

DEVELOPMENT OF SAFE URBAN ROADS

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issues



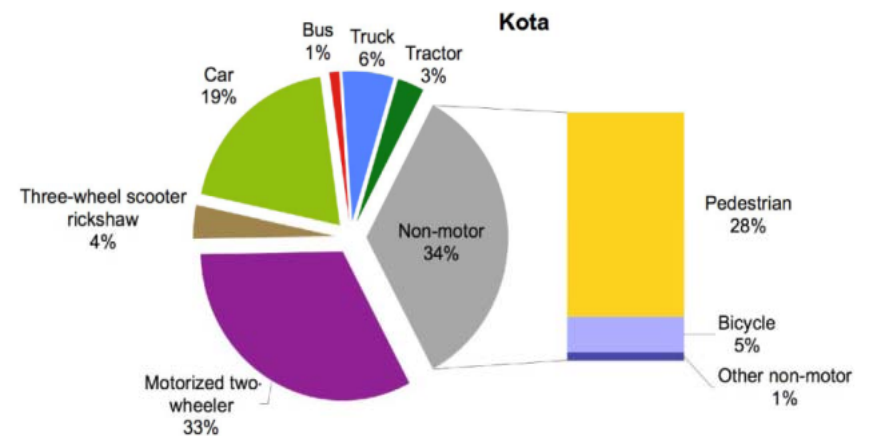
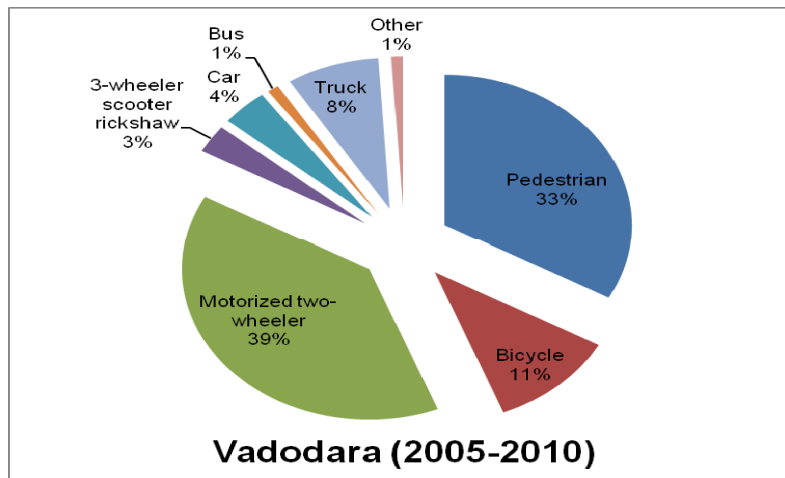
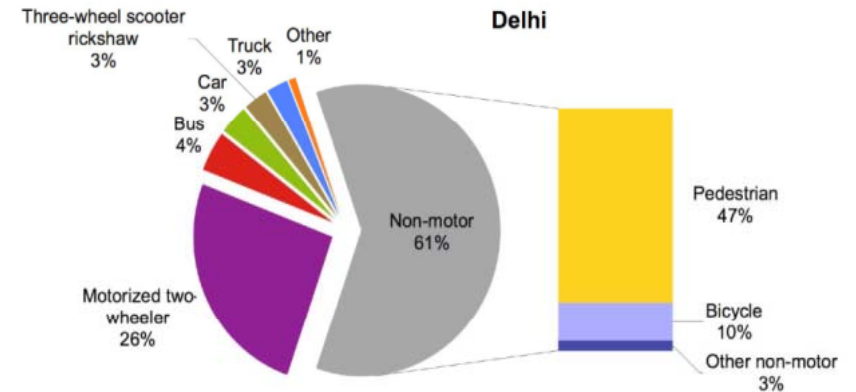
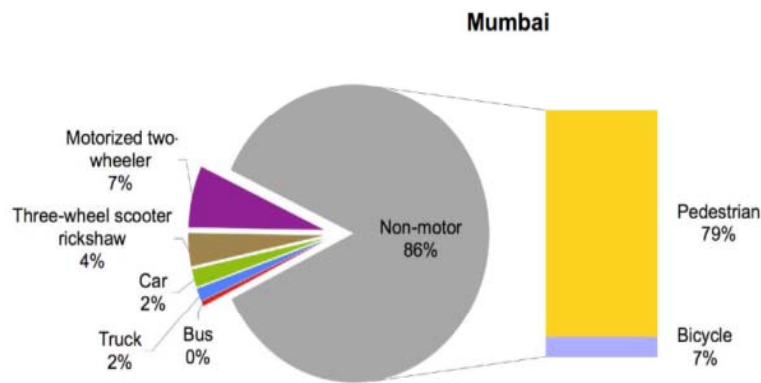
Introduction:

