to TOD areas
- Create a framework to evaluate impact of regulations on women’s experience / access
Proposed Strategies at Planning Sector-level

- Spatial maps to audit streets and public spaces based on women’s experience of safety, comfort and convenience

Source: www.harassmap.org/en
Institutional Structure
Proposed Institutional Structure

Create a dedicated city-level NMT Department or NMT Cell within Roads Department at par with Chief Engineer

Support it with offices at the ward levels

Key Responsibilities

- To create and implement the NMT Strategy for Mumbai
- To prepare Street Design Guidelines for Mumbai
- Undertake capacity building of MCGM engineers
- Auditing streets based on women’s experience of safety, comfort and convenience and undertake improvements

Key Powers

- All road projects to have prior approval from NMT Cell
Summing up

- Frame transport strategy within the framework of the National Urban Transport Policy (2006)
- Create a Non-motorized Transport Strategy for Mumbai
- Regulations to facilitate NMT access
- Street Design Guidelines
- Incorporate gender perspective in urban development regulations, streets and public space design
- Re-evaluate the proposed road projects in who they serve and how will they improve NMT and public transport modal shares?
Thank You

Questions?