



NITI Aayog



GLOBAL MOBILITY SUMMIT
SEPTEMBER 7 & 8, 2018

STATE/UT STRATEGIES FOR TRANSFORMING MOBILITY

A SUMMARY





STATE/UT STRATEGIES FOR TRANSFORMING MOBILITY

We would like to thank KPMG in India for helping Niti Aayog compile this summary document from the detailed state strategy documents submitted by individual states

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FOREWORD

A modern, digitized and efficient mobility paradigm is critical for economic growth. Mobility solutions in a modern economy must address the aspects of interconnectivity, environmental concerns and minimising congestion. India is very well positioned for a mobility revolution to address the challenges and tap the opportunities thrown by this major disruption being engendered by new forms of mobility.

For India, the disruptive potential of shared, connected, and zero emissions mobility can be a major engine of growth and generator of employment. Our inherent strengths in the digital economy and vast scale for mobility solutions have the potential to make India a leading source of innovation for developed and developing economies.

The Hon'ble Prime Minister's enabling vision of a bottom up policy formulation exercise is fully reflected in this Strategy compendium in partnership with the States and Union Territories of the Nation. The States and Union Territories have come up with forward looking State/UT Strategies in consultation with all stakeholders. State wide consultations and five Regional Workshops across the Nation have helped create a common platform for cooperative federalism in mobility.

NITI Aayog in consultation with knowledge partners has identified broad thematic areas and key Strategic levers for successful policy deliberations at the National and State levels. Five thematic areas, as identified by NITI Aayog, are Maximising Asset Utilisation; Electrification and Alternative Energy; Reinventing Public Transit; Logistics and Goods Transport; and Data Analytics and Mobility.

I congratulate the NITI Aayog team for bringing out this one of a kind State Mobility Strategies compendium. My thanks to the Chief Secretaries, senior officials and other stakeholders of the State task force and our knowledge partners who contributed to this document.


(Rajiv Kumar)

Place: New Delhi



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MESSAGE

Mobility has been central to humanity since the very beginning of time. The modern paradigm of Mobility has its roots in technological change, economic activities, and modal penetration and branches out to shared, connected, intermodal, seamless and green Mobility. The Government of India wants to take the idea of transforming Mobility forward as an important dimension in policy agenda, for addressing the challenges and tapping the opportunities that exist across our diversity.

Disruptive technological changes and Innovations are pillars of driving the transformational change; this includes Electric vehicle adoption, reinventing Public Transport, institutional restructuring, enabling laws among others to drive a revolution. Data driven planning, focus on multi modal systems with common mobility access, promotion of Non Motorized Transport etc. are important aspects in achieving a progressive change.

In the process of Transforming Mobility the key Strategic drivers are the State Governments and the Union Territories which are drivers of change at the very ground level. The honourable Prime Minister envisioned State led planning to drive the change, for which the State Strategies Compendium has been created comprising of all the State and UT Strategies. The States have been actively partnering in this policy exercise through various regional workshops and State level consultations.

The Government is engaging with the new technological innovations as well as the global best practices and start-ups to redefine the concept of Mobility and make it more comprehensive suiting today's challenges. The necessary stakeholder participation from Industry, Think Tanks, Academia, and Government is facilitated through landmark events like the upcoming MOVE Summit 2018.

The able leadership at the State level and Mr. Anil Srivastava, Adviser with his competent Team has resulted in bringing out this Strategy compendium. I must compliment the Knowledge partners, Stakeholders and the officials who have contributed in making this policy document. The next step ahead of us is to get the key recommendations considered as part of the planning at the National level for Transforming Mobility.

(Amitabh Kant)

Place: New Delhi

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MESSAGE

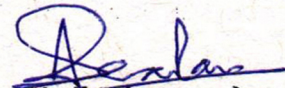
In a modern welfare State, Mobility acts as a key pillar in driving the economy forward. It serves as the lever which drives the economic activities and improves the standard of living both in Urban and Rural spheres. The new Mobility paradigm takes the deliberations beyond providing sufficient infrastructure to efficient movement of people and goods. The opportunities and solutions in this technology age are immense and an integrated vision along with thorough planning is what must drive the holistic agenda ahead.

NITI Aayog is encouraging the adoption of transformational Mobility as a key Policy Agenda. This policy exercise revolved around the true nature of cooperative federalism through multiple consultations, workshops and a series of communication to bring all the partner States and Union Territories together. State wide consultations and video conferences were carried out with all 29 States and 7 UTs throughout June to enable the formation of State Task Forces on Mobility and present the comprehensive thematic areas and strategic levers to federal units. An orientation workshop was also conducted at NITI Aayog with senior officials comprising of Chief Secretaries and Secretaries of the State governments to facilitate the strategy formulation at the State/UT level.

Over the course of July and August five regional workshops at Delhi, Ahmadabad, Bangalore, Kolkata and Guwahati were organised for States to discuss the outline of their strategy papers and attain regional synergies. An indicative template for State mobility strategies was evolved based on discussions to facilitate States in formulation of strategies.

I would like to thank the senior leadership of our Vice Chairman and CEO for providing us the vision and support to carry out this exercise. I would like to congratulate the State and UT officials for coming up with respective strategies in this short span of time. This document is the result of diligent efforts and sincerity on the part of my team and the knowledge partner to put it together as a compendium.

The next step ahead of us is to get the key recommendations and preferences that emerge out of the State/UT strategies incorporated at the National level for transforming mobility in the country.


(Anil Srivastava)

Place: New Delhi





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Introduction

Mobility solutions are important to connect people to jobs, education, health care and various recreational activities and connect goods to markets. Mobility is important for economic growth of a region as clearly pointed by NITI Aayog *“If cities are the “Engines of Economic Growth” its mobility systems are the “wheels of that engine”*”. In India, between 1981 and 2011, , the number of vehicles has increased by 25.3 times against the population growth of 1.77 times¹ indicating increasing economic status of people along with increasing need for comfortable mobility solutions. However, this increase in number of vehicles has also led to increase in congestion in the cities. Increasing congestion is expected to cost USD 14.7 billion per annum by 2030 for New Delhi alone. This includes cost of productivity loss, cost of pollution, and fuel wastage². Today, new technologies and business ideas are disrupting the traditional mobility solutions across the world. These are helping cities to provide clean, sustainable, affordable and comfortable mobility solutions.

With this context, NITI Aayog is hosting the first Move Summit in New Delhi where stakeholders from various sub-sectors of mobility and transport will gather to co-create a public interest framework to revolutionize transport. The vision statement defined by NITI Aayog on mobility is “To seamlessly provide **inter-modal, shared, clean, connected, inclusive, safe, and economical** transport to citizens across urban and rural areas”. With this in mind, NITI Aayog conducted a national workshop on 28 June 2018 with all states and Union Territories to achieve a common understanding of the principles of transformative mobility and enable dialogue on state, regional and national level strengths, challenges and opportunities on mobility.

During the summit, NITI Aayog proposed the following levers as drivers for Mobility Vision : Shared mobility; Intelligent Transport Solutions and Digitization; Zero Emission Mobility and Renewable Energy Sources; Non-motorized Transport and Inclusive Mobility; Freight Movement; Mobility Financing & Entrepreneurship; Rural Mobility & Farm Logistics; Skilled Manpower; Advanced Manufacturing, and Cyber/ Data Security & Safety Mechanisms. NITI Aayog also proposed six themes for developing a mobility strategy viz.

- Maximum asset utilization
- Comprehensive electrification
- Alternative fuels
- Re-inventing public transport
- Logistics and Goods transport
- Data analytics and mobility

With this, NITI Aayog also requested states to outline their strategies on mobility solutions. This would help in making a coherent policy on transformative mobility in the country. This document summarizes the key elements of the strategy documents shared by the states.