- *People depend on roads in their daily life – to get to school, to work, or to the health center. Roads underpin the businesses, agriculture and trade which provide the jobs that lift nations out of poverty.*
- *President John F Kennedy has said: “Our wealth did not create our transport infrastructure; it is our transport infrastructure which created our wealth”.*
- *Enormous benefits of major road networks do not come without costs. Every day 3,500 people are killed and more than 100,000 people are injured in road crashes.*
- *A prevalence of under reporting of serious crashes.(WHO-2009)*

Half of the world's road deaths are vulnerable road users (pedestrians, bicyclists and motorcyclists) and the majority of those killed are between the ages of 5 and 44 (WHO, 2009).



Who are the victims in Road Crashes (Delhi (2001-2005), Mumbai (1996-1997), and Kota (2007), Vadodara



Pedestrians are the largest no. of victims followed by motorised two wheeler riders

NMV victims are more than 60% in large cities

Victims in Urban Roads

- Highest share of Road fatalities in urban areas are pedestrians regardless of country income; eg
- New York 54%
- London 30%
- Johannesburg 33%
- Mexico city 52%
- Delhi 50%
- Mumbai 75%
- Tehran 33%
- Shanghai 40%

Tremendous traumatic and emotional impact of road crashes.

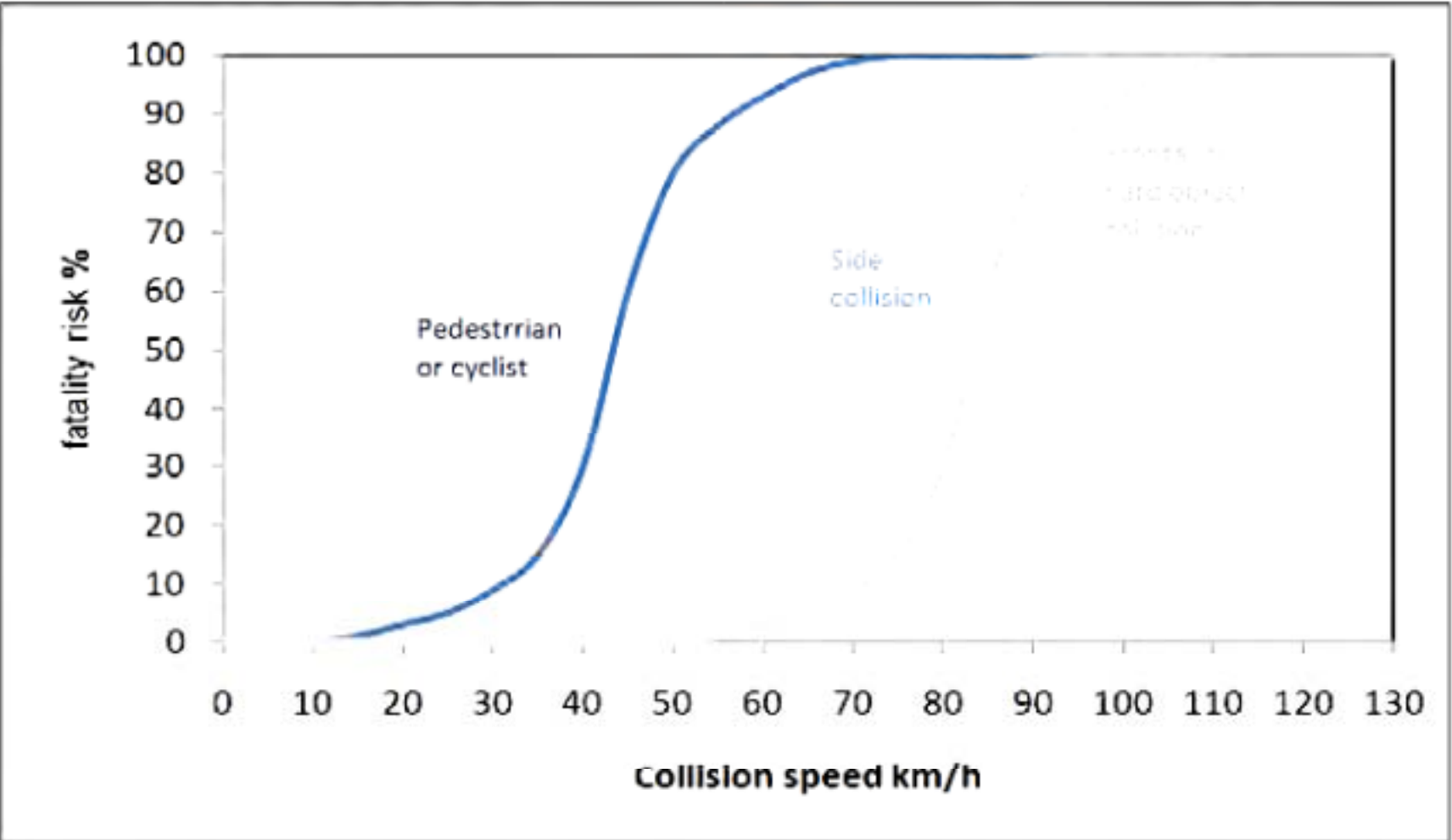
Vast economic consequence. Cost to global economy US\$1.4 billion every day, in terms of lost productivity, health care, emergency services.