¹ State Task Force Orientation, Strategy for Transforming Mobility, NITI Aayog June 28, 2018.
<http://movesummit.in/files/StateTaskForceOrientation.pdf>

² Neema Davis, Harry Raymond Joseph, Gaurav Raina, Krishna Jagannathan, “Congestion costs incurred on Indian Roads: A case study for New Delhi”,

ASSAM





Introduction

Assam is one of the fastest growing States in east India with a population of 3.12 crores as per 2011 census. The “Vision 2030” for mobility in Assam is “Towards greater accessibility, efficient mobility and low carbon future”.

Key challenges facing Assam in achieving this vision are:

- a) How to reach 80% public transport share including walking and cycling?
- b) How to achieve 100% accessibility of all public facilities – public transport, non-motorised transport (NMT), public space, public buildings for everyone, regardless of physical ability?
- c) How to achieve multi-modal integration?
- d) How to ensure that all cities/urban areas in Assam meet or exceed Central Population Control Board (CPCB) ambient air quality norms?
- e) How to plan for Electric Vehicles and Non-Motorized Transport (NMT)?
- f) How to adopt Mobility-as-a-service in the state?

In order to achieve the stated vision, Assam government is focusing on the following objectives and rolling out the strategy in a phased manner -

- a) Remodel STA/ RTA as a dedicated Unified Metropolitan Transport Authority (UMTA)
- b) Encourage low emission transit-oriented development
- c) Regulate growth of personal motor vehicles & management of commercial goods vehicles including parking, through travel demand management
- d) Prioritize walking, cycling and public transport (Surface & IWT)
- e) Promote universal accessibility for all including women, children, elderly and the physically challenged at all the public spaces
- f) Improve Regional and Rural Connectivity to enhance economic and social activity

Planning for the future

Pillars of mobility strategy

Assam's Mobility Strategy is built on 5 strategic pillars.

Transit Oriented Development

- a) Proper route scheduling to integrate metro, bus, ferry services in-line with airport and railway arrival-departure schedules
- b) Efficient segregation of freight and passenger traffic movement to reduce peak-time congestion



- c) Integrated payment system across all modes of transport to enable hassle free cashless movement of passengers
- d) Incentivize car-pooling services to increase asset utilization and promote e-rickshaws to provide end-mile connectivity.
- e) Enhanced safety and accessibility of public transport for women, children, elderly and physically challenged individuals

Infrastructure Development

- a) Develop Metro line that connects key economic nodes in the state
- b) Establish state-wide charging infrastructure to meet the charging requirements of electric run buses, ferries, cabs, e-rickshaws
- c) Update State Master Plan to incorporate design that encourages movement of non-motorized vehicles and pedestrians
- d) Make the fleet ICT enabled and incorporate enhanced traffic management system

Fiscal Sustainability

- a) Encourage Public-Private Partnerships for effective and efficient execution of projects
- b) Incorporate technology to streamline processes and generate reports that enable management to take informed decisions while making investment decisions.
- c) Identify non-operational means of revenue sources such as advertising/co-branding, leasing/renting of under-utilized assets and utilize the receipts to meet the operational expenses.
- d) Make use of SPV and revenue sharing models where-ever necessary to share the risks among the stakeholders and execute projects with minimum investment from the state

Responsive Governance

- a) Remodel STA/ RTA as a dedicated Unified Metropolitan Transport Authority (UMTA) in the state
- b) Establish Integrated Command and Control center which monitors and co-ordinates traffic movement in the areas they are designated to within the state.
- c) Establish Grievance redressal units that attend and resolve public concerns related to transport
- d) Create a single window clearance system across transport department of Assam to enhance ease-of-doing business

Socio-Economic Development

- a) Develop specially designed buses that enable farmers to carry agri-produce from villages to the near-by markets.
- b) Provide employment opportunities in the transport department for skilled youth



- c) Fare policy for public transport will be prepared taking the travelling needs of rural population into consideration

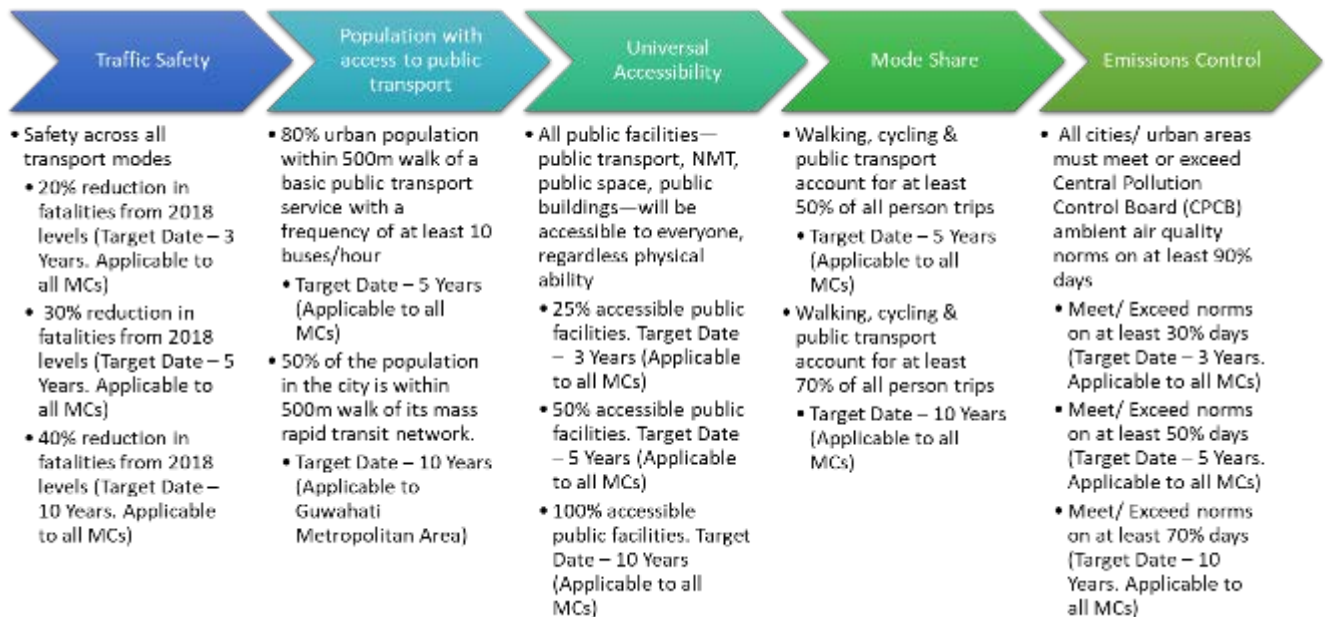
Detailed action plan

The pillars that support the strategy are compartmentalized into 5 broad projects

	Phase I (2019-21)	Phase II (2022-26)	Phase III (2027-30)
Institutional Establishment	- Set-up State Nodal Authority to supervise the State Mobility Plan - Define roles and Responsibilities of the Nodal Agency	Dedicated State Mobility Fund for infrastructural/ technological improvements	Integrated payment system across all modes of transport
Electrification of Public Transport	- Regulatory Policy to incentivize private electric vehicle aggregators for both surface and water transport - Procure Electric Fleet - Buses, Rickshaws, Cabs, Ferries - Command Center for Integrated Monitoring / Surveillance	ICT enabled public transport	Integrated transport management system to streamline traffic flow
Urban Mass Transport Development	- Update master plan to include transit oriented development - Fleet modernization and remodelling of river transport services	- Metro Infra Plan and Designing - Land Acquisition Plan for Metro development	Route scheduling to Integrate Metro Schedule with bus, ferry and other modes of transport
Promotion of Non-motorized Transport	- Regulate passenger & freight movement - Plan Dedicated Pedestrian Facilities - Enhanced city-wide signage	- Identify and plan corridors for improved access to pedestrian and NMT vehicles - Critical Junction / Node Improvement Plans	Develop dedicated lanes to encourage walking and cycling
Emission Control Measures	- Monitoring of Vehicle health check process - Introduce CNG for greener public transport - Complete digitization of vehicle registration process	- Monitoring of City Pollution Maps through distributed sensors - Congestion Charging & last mile connectivity	- Monitoring of City Pollution Maps through distributed sensors - Congestion Charging & last mile connectivity



Additionally the Action Plan is envisaged to be monitored through the following suggested KPIs.



Conclusion

The overall strategy has a three pronged triple bottom line approach which reflects key outcomes for the state on the economic, social and environmental benefits as detailed below:

Economic benefits

- Revenue augmentation through alternate sources of income
- Controlled spending and data-based investment planning
- Reduction in leakages due to technology enablement and e-vigilance

Social benefits

- Increased access to public transport due to integration of key modes
- Increased convenience due to ease of payment and live tracking of vehicle locations
- Decrease in congestion due to dedicated corridors for particular modes
- Enhanced safety due to traffic management and transparency in processes
- Employment generation for skilled youth

Environment benefits

- Improved quality of life through affordable and cleaner public transport
- Reduction in Air, Water, Sound, Soil pollution due to adoption of NMT, Electric Vehicles and improved walkability
- Reduced dependency on fossil fuel (energy efficiency) by adopting alternate sources of fuels such as solar and electric batteries

BIHAR





Introduction

Bihar is the third largest state of India by population and has a land area of approx. 94,163 sq kms. Its urban population is currently only 12% of the total population of the state.

Some facts about the state's transport sector are –

- a) Roads - 20,068 km
- b) Railways – 3,730 Km
- c) Airways - Two operational airports at Patna & Gaya
- d) Inland Water Transport:
 - Length of National Waterways: 420 km
 - Major Rivers: Ganges, Koshi, Gandak, Shone, Kiul, Mahananda, Falgu
 - No. of Registered Boats-6581 till 31st March, 2018.

In addition the State has seen an increase in the numbers of Vehicle Registration of about 3.5 Lacs (FY 2017-18: 11.14 Lacs vs FY 2016-17:7.64 Lacs) with total vehicles plying on the Road at approximately 65 Lacs..

Planning for the future

State strategy plan for transport mobility is summarized in the table below:

Strategy pillar	Strategy plan	Government initiative
Integrated Land Usage & Transport Planning	- Improve Road Network - Land Use Integration - Footpaths/walkways, sidewalks, foot over-bridges and facilities for non-motorized transport (bicycles and cycle-rickshaws).	Footbridges, sideways have been developed in major Cities & on National Highways. Govt. is funding new & existing Road Infrastructure.
Modal Mix & Priority Transport Services	- Interconnection of Urban & Sub-urban Network - Optimization & Integration of Transport Modes - High Speed Inter City Railway Services (Patna to Purnea, Patna to Bhagalpur, Patna to Gaya, Patna to Darbhanga via Muzaffarpur)	- Govt. is promoting new business models – shared & connected mobility for Urban & Rural Bus Connectivity. - Bihar already has a Railway network with States i.e. UP, Bengal, Odisha, Chhattisgarh, Delhi and state is planning to have new bus routes with the states. (Interstate Connectivity) - In addition to that, Bihar will start a New Bus Services to Nepal. (International)
Use of Clean Fuel & Clear Technology	- Promotion of E-Rickshaws - Use of CNG Based Vehicles	Tax incentives have already been provided to E-rickshaws.



	Promotion of Non-Motorized Transport	Govt. is trying to adopt CNG Based Vehicles and MOU with GAIL India already signed for the same.
Public Transport Promotion & City Bus Services	- Prioritize traffic for public buses - Subsidize fares for public transport - Increase the number of buses and terminals at primary locations - PPP Modes for Bus Terminals - Connectivity to rural areas through buses operated by STU	- Nine new routes for city bus services have been introduced at Patna. More than 40k commuters travel on these routes on a daily basis. - Training of drivers, conductors & helpers are at planning stage. - Mukhamantri Gram Parivahan Yojana started in 4000+ Gram Panchayats at Bihar. Thus it will facilitate last mile shared mobility in rural areas. - Motor Driving Training Institute (IDTR) has already made operational at Aurangabad. Schemes for Regional Driving Institute already in progress. - Inland motor transport is important from Bihar's perspective and govt. is promoting boat registration through special incentives on the same.
Smarter Urban Transport	- Intelligent Transport System - Traffic Management - E-Ticketing/Smart Card based Ticketing System - Smart Parking Facility - RFID in freight transportation - Cyber Security of Traffic systems	- Four cities (Patna, Muzaffarpur, Bhagalpur, Bihar-Sharif) have been selected under Smart City Project. Electric Bus proposals have already been sent under Smart City program for approvals. - Intelligent Transport Project is a part of Smart City Project and Transport Department also intends to adopt E-Ticketing in future. - Special incentives on Bus Tickets are being provided for the Disabled & Students. - CCTV based E-Challan has been started at Patna as a Part of traffic management. - Passenger Information system will launch soon at State Road Transport Authority undertaken buses. - GPS has been enabled in all the city buses plying at Patna.
"Livability" Improvement & Shared Cars	- Encourage walking / cycling - Promote environmentally friendly cities - Support walkability for the planned Central Business Districts (CBDs) - Taxi tolling on city entrances	- Aggregator Policy and Rent a cab/motorcycle scheme is in Pipeline. - Through "Mukhamantri Balak/ Balika Yojana" more than 47 Lacs Bicycles have been distributed thus focusing on Non- Motorized Transport.



	▪ Maintain taxi fleet size by freezing number of taxi licenses in circulation ▪ Optimize the use of private vehicles ▪ Sharing/Pool Cars	▪ Shared Taxi & Cab Services started from Major Railway and Airports as a part of PPP/Government Initiatives.
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Conclusion

Bihar is poised for an impressive economic growth with GSDP growing at 7.6% compared to 6.8% for the national economy. The sectoral growth rates indicate that the following sectors, each recording growth rates of more than 10 percent, are drivers of growth of Bihar economy — manufacturing (17.7 percent), electricity, gas and water supply (15.2 percent), trade, repair, hotels and restaurants (14.6 percent), transport, storage and communications (12.6 percent), and fishing and aquaculture (10.0 percent). This is backed by a 15 million young human capital base (age group: 20-39).

In the next decade, sustainable choices for public transport coupled with greener fuels will greatly enhance the quality of life for the citizens and give a push to the economic activity in the long term. Combination of strong policies, regulation, public and private sector investments and public awareness will bring the desired change for implementing and executing the dream of smart transportation in the State.

Chandigarh





Introduction:

Chandigarh is a union territory and capital of two states, Punjab and Haryana. It had a population of around 11 lakhs as per 2011 census. Over the last couple of years, density of vehicles has increased significantly in Chandigarh with population growing at 1.4 per cent per annum and number of vehicles at 5 per cent per annum. Chandigarh's administration has laid down the following objectives for transforming mobility:

- 1) Move the people more efficiently so that there is comparatively lesser burden on the road space, infrastructure and environment
- 2) Optimize the use of resources by redefining and restructuring mobility modes and re-setting of the priorities
- 3) Re-allocate road space accommodating pedestrians and cyclists
- 4) Promote public transport as well as shared private transport
- 5) Improve road safety and public safety through social and engineering interventions

Share of various modes of transport in modal mix

Mode of transport	Share in modal mix (%) - 2009	Share in modal mix (%) – expected today	
		Status	Reason
Personal two wheelers / four wheelers	61% (excluding walk)	Decreased	Introduction of web based cab aggregators
Intermediate Para Transport (IPT) system	10%	Increased	Introduction of web based IPT aggregators
Public Transport system	11%	Increased	Number of buses in local and sub-urban sector has improved from 200 to ~400 in last 3-4 years
Pedestrian and cycle trips	28%	Decreased	Due to increase in other mode of transportation

Mobility solutions in Chandigarh need to be planned in coordination with neighbouring cities of Mohali and Panchkula. For any solution to be successful, it should be seamless across the tri-city (Chandigarh, Mohali and Panchkula) and provide same standard of service across tri-city. Though the population and area under Chandigarh is not increasing, but the tri-city is expanding at a rapid pace. New areas which are at quite a distance from the heart of city are gaining prominence. Areas such as Aero-city, Eco-city, IT city Mohali and new sectors of Panchkula are at a distance of about 25-30 km from the city center. New sub-urban towns such as Kurali, Morinda, Baddi, Lalru, Banur, Nalagarh, Pinjore are also gaining prominence and many people commute daily from these places. The congestion on the city roads has



increased and travelling time has doubled in the last decade. The situation is worse during the peak hours.