Crashes are leading cause of traffic congestion, itself a source of environmental damage

Nationally, road crashes typically cost the equivalent of 1-3% of a country's Gross Domestic Product.

Personally, road crashes can be the trigger that plunges a family into poverty.

- *Infrastructure plays a crucial role in road safety*
- *There has to be a clear distinction and separation between inter-urban roads for high speeds and urban roads for lower vehicle speeds and priority for vulnerable road users*



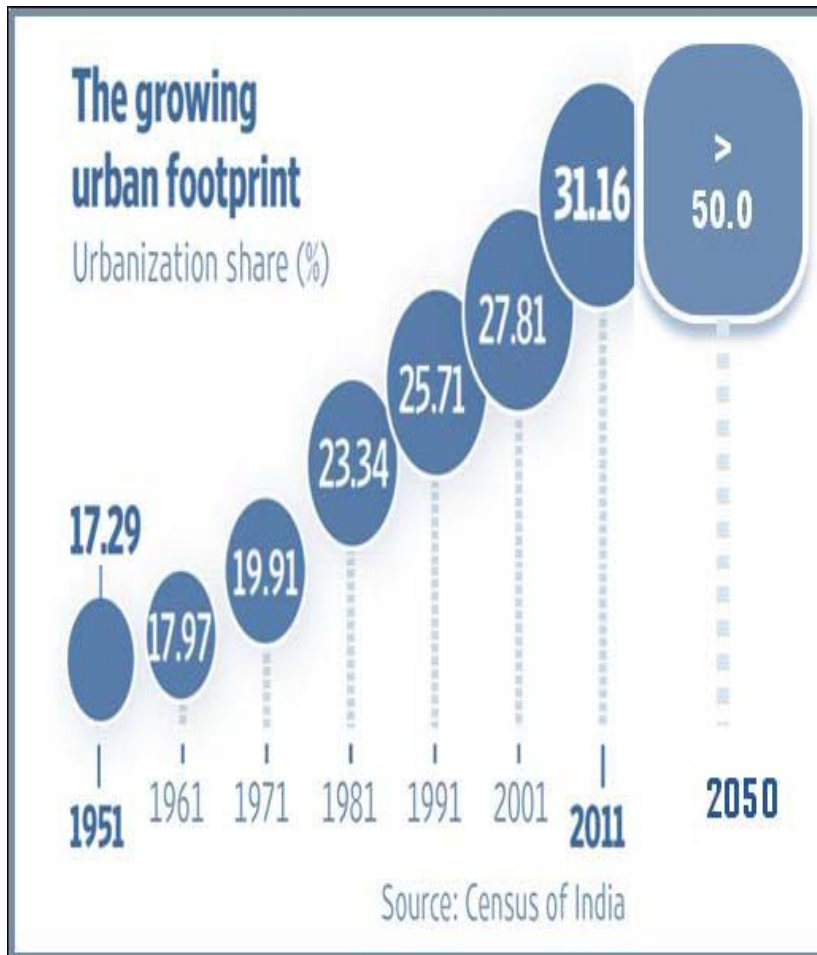
➤ *Between 1980 and 2000 in Sweden, Netherlands and United Kingdom, infrastructure treatments Combined with speed management measures reduced the number of deaths by around a third.*