There are several issues of regulation, enforcement and public safety, which have emerged as points of debate in the tri-city. Regulatory issue especially related with web-based taxi aggregators are not clear as their affairs with the driver-partners and clients are not transparent. Capacity building of the regulator (State Transport Authority) is required to deal with these issues. The new modes of solution (web based aggregation) also needs to be integrated with Public Transport system to offer Mobility as a Service (MaaS).

The cycling paths and pedestrian footpaths are also not extensive in the city with increasing number of vehicles encroaching the pedestrian footpaths. Increasing density of vehicles is leading to increasing pollution in the city. All these were taken as a base for the roadmap for devising the strategy for transforming mobility in Chandigarh

Planning for the future

The action plan has been framed in two parts; one for low to medium term for next 2-3 years and another for long term for next 4-7 years. Additionally, Chandigarh administration has proposed an immediate mobility action plan.

Immediate mobility action plan

Interventions	Key Action Areas	Implementing Agencies	Deadline
Shared Mobility	Promoting ITS enabled carpooling system for the city with a view to own the ride instead of vehicle. Primarily focused to address mobility needs of employees and students.	Transport, Department, Chandigarh Administration.	2018-19
City Navigation App	A one stop solution for citizens and tourists to navigate within in the city	Department of Urban Planning, Chandigarh Administration.	2018-19
Public Bike Sharing (PBS) Scheme	Installation of ITS enabled PBS System comprising 5000 bicycles at 500 locations in UT Chandigarh.	Chandigarh Smart City Limited (CSCL)	2018-19
Augmentation of Bus System.	ITS enabled system coupled with first and last mile connectivity	Transport Department, Chandigarh Administration	2018-19
Zero Emission Plan	Introduction of first lot of 20 Electric Buses on potential corridors	Transport Department, Chandigarh Administration	2018-19
Centre of Excellence in Road Safety	The operationalization of the centre by recruitment/ assigning the dedicated staff and imparting training to build their capacity	Traffic Police Chandigarh	2018-19



Short term action plan

Short term action plan envisages interventions which are incremental in nature.

- 1) Augmentation of bus system: Improve quality and quantity of buses
 - The frequency of the buses during peak time may be reduced to 7-8 minutes from 15-20 minutes. Professional study would be conducted to assess the fleet size required to achieve the same.
 - New innovative finance model based upon the Gross cost contract model (GCC), Net cost contract model (NCC) or hybrid contract model are expected to be explored.
 - A complete ITS (Intelligent Transport System) overhaul is planned for the city transport buses under the World Bank funded project, which is due for completion in 2019, to make the bus system more reliable and efficient.
 - High quality buses are expected to be introduced to improve the quality and comfort level. This is expected to attract two-wheelers/ four wheelers users shunning their personalized modes of travel. The city also plans to introduce high-end shuttle services to the IT park, airport etc. to cater to people such as IT professionals, Doctors, Airport passengers etc. who require services with extra comfort and reduced travel time.
 - City proposes to build end-to-end transport solution by integrating E-rickshaws formally with the bus transport system.
- 2) Public Bike Sharing Scheme: To encourage the NMT modes, the city is extending the cycle network from 36 km to 90 km. The city proposes to introduce a Public Bike Sharing (PBS) scheme to make cycling popular in the city. Some areas are expected to be declared motor- vehicle free zones after discussion with relevant stakeholders.
- 3) Parking policy: A draft policy for parking of vehicles has been released for public consultation. The final policy is expected to enable use of IT for optimizing available parking spaces. The policy is expected to identify, delineate and mark parking spaces making a comprehensive inventory of parking space in the city. Due provisions to effectively manage parking and tackle enforcement issues are expected to be introduced.
- 4) Pedestrian friendly roads: Well-lit inter-connected network of pedestrian paths are expected to be created around the city. The sub-passes are planned to connect the sectors so that people can move around the city without touching the main roads. Effective ways to remove encroachment of footpaths by the vehicles are expected soon.
- 5) Tri-city urban planning and transport: Regional groups on urban planning and transport are expected to be explored with Punjab and Haryana. A common transport corporation, Greater Chandigarh Transport Corporation, is envisaged after consultation with the states.
- 6) Agreement with states: A tri-partite agreement is envisaged to deal with the issues of mobility across the tri-city as it involves issues of policy, taxation, and unification of rates so that there are no intangible barriers to mobility across the states.
- 7) Upgradation of transport (freight management): The immediate improvement and maintenance of the existing freight needs to be undertaken.
- 8) Capacity building in regulation: Rigorous training and skill updating of transport regulator is expected on recent changes in transport sector such as web based aggregators, e-rickshaws, control of traffic (lane regulation), public safety and related issues, safety of students, panic button, emergency response protocol etc.
- 9) Road Safety: Chandigarh administration has already created a "Centre of Excellence in Road Safety" to build capacity through national and international collaborations, undertake research and develop data analysis and accident investigation skills. A road safety fund corpus is also being created'. A separate exercise is expected to be undertaken by this centre to develop a Road Safety Plan for the region.
- 10) Public Safety: Chandigarh Administration is contemplating innovative use of technology by introducing QR based IDs to drivers of Intermediate Para Transport system (IPTs) to check crime



against women by IPTs. Besides another project of e-surveillance of the city by using over thousand cameras (ANPRs/ PTZ/ night vision cameras etc.) is being implemented. The same cameras shall be utilized for integrated traffic management system (ITMS) to regulate the traffic flow and enforcement.

Long term action plan

Long term action plan are systemic changes and interventions which require more serious consideration at various levels.

- 1) Holistic Planning:** Long term comprehensive plan for transforming mobility in the region would entail expansion of road network, dedicated corridors for freight and public transport, ring roads and ring rail for fast commuting from sub-urban areas with an efficient and convenient transport solution. Regional groups on relevant topics are expected to be constituted in short term to present the regional plans to the apex regional body consisting of the chief secretaries of the states and adviser of the Chandigarh. The holistic plan is expected to be prepared keeping in view all the aspects of urban planning, transport, and engineering feasibility keeping in view the common policy denominator.
- 2) Mass Rapid Transport System (MRTS):** Different MRT systems would be studied to identify the most suitable system for the region. All other systems (Bus System, PBS and E-rickshaws) are expected to be well integrated with MRTS with park and ride facilities for personal modes.
- 3) Infrastructure (BHLS):** High traffic corridors are expected to be managed with high level of bus service (BHLS) which relies upon the luxury buses with modern amenities, priority laning and priority signalling during peak hours and other such features making it a preferred mean of transport.
- 4) Zero Emission Plan:** City has already mandated solar energy generation for institutional buildings and residential buildings (above size of one canal). It is also trying to promote electric vehicles by giving complete exemption from road tax.
- 5) Comprehensive logistic plan:** Given the good rail connectivity with the national centres, the city has a good potential to emerge as a regional logistic hub for supplies to the states. Planning for comprehensive logistic park aligned with rail services can act as economic booster for the region
- 6) Engineering capacity and delivery:** A detailed exercise is expected to be undertaken to enlist all supporting engineering interventions as per the action plan.

Conclusion

The State Task Force has laid down the guiding principles for transforming mobility scenarios in the Chandigarh and surrounding regions. Success of this plan will depend on participation and contribution (particularly financial) by the neighbouring states, and proper engagement of all stakeholders. The plan is expected to rejuvenate the economy and life standards of inhabitants of the region.

Chhattisgarh





Introduction

Chhattisgarh envisions to have an efficient, safe, automated, national benchmark comparable transport infrastructure and to ensure revenue generating, customer-focused, affordable and environmentally sustainable integrated transportation solutions. It also aims to achieve inclusive growth by connecting regions, communities, and centres of industry, commerce, tourism and pilgrimage across the state. Government of Chhattisgarh is taking initiatives to achieve following long term goals:

- To promote road infrastructure support for transportation of goods and passengers.
- To promote public transport and advanced quality of service.
- To promote modern, energy-efficient and eco-friendly surface transport system.
- To promote road safety and modern traffic management.

Planning for the future

Mobility Strategy

- 1) Encourage shared modes of transport including public transport
- 2) Improve the travel experience of the passengers in the public transport modes
- 3) Ensure safety and convenience of passengers in public transport
- 4) Introduce sustainable and affordable, Non-Motorized Transit (NMT) modes of transit such as Public Bike Sharing, e-Rickshaw, etc.
- 5) Introduce Mass Transit System such as Light Rail Transit (LRT) and Bus Rapid Transit
- 6) Implement Intelligent Transport System for live tracking of city buses and providing information to the citizens about bus routes, timings, etc. in real time through mobile app.
- 7) Land use adjustments and densification of corridors along mass transport corridors.
- 8) Provide better road drainage and maintenance system
- 9) Introduce smart parking and multi-level parking for decongestion at public places
- 10) Developing multi modal hubs for better connectivity inside the bigger cities

Sustainable Mobility

A major focus of the state mobility strategy is towards development of sustainable mobility solutions. Chhattisgarh focuses on three sustainable modes viz. Public Bike Sharing (PBS), E-rickshaws and electric vehicles and Pedestrian lanes.

Public Bike Sharing: PBS projects have been carried out by multiple cities as part of the smart city initiatives. Cities are encouraging PBS by increasing its availability across the city at an affordable price. Separate road marking have been done to provide dedicated lane for bicycle riders.

E-Rickshaws/Electric Vehicles: Major cities are slowly moving towards making e-rickshaws as the preferred mode of transport for short distances by granting road tax exemptions. Cities are also developing the charging infrastructure for electric vehicles. Suitable charging stations are expected to be developed for increasing the number of electric vehicles.

Pedestrian walkways: Major cities are planning towards creating wider pedestrian lanes for the movement of pedestrians. Cities under smart city mission are implementing several projects like Smart Roads, etc. wherein the space of pedestrian movement has been specially taken care of. Raipur is implementing a Sky Walk dedicated for the pedestrians on one of the major road in the city.



Shared Mobility

Objective of shared mobility is to provide use of shared modes of transport and reduce dependence on private transport. Following options are being explored for shared mobility.

Three wheelers	Taxis	City buses	Private buses
- An important mode of transport in cities and growing rapidly in rural areas - Provides employment opportunities to small entrepreneurs - Efforts are being made at district level to regulate movement - Auto policy has been formulated by the transport department - e-vehicles are expected to be encouraged	- Taxi aggregator policy has been formulated - Efforts are being made to encourage four wheeler, three wheeler and two wheelers taxis	- Urban Transport Societies are formed under chairmanship of district collectors for efficient operations of city buses - Urban bodies / Society ensure most efficient and economic citizen friendly use of city buses. - City bus operation would be expanded in the area suitable for public transport	- Transport department to ensure proper operation of passenger buses both on interstate and intra state routes. - Fast, non-stop, AC buses are started on key routes - Use of GPS tracking for information and safety of public is proposed

Other aspects of mobility

Rural and Last mile connectivity	Citizen centric practices	Building Infrastructure	Parking
- Efforts are being made to expand the transport network and availability of shared mode of transport in remote and rural area. - Tax incentives and other concession are expected to encourage such connectivity	- Suitable provision for disabled, women and elderly people have been provided in public buses - Travel concession for certain categories of passengers including sick, disabled and elderly has been provided	- Bus terminals with proper facilities are being developed with public information system - Bus terminals are expected to be shifted from crowded areas - Adequate provisions for bus lay byes and drivers rest are expected along major roads	- Adequate parking spaces is expected to be identified and developed along with development of multilevel parking - Parking policies and prohibition of certain type of vehicles is expected to be planned on the basis of the specific need of the areas.

Projects/New initiatives

Some of the new initiatives taken by the state government are listed below.



Project / Initiative	Details
Projects/Initiatives completed	
MoU between RSCL and NIUA	MoU has been signed between Raipur Smart City Limited (RSCL) and National Institute of Urban Affairs (NIUA) on 15 June 2018 for providing technical assistance for upcoming projects of RSCL under Smart City Mission. NIUA is expected to provide technical assistance in projects like Comprehensive Mobility Plan, Multi Modal Transportation Management Strategy, Market redevelopment projects of Raipur, etc.
Dedicated Bicycle Tracks in Raipur and Naya Raipur	A dedicated bicycle tracks is made available in Raipur and Naya Raipur with physical barriers separating the cycle track from the main road. A RFP for Public Bike Sharing is also under progress in Raipur
Bus Rapid Transit System (BRTS)	- A bus depot and 12 bus stops are constructed and fully functional in Naya Raipur BRTS with 13 BRT shelters and 9 feeder stop - Currently, BRTS has 30 AC buses with average ridership of 2604 people per day which is increasing continuously
Intelligent Traffic Management System and Integrated Command & Control Centre (Implemented in Naya Raipur and under Implementation in Raipur)	- Adaptive Traffic Control System to enable adaptive timing of the traffic signals depending on the actual traffic on the road. - Variable Message Signage System & Billboards to enable display of messages such as traffic condition on the route, delay in specific route, route diversion, etc. - Integrated Command and Control Centre (ICCC) to monitor, manage and provide rapid response to its stakeholders
Projects/Initiatives under implementation	
Raipur Smart Road	- Dedicated utility trenches along smart road to make a clutter free organized infrastructure network. - It will also include Cycle track, green belt, median, wide footpath and storm water drain network to avoid water logging.
Raipur Sky Walk	A dedicated walk way is under construction over GE road and Jail Road (one of the most congested road of Raipur) to minimize the pedestrian traffic on the main road and provide easy mobility to pedestrians
Electric Vehicle Charging Stations in Raipur	- Electric vehicle charging station are expected to provide paid charging facility for all types of electric vehicles. - A few charging stations are also expected to provide battery swapping facility in future
Projects/Initiatives under review	



Project / Initiative	Details
Multi Modal Integration	• Proposal under consideration for making at least four Multi Modal Hubs in the Raipur City. These hubs are expected to have maximum footfall of commuters in the city • Multi Modal Hubs are expected to provide facility to reach various parts of the city in the shortest possible time through the combination of various modes of public transport

Conclusion

The vision envisaged and the strategy outlined are expected achieve its objectives with serious efforts towards the implementation. Transformative mobility opens up a range of new opportunities for economic growth and employment generation. All the stakeholders and concerned departments are required to work with synergy, in the area of public transportation, environmental sustainability, rural and last mile connectivity and other aspects of transformative mobility.

Dadra and Nagar Haveli





Introduction

Dadra and Nagar Haveli (DNH) is located in the western part of country. The capital of DNH is Silvassa, which has been declared as a Smart City. The details of the transport network in DNH has been summarised below:

- Gujarat State Road Transport Corporation (GSRTC) and Maharashtra State Road Transport Corporation (MSRTC) buses ply 140 trips and 8 trips respectively. In addition, 72 stage carriage buses ply in DNH.
- Auto rickshaws and taxi cabs provide the last mile connectivity
- Majority of the population are dependent on two wheelers and four wheelers (LMV) private transport vehicles for commuting in DNH
- The Silvassa Bus Depot located at the centre of the city is proposed for redevelopment with commercial facilities through PPP model.

Planning for the future

Vision

“Provide mobility to all and cover all the villages of DNH through sustainable transport network of low carbon emission”.

Objectives for Mobility

Objectives for the territory are as below:

• Develop alternative fuel infrastructure and to transform the existing fleets of buses into CNG and electric, etc.	• Promote accessible and safe cycle and walking routes to encourage walking and cycling for short journeys for commuting or leisure to reduce carbon emissions, congestion and improving air quality and health.
• Promote electric vehicles and ensure charging points are situated at visible, accessible and reliable locations	• Provide Effective and efficient transport network
• Maximise the travel choices and mode of transport	• Protect the transport users and the environment
• Improve road infrastructure network	• Decongest roads and highways
• Better access to public transit	• Improve air quality
• Reduce traffic fatalities	• Adopt technology to enhance mobility
• Promote Awareness	• Improve employment opportunities

Identifying key Strategic levers for transforming mobility

The SWOT analysis of existing mobility scenario has helped DNH identify key strategic levers for the territory as given below:



1. Expanding /Enhancing network infrastructure for various modes 2. Shared Mobility (including public transport systems, taxis, 3 wheeler autos etc.) 3. Intelligent Transport Solutions (ITS) and Digitization 4. Zero Emission Mobility 5. Renewable Energy Sources 6. NMT/ Pedestrian facilities 7. Inclusive Mobility	8. Transit Oriented Planning 9. Freight Movement 10. Mobility Financing & Entrepreneurship 11. Rural Mobility & Farm Logistics 12. R&D and Advanced Manufacturing 13. Employment & Skilling 14. Cyber/ Data Security & Safety Mechanisms
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State Action Plan

The state action plan is envisaged for both short-term and medium term in accordance with the constantly changing scenario in the UT

• Medium-term strategy • Integrated Traffic Management System – GPS, Smart payments, Safety & security systems etc. • Introduction of e-bus and e-rickshaws , Setting-up of e-bus and e-rickshaw charging stations • Redevelopment of bus depot in Silvassa • Improve the highway/road infrastructure network • Modernise the RTO check posts • Promote inclusive mobility	• Short-term strategy • Increase in public transport • Promote shared transport • Development of traffic islands at important junctions in the municipality area to reduce the congestion and improve the traffic flow • Limit high-mileage polluting vehicles on road. • Strengthen PUC monitoring • Promote electric mobility • Convert the existing stage carriage /contract carriage buses into CNG • Renovate bus shelters and make them user friendly • Ensure, schools, key locations, industrial areas and all the villages are covered with bus service • Improve the traffic islands to minimise congestion at junctions • Encourage more walking through better pedestrian areas and wayside signage • Introduce and expand cycle hire scheme • Create cycle parking around market areas, commercial streets, etc. • Cycle training for school children to use cycle as a mode of transport • Expanding the existing local bus network • Create awareness on the transport options available to people for different journeys • Install sensors to assess the traffic flow in Silvassa Municipal area on a real time basis
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Conclusion

The scenario in the UT is constantly changing requiring dynamic strategies. The state action plan with short term and medium term strategic initiatives can help address the challenges for improving mobility in DNH.



Daman and Diu





Introduction

Daman and Diu is a union territory (UT) in the western part of India. It is the smallest federal division of India on the mainland. Daman and Diu, the two districts are separated by the Gulf of Khambhat. The total area of the mainland is 112 square kilometres. The Arabian Sea and state of Gujarat border the territory.

The transport sector of mainland is served by Omnibus Industrial Development Corporation (OIDC) and Gujarat State Road Transport Corporation (GSRTC) having trips between Vapi – Daman, Valsad – Daman, Diu – Una, Diu – Veraval, Diu – Ahmedabad, and Diu – Daman.

Daman has 10.17 Km of national highway (848/B) connectivity, and major district road length of 38.98 km and 20.34 km in Daman and Diu respectively. Daman and Diu combined have 125 km of district panchayat road length, and a vehicle population of 1,08,000 and 13,070 respectively. Recently, public work department has designed 93.05 kms of road in Daman to widen the roads for safe and smooth movement in Daman district.

The Transport Department of UT of Daman & Diu is entrusted with the responsibility of providing an efficient public transportation system, control of vehicular pollution, registration of vehicles in Daman, issuance of driving licence, issuance of various permits and collection of road taxes etc., The department is also entrusted with policy-making, co-ordination, implementation, monitoring and regulatory functions of all the transport related aspects.

Union Territory (UT) of Daman and Diu is a small coastal region, geographically 685 km apart from each other. The marine connectivity between two regions is being explored and the Catamaran Service is planned to start shortly between Daman & Diu, which will reduce travel time between them to a few hours.

UT Administration of Daman and Diu has started helicopter service between Daman and Diu under UDAN Scheme .The chopper service has reduced the 13-hour distance by road between the Union Territories to an hour by flight. Flight service between Diu and Ahmedabad under UDAN scheme is underway. Bus Service in Daman district is operated by Omnibus Infrastructure Development Corporation (OIDC) as Saarthi Bus. The Saarthi bus services are operated on various internal routes in Daman. Free pollution check centres at RTO Office for vehicles will be started shortly.

20 e-rickshaws are running in Daman under e-rickshaw scheme initiated by UT Administration of Daman & Diu to promote Non-Motorised Transport in the UT with the aim of providing employment and enabling women empowerment.

Planning for the future

The transport mobility strategy of Daman and Diu has focus on both long term and short term levers. The key intervention areas as part of the strategy are given below:

- **Shared Mobility**
 - **Short Term:** (a) Promoting ride sharing, (b) vehicle sharing, (c) fixed route commuter services and (d) incentivizing the aggregator services. Shortly an app-based taxi booking, Yara Cab is also expected to start.
- **Non – motorized and Inclusive transport options**
 - **Short Term:** (a) Develop pavements, (b) Develop walkways and cycle tracks in the urban areas and (c) Launch e-rickshaws on large scale in all district centers and towns.
 - **Long Term:** (a) Planning and modification of urban infrastructure to make the cities walkable and major destinations approachable on foot or on bicycle, and (b)



Promoting Green Urban Transport solutions like development of Non-Motorised Transport (NMT), Electric vehicle etc.

- **Freight movement**
 - **Short Term:** (a) Subsidize and promote usage of electric and hybrid vehicles for public transportation. (b) Promotion of e-taxis and green number plates.
 - **Long Term:** Scheme for tax exemption and 10 years permit extended on purchase of electric vehicles.
- **Road infrastructure development**
 - **Short Term:** (a) Widening and improvement of major roads, and (b) Infrastructure for bicycle plying and pedestrians.
 - **Long Term:** Construction of Signature Bridge connecting Nani Daman and Moti Daman.
- **Safety, security and parking space**
 - **Short Term:** (a) Construction of multi-level parking and safety awareness programs, (b) GPS on school buses, and (c) Identification and modification of accidents prone areas.
- **Modernization of RTO and Regulatory methods**
 - **Short Term:** (a) Expansion of the current driving license related services, (b) Develop mobile apps for payment of e-challans, and (c) Create integrated MIS for all RTO related services – registration, permits, renewals etc.
 - **Long Term:** Front office automation through outsourcing to external agencies for digitalization – booking an appointment, registration, payment, e-challans.
- **Coastal and waterways infrastructure**
 - **Short Term:** Implementation of passenger ferry system.
- **Clean fuel**
 - **Short Term:** Conversion of all diesel based auto rickshaws to CNG, and conversion of all state carriage and contract carriage buses to CNG.

Conclusion

It is crucial that each state and UT work on their individual strengths, opportunities and challenges to streamline strategies for mobility across the country. The focus of the sectoral strategy developed in Daman and Diu is on public bicycle sharing, promoting electric vehicle and related infrastructure, maximizing public transport, and car sharing. The strategy is also focused on seamless intermodal mobility, efficient and transparent services, and safety in all aspects.

Goa





Introduction

Goa is the smallest state in Indian Territory with a population of 14.5 lakhs and 3,702 Sq.km geographical area. Goa has always remained a prime tourist destination in the nation, with annual tourist arrivals reaching up to 63 lakhs in 2016. It is an economy primarily dependent upon tourism and allied activities. The mobility vision strategy for Goa is to be Safe, Equitable, Smart and Sustainable. The key objectives for mobility as defined by Goa are given below:

- Ensure urban road structure is organized and aligned with the land use
- Public transport is accessible, economical, efficient and effective
- Promotes NMT and ensures clean environment and liveable towns
- Traffic management and engineering solutions increase safety and optimize the efficiency of the network
- Goods movement is better organized and does not interfere with passenger movements
- Parking policies and parking master plans are sustainable and smart
- Cost effective and efficient transport mode

Planning for the future

The primary focus of the mobility plan is to efficiently support the mobility of people and goods rather than vehicles aiming at three goals specifically: reducing traffic, shifting traffic and managing traffic. Each objective is applicable to the state mobility and for the urban areas as well. Hence, there are two levels of strategies: state level and city level for sustainable functioning of urban transport systems.

Key strategic levers for transformative mobility

- **Network infrastructure for nodes** which includes a mass transit system and waterways
- **Shared mobility** with upgradation of existing fleet of buses
- **Intelligent Transport Solutions and digitization** with smart traffic signals, dynamic transport information, and way finding and navigation
- **Zero emission mobility**
- **Renewable energy sources**
- **Non-motorized transport** with better designed streets for pedestrians and bicycles. In addition, Public Bike Sharing (PBS) scheme is also expected to be explored
- **Inclusive mobility:** All the proposals mentioned above has to be inclusive and equitable for all users
- **Transit oriented development**
- **Freight movement** with traffic management for goods and safe regional goods movement
- **Safety** with safe junction and road design keeping in view of vulnerable users along with a safe traffic movement plan
- **Mobility Financing and Entrepreneurship**
- **Rural mobility and farm logistics** with better understanding of all stakeholders and organization involved in rural transport
- **R&D and advanced manufacturing**
- **Employment and skilling**
- **Cyber/Data Security & Safety Mechanisms:** The Smart City SPV, Imagine Panaji Smart City Development Limited (IPSCDL) has already taken initiative to set up a Goa Intelligent City Management System, wherein a separate Network and Operation Centre (NOC) & Security Operation Centre (SOC), is being provided to cover the services of the entire state. The smart solutions are expected to be integrated at the Command and Control Centre with a NOC, SOC,



LED walls for surveillance and software providing and disseminating information to various stake holders. IPSCDL has also conceptualized the idea of a 'Goa Universal Smart Card System' for multiple purposes including public transport, smart parking etc. Further, data from the card is expected to provide useful insights for transport needs of the people.

Action plan

Intervention	Key action area	Implementing agency
Mass rapid transport system	Rapid Transportation to connect Panaji with major other destination areas (proposed International Airport at Mopa, and urban nodes in North and south Goa).	DoT
Water Transport/ Inland Waterways	Jetty and ferry precinct development, amenities and facilities at Jetty and ferry precinct	Captain of Ports
Multi Modal Integration	Development of multi model integration like BRTS (Bus Rapid transit system), Last mile connectivity, MRTS (Mass Rapid transit system)	IPSCDL for Panaji Urban Agglomeration / DoT
Transit Oriented Development (TOD)	Integrates land use and transport planning and aims to develop sustainable urban growth centers. TOD increases the accessibility of the transit stations by creating pedestrian and NMT friendly infrastructure	KTC / DoT/ IPSCDL for Panaji Urban Agglomeration
Public bike sharing/ Cycling Infrastructure	Bicycle lanes, cycle dock/ stations to be adjacent to the mass transit stations, bus stations, railway stations, tourist locations etc. to increase the reach of transit facilities	GTDC / IPSCDL for Panaji Urban Agglomeration
Smart Traffic Signals	Smart traffic signals across the urban centers and regional nodes for safe mobility	IPSCDL for Panaji Urban Agglomeration
IPSCDL: Imagine Panaji Smart City Development Limited; KTC: Kadamba Transport Corporation; GTDC: Goa Tourism Development Corporation; DoT: Director of Transportation		

Institutional and Regulatory reforms

Smart City SPV, Imagine Panaji Smart City Development Limited, has developed the Comprehensive Mobility Plan (CMP) for Goa. Institutional framework for the successful implementation of all urban projects is expected to be suggested as part of CMP based on which a Unified Metropolitan Transport Authority (UMTA) is expected to be established in Goa for effective development of land use and the transport system of the State. Some of the regulatory reforms that are expected at the state level include:

- Regulatory reforms that enable fleet-based operations in order to encourage private players in the field of sustainable mobility
- Regulatory reforms to control emissions caused by vehicles
- Regulatory reforms to minimize the influx of private/ tourist vehicles in cities and to promote public transport as the major means of commute
- Regulatory reforms and building By-Laws



Conclusion

New approach is the need of the hour to face the rising mobility challenges in the city and the districts of Goa. To meet the challenges, new forms of co-operation and steering in the administrative context as well as with the stakeholders outside the public administration are important and are being proposed to be implemented in the State.

Gujarat





Introduction

In the state of Gujarat 43% of population resides in the urban areas and is well connected via different modes of the transport to the other parts. The existing transport infrastructure for the state can be summarized as below

- **Roadways:** Total length of roadways in Gujarat stands at 77,500 kms, out of which almost one-third is national and state highways. State Highway Development Program will add additional 6,000 kms to the states network of roads to augment connectivity to the DMIC and DFC.
- **Railways:** The state has total railway network length of 5,314 kms out of which almost 50% is broad gauge. Several other initiatives such as establishment of G-RIDE, re-development of Surat station as Multi-modal hub, and re-development of Gandhinagar railway station and DMIC projects will help development of railways in the state
- **Waterways/Ports:** Gujarat has India's longest coastline and Gujarat maritime board has effectively harnessed it by building 49 ports along its coastline. Gujarat has become gateway to India handling almost 40% of nation's maritime traffic.
- **Air:** Gujarat has a network of 17 airports including one international airport and one green-field airport being constructed at Dholera. Details of passenger and traffic movement for major airports in the state are as below:

Airport	Aircraft Movement (nos)	Passengers (lakhs)	Freight (in MT)
Ahmedabad	62,129	91.74	91,633
Vadodara	7,338	10.08	2,308
Rajkot	4,499	3.65	289

- **Urban transport:** Gujarat has developed network of city buses, BRTS, Metro, non-motorised transport for selective ULBs detailed as below

City buses	BRTS	Metro	NMT	Smart city command centre
12 municipalities and 8 municipal corporations	3 cities	Ahmedabad-Gandhinagar	31 AMRUT cities	Six Smart cities

Apart from above initiatives, the state is also monitoring air quality at 4 stations and developed multi-level car parking facilities at 7-8 locations across various cities in the state.

Planning for the future

Vision:

"To seamlessly provide inter-modal, shared, clean, connected, inclusive, safe, economical and zero emission transport to citizens across urban and rural areas."

State Strategies for Mobility

The state has channelized its vision and its efforts to achieve efficient and sustainable traffic flows by



changing focus from moving vehicles to moving goods and people. The state of Gujarat envisages to bridge the gap between the current capacity of transport and the target as per the vision of the state by choosing to implement below:

- **Allows users to access transportation services on an as-needed basis** by using modes such as car sharing, automated mobility, public bicycle sharing, on demand ride services, maximizing usage of public transport etc.
- **Target for ZERO Emission by 2030** by promoting non-motorised transport, EVs etc. and supporting them with energy measures.
- **Facilitating freight** by improving utilisation of rail network, introducing scientific logistic movement, establishing unified body across sectors/modes, giving impetus to multi-modal freight aggregators, developing large multi-modal logistic hubs at Ports, SEZs, and SIRs etc.
- **Improving rural mobility** by taking initiatives such as on-demand last mile connectivity, strengthening GSRTC, share mobility in waterways (& other forms)
- **Reducing parking & congestion**
- **Reduction of Fatal Accident** by 50% in year 2020 by enforcing road safety act 2018 and using education as tool etc.
- **Improving usage of urban transport** by promoting existing public transport, NMTS and other modes of green transport, establishing Unified Metro Transport Authority, emphasizing on intelligent transport systems, introducing innovative financing mechanisms and similar initiatives to make public transport efficient, comfortable and affordable.
- **Improving people's participation** by education and training via digital as well as physical medium

State Action Plan for Mobility

The strategy action for the mobility for the state is illustrated as below.

Strategy Action	Short Term (Up to 3 years)	Long Term (Up to 10 years)
Shared Mobility	• Promoting shared services and Improving usage of public transport	• Implementation of Intelligent Transport Solutions (ITS), AI, block chain and Digitalization across all modes and entire operations. • Expand and promote existing modes of the public transport • To ensure seamless multi-modal transport. • Encourage Public Private Partnership • UMTA to be established
Non-Motorized and Inclusive Transport options	• Develop pavements, walkways and cycle tracks in the urban areas and launch e-rickshaws on large scale	• Planning and modification of urban infrastructure to make the cities walkable and major destinations approachable on foot or on bicycle. • Promoting Green Urban Transport solutions • Increase accessibility
Multi-modal transport	• Create a number of multi modal hubs and develop system for a common pass or payment for the multi modal system	• Integrate mobility through different modes including public transport such as metros to rail/road/air etc.



Freight Movement	• Subsidize and promote usage of electric and hybrid vehicles for transportation of goods within urban limits • Enhance and improve usage of Railways for freight movement to reduce traffic and emissions	• High Scale implementation of policy changes to adopt EVs for freight • Development supporting infrastructure and introduce incentivizing policies for transport companies to shift 100 % to EVs.
Roads and Infrastructure Development	• Non-connected villages and hamlets to be connected by all-weather roads in 3years	• Effective planning for road, railway infrastructure with projects such as well-equipped railway crossings, provide flyovers and Road under bridges for busy junctions , 4 laning of roads connecting to Industrial area, SIR/SEZ etc.
Safety and Security and Parking Space	• Prepare parking policies • Increased surveillance • Setting up Command and Control Room at 6 smart cities	• Considering importance of road safety, safety audit is made compulsory in all works of greater than 5KMs length
Modernization of RTOs and Regulatory methods	• Expansion of the current driving license related services • Digitization and integrated MIS of RTOs	• Front office automation through outsourcing to external agencies for digitalization at a planned cost of INR150 Cr
Use of Coastal and Waterways Infrastructure	• Passenger Ferry Services and RO-Pax ferry services between key destinations and development of 4 new ports	• Expansion plans for RO-Pax ferry services in Gujarat and to other states.

Summary

Gujarat has plans to tackle these challenges to create a sustainable model for mobility for the goods and passengers. It plans to use expansion of existing network, digitization and integrating the MIS for the state, promotion of NMT/EVs and leveraging cleaner and already developed coastal waterways infrastructure. Formation of the UMTA can be crucial for success of the long term and short term strategies.

Haryana





Introduction

Haryana's vision for transforming mobility is "To provide safe, clean, inclusive and economical transport service to citizens across Haryana." The major areas of focus are given below:

- Provide adequate transport services
- Address city wide traffic congestion issues
- Safety & accessibility of all travel modes for road users
- Inter connectivity of different modes of transport to ensure last mile connectivity
- Enable hassle free travel for passengers and goods vehicles in a safe, user friendly and cost effective manner

The objectives for mobility are as described below.

- The strategy is devoted to set the right conditions for a coherent long-term (for year 2041) transport plan for the state
 - To identify existing challenges related to walking, cycling, public transport, private vehicle mobility and other aspects of the transport system
 - Enable adequate, efficient, economical and safe movement of people and vehicles
 - Promote economic development both in urban and rural areas
 - Influence changes in the human behaviour for safe mobility

Planning for the future

Haryana estimates the state population to increase to c.5 crore with 4.63 crore vehicles by 2041. The key element of the strategy for mobility is the promotion of public transport system with maximum reliance on electric vehicles, pooling of private vehicles, addressing the congestion issues, last mile connectivity, safety of road users, promotion of zero emission technologies, and employment generation. Transport operators should also implement state-of-the-art intermodal management systems – that make commuting and other forms of travel a simple, reliable, flexible and attractive experience. The various strategic levers are given below:

Strategic lever	Details
Shared mobility	• Last mile connectivity for the benefit of commuters • Distinction of public and private ownership to be removed, and a data security framework to be incorporated • Alternate modes of mobility to be promoted with importance to electrification of public transport
Intelligent Transport Solutions and Digitization	• Mass transit players to accommodate growing number of passengers- within the existing road infrastructure • Efficient, uninterrupted transportation services to fulfill an ever more complex mandate with limited resources • Intelligent solutions for information management, new mobility solutions, technologies for increased road safety, more-fuel-efficient drive systems



Strategic lever	Details
Intelligent, efficient mass transit	- Integrated and seamless mobility for the customers with multi-channel, multi-modal ticketing systems to be planned with coordination of multiple means of transportation - Real-time information for commuters and other users - Proper planning of routes to be undertaken with provision of travel alerts, information on travel prices and timetables, precise information about buses via GPS data. - Integration in WIMT (Where is My Transport) to be ensured
Zero Emission Mobility(ZEM)	- Electric vehicles to be promoted by creating appropriate infrastructure and providing incentives in taxes and government levies. - Apart from electric vehicles, alternatively powered vehicles, including hybrid vehicles, fuel cells vehicles and natural gas powered vehicles may also be promoted.
Promoting Renewable Energy	Renewable energy is instrumental in reducing the environmental pollution and can contribute towards sustainable mobility
Non-Motorized Transport (NMT)	NMT infrastructure is key to reduce carbon footprint from the transportation sector

State Action Plan

SN	Key action areas	Implementing Agency	Action Plan	Deadline
1	Enhancement in Public Transport	State Transport Department	- Procurement of 365 new standard Non-AC buses - Hiring of around 510 new buses under KM Scheme - Hiring of 20 Super Luxury AC buses for long routes on KM Scheme - Procurement of 150 standard HVAC buses (3×2 seater) - Procurement of electric buses - Procurement of 150 Non-AC Mini Buses on hiring basis - Promotion of Electrical vehicle	2018 2019 2020 2020 2020



SN	Key action areas	Implementing Agency	Action Plan	Deadline
				2019
				2019
2	Safety & Security	Transport, Police, Health, all engineering departments	• Identification of black spots • Identification of accident prone areas and rectification thereof • Setting up of trauma centres • Mobile ambulances having lifesaving instruments	2018 2019 2020 2020
3	Infrastructure	All engineering departments	• Preparation of overpasses, pedestrian paths, widening of roads	2019
4	Zero Emission	Police, Transport	• Promotion of battery operated vehicles by creating infrastructure and rebate in the government levies. • Strict compliance of emission norms at all levels	2019 2019
5	Non-Motorized transport	Urban Local Bodies, Town & Country Planning	• Preparing separate paths for walking, bicycling, cycle rickshaws, push scooters and hand carts etc. • Pedestrian facilities	2019 2019
6	Congestion	Traffic police, transport	• Increased dependence on public transport • Car pooling • Alternate modes of transport i.e. walking, bicycling, cycle rickshaws, push scooters and hand carts etc. • Overpasses, subways, link roads • Erection of Traffic signals	2020 2019 2019 2030



SN	Key action areas	Implementing