Present Scenario- India



Urban Scenario



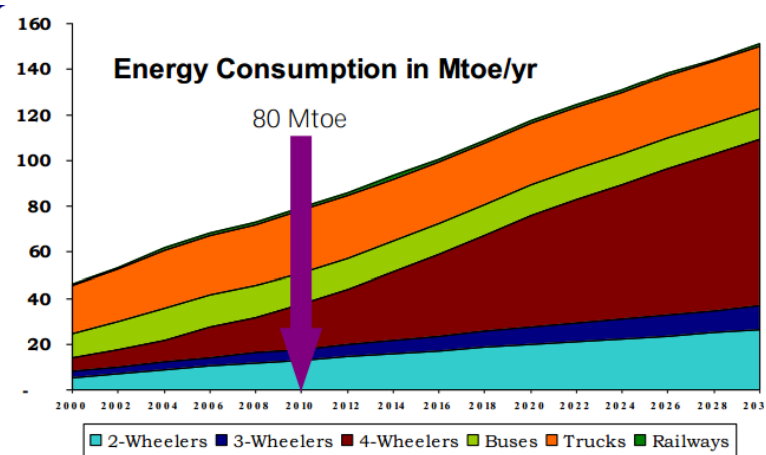
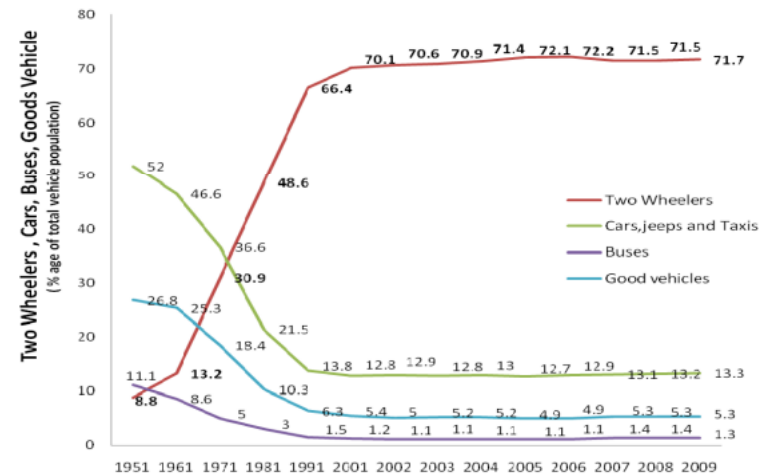
Urban population likely to increase from present 377 million to 600 million by 2030 & 900 million by 2050

Urban population is increasing at a rapid rate, so is the *gap* between demand and supply of urban services

- No of census towns has increased by **185%** whereas the number of statutory towns has increase by **6.37%**
- This shows no of rural settlements has attained urban characteristics

Motor Vehicle Scenario

- From 2001 to 2011, the annual growth of population 1.6%, but motor vehicles increased by almost 10%
- Energy Consumption by transport sector – 80 Million Tons of Oil Equivalent (Mtoe)/ year

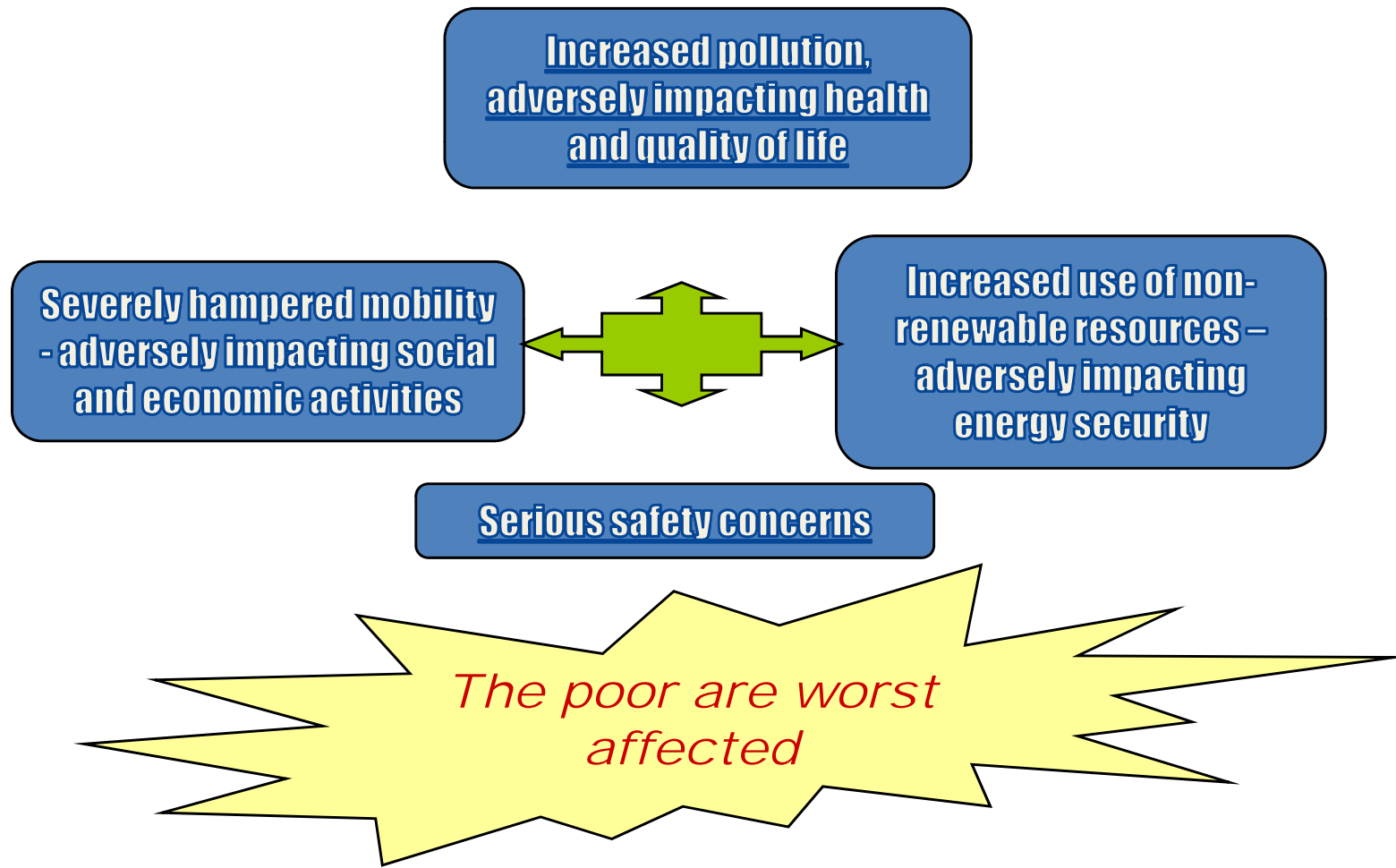


Urban Land use - Transport Issues



- Cities are Sprawling
- Environmental Degradation
- Declining PT & NMT
- Low Investments
- Supply Side Focus
- Poor Enforcement
- Multiple Institutions
- Education of People

This is Leading to-



Not enough focus on safety

- Things which compromise road safety
 - Allowing driving licence to be issued without test.
 - Allow somebody to drive without DL.
 - Easy fitness test of commercial vehicles.
 - Still governed by penalty structures of 1988.
 - Private vehicle predominance: cars and two wheelers.
 - Public transport not vibrant and robust.
 - Improper and insufficient road infrastructure
 - Are not paying sufficient attention to road safety despite track record.

Safe pedestrian crossing & bicycle lane



~1500 bicycles/h



At grade pedestrian crossing

Hawker Spaces and Landscaping to ensure safety from crime

- Hawker spaces defined by benches and bollards located outside pedestrian path and cycle track





Road Vaccines

"We need simple, affordable safety features. These interventions are as effective as vaccines. 30 to 50 % road accidents reduced by implementing these vaccines."

Examples of "vaccines for roads" for common crash types

Pedestrian facilities

- Foot paths
- crossings (see right)
- overpasses
- additional lane for walking
- 30km/h zones
- pedestrianisation of streets or areas

Bicyclists

- bicycle paths and lanes (see right)
- Crossings



Median separation:

- *Flexible posts*
- *Central hatching*
- *Safety barriers (see right)*
- *Wide medians*



Roadside hazard reduction:

- *Hazard removal or relocation*
- *Safety barriers (see right)*



Intersection upgrades:

- *Turning lanes*
- *Signalisation*
- *Roundabouts (see right)*

Road definition:

- *Signage*
- *Road markings (see right)*
- *Channelisation and layout improvements*



Using visual cues within infrastructure to reduce speeds and match posted speed limits:

- Width reduction
- Readable roads
- Speed limits



*Bad examples of design
and enforcement issues*



How this pedestrian light will help?



Controlling unauthorized accesses, encroachment , Parkings

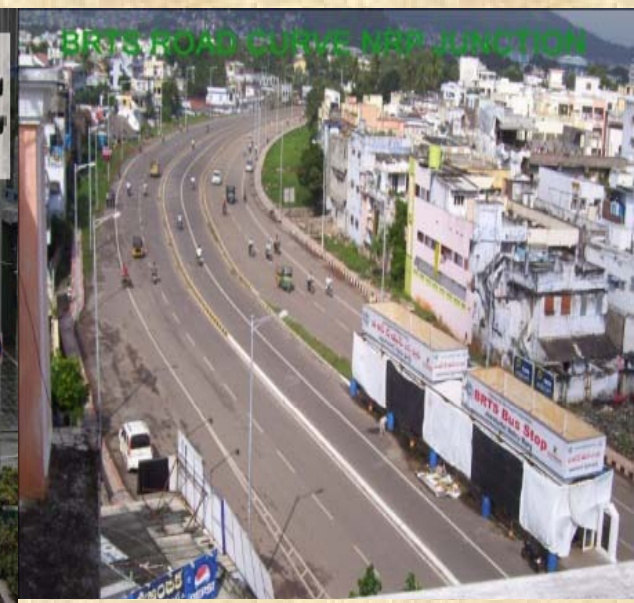


Intensive action against drunken driving

- Prosecution : 2010 – 11,388
2011- 18,073
- ✓ 22,971 - Prosecution till 30th November, 2012
- ✓ 6,375 - Imprisonments for drunken driving.
- ✓ 982 - Driving license suspensions.
- ✓ 5,900 - special drives in vicinity of pubs and bars



INITIATIVE OF MoUD FOR SAFE ROADS & URBAN TRANSPORT





National Urban Transport Policy (NUTP), 2006

Vision of NUTP

*To make our cities the **most livable** in the world and enable them to become the “**engines of economic growth**” that power India’s march towards becoming a developed country*

Save Lives, Time and Money

Elements of NUTP:

Institutional Integration

Integrated land use & transport planning

Equitable allocation of road space

Investments in public transport & NMT

Strategies for parking & freight traffic

Regulatory mechanisms for a level playing field

Innovative financing methods

ITS, cleaner fuel & vehicle technologies

Demonstration projects for best practices

Capacity Building



National Sustainable Habitat Mission (NSHM)

Focus Area for Parameters

- *Walk: Develop neighbourhoods that promote walking.*
- *Cycle: Plan and create cycle networks.*
- *Connect: Create dense networks of streets and paths.*
- *Transit: Support high quality transit.*
- *Density, Diversity and Compactness: Optimize density and match transit capacity; Create compact regions.*
- *Shift: Shift to sustainable modes by using technology, regulating road use, parking and fiscal measures.*
- *Urban Transport Fund: Institutionalise fiscal and funding mechanisms to ensure financial sustainability of investments.*
- *Impact Assessment: evaluation and assessment measures to measure impacts of urban transport policies and projects*

Document Defines Parameters, Gives Indicators of Measurement and Suggests Methods of Implementation



**National Transport
Development Policy
Committee (NTDPC) for
Urban Transport-2012**

Goals

- Organised city Bus service as per Urban bus specifications
- Add BRTS @ 20 km/1 Mn population in cities
- Rail transit projects- Estimated requirement 10 km/Mn
- Creation of an effective institutional and Implementation framework as well as capacity building
- Road network in all 2 lakh + cities to be completed with missing links
- Walk and cycle lanes to be provided in all 2 lakh+ cities and state capitals

Average annual outlays are in the range of Rs. **75,000 Crores to 1,00,000 Crores /Year.**

Urban Road Design Codes:

- *Part I: Urban Road Cross Section Design*
- *Part II: Intersection Design*
- *Part III: Road Markings*
- *Part IV: Signage's*
- *Part V: Traffic Calming Methods*

Guiding Principles for safe urban roads

Road Categories

- Arterial Roads
- Sub Arterial Roads
- Distributor/Collector Roads
- Access Streets

Speeds proposed for each road category as per current international practices.

| Road Typology | Right of Way- ROW (m) | Design speed (km/hr) |
|-----------------------------------|--------------------------|-------------------------|
| Arterial Roads | 50-80 | 50 |
| Sub Arterial Roads | 30-50 | 50 |
| Distributor/Collector or Roads | 12 - 30 | 30 |
| Access Streets | 6 - 15 | 15 |

Safe urban Roads – Speed Management by design!

Need to re-think about the Design Speed vs. operating speed, especially in urban areas

- 1. Wider lane widths (3.5m+) do not have co relation with low crash rates.**
- 2. Operating speed and driver's behavior (speeding) are related and influenced by lane widths. (Wider lane encourage high speed)**
- 3. In urban areas there should not be difference in operating speed and design speed as the geometric features are based on design speed; it can confuse the driver and encourage higher speeds.**

The new Standards like ASVV (CROW Manual-1998) and NCHRP Report (2003) recommend the following
Source- NCHRP Report (2003).

Walking and cycling along the road.

Pedestrians and non-motorised traffic should be provided with safe parallel paths, walkways and lanes. The higher the actual speed of the motorised traffic, the more stringent the requirements on safe parallel infrastructure:

sharing the road at 30 km/h;

having dedicated zones at 50 and even 70 km/h;

using well-separated secured zones at speeds above that.

12th Five Year Plan



Goals:

- Develop an effective Institutional framework
- Capacity building of state and city officials
- Development of NMV facilities in all 2 lakh+ cities and State capitals
- Promote cycle rickshaw for last mile connectivity
- Augment public transport – suburban rail, metro, BRT and city bus service
- Develop network in cities to improve mobility
- **Improve road safety**
- Use of ITS for multimodal integration & management

Service Level Benchmark (SLB)

- MoUD, GoI developed the Handbook on SLB to measure the quality of infrastructure and services. The research work in 12 cities completed and monitoring for two years started.
- Areas of interventions are as follows:
 - ✓ Public Transport Facilities
 - ✓ Pedestrian Infrastructure Facilities
 - ✓ Non Motorized Transport (NMT) Facilities
 - ✓ Level of usage of Intelligent Transport System (ITS) facilities
 - ✓ Travel speed (Motorized and Mass Transit) along major corridors
 - ✓ Availability of parking spaces
 - ✓ **Road safety (Fatality rate per lakh population: Bring down to 2/lakh in 2 years and fatality rate of pedestrian and NMT(%): bring down to 40% in 2 years)**
 - ✓ Pollution levels
 - ✓ Integrated land use transport system
 - ✓ Financial sustainability of public transport

Others

- Public Transport helpline
- Common Mobility Card
- Reforms under JnNURM
 - UMTA
 - SPV
 - Parking Policy
 - Advertisement Policy
 - Urban Transport Fund
 - Transit Orient Development
 - Traffic Information Management Centre

Promoting Quality Public Transport

Bus Funding Scheme-1/1

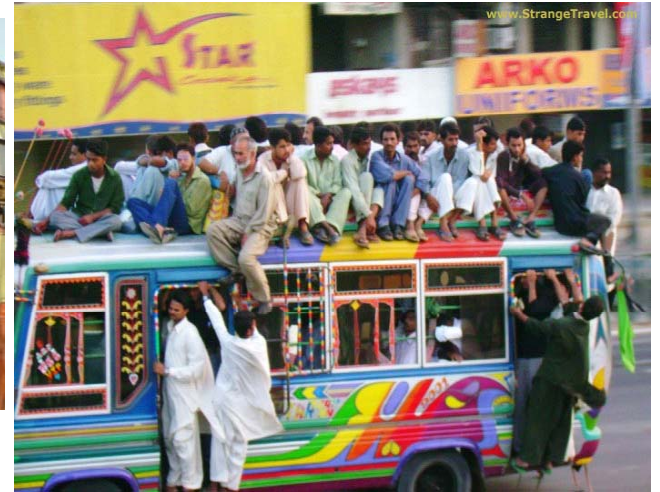
- Launched in 2009 for **67** cities (61 mission cities)
- Number of cities benefited: **63**
- 15260 buses sanctioned, around **14000** purchased
- Total project **sanctioned** :Rs. **4724 cr.**
- Number of city specific **SPVs** formed: **28**
- **Urban Transport Funds** created: **17**
- **UMTA** formed: **16**

Bus Funding Scheme-1/2

- Cities implemented Parking & Advertisement Policies: 8
- Success Model of Operation on PPP: Bhopal, Ahmedabad (AMTS & JanMarg), Indore, Bhubaneswar, Puri
- States yet to take any action: Punjab, Bihar, Jharkhand



What We Were..



What We Are.



Bring change in the perception for bus based transport system

Social uplift for 'captive' bus users

Better options for 'choice' riders

Public transport for 'ALL' – PWDs



Ujjain 900mm Diesel



Nagpur 900mm Diesel

West Bengal 900mm Diesel



Nanded Mini Bus Diesel

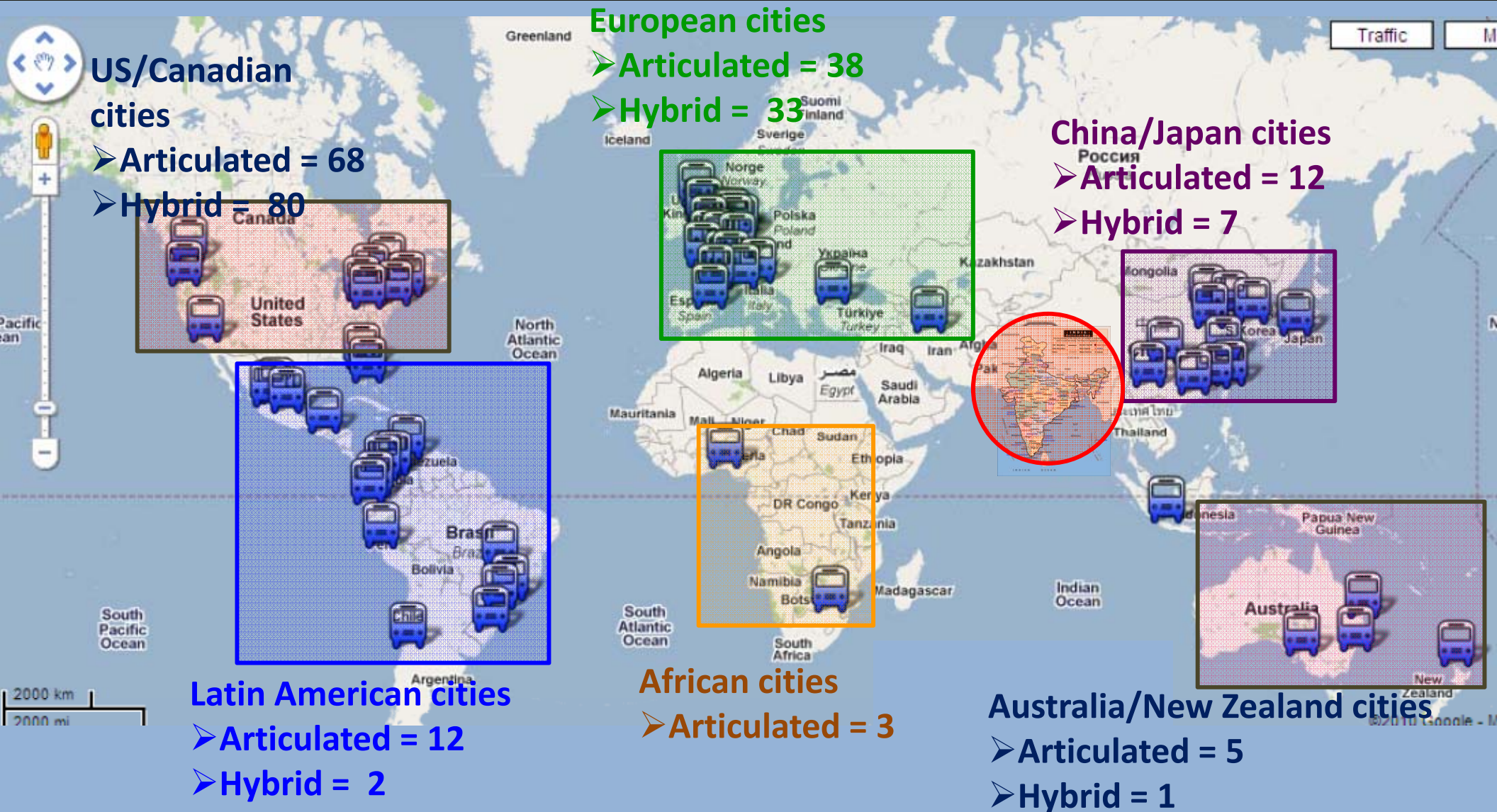


BMTC 400mm AC

Vision for the current Scheme for 10000 buses

Bringing India on Global Public Transport Map...

Articulated and Hybrid buses across the Globe...



Urban Bus Specifications-II (UBS-II)

- Improved comfort for passengers as well as drivers
- Better safety features including improved accessibility for PWDs
- Standardisation of features
- Adoption of cutting edge technology integrated with ITS
- Improved fuel efficiency
- Separate specifications for buses for BRT operations
- Emphasis on detailing of specifications
- Introduction of new variants- premium, articulated and bi-articulated buses
- Road map for future

Promoting non motorised transport

- *All the projects being funded by MoUD to be NUTP-2006 complied.*
- *NMT including pedestrian facility to be integral part of DPR of all major projects of Metro/Mono/BRT etc.*
- *NMSH guide lines to be followed*





सत्यमेव जयते

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Thank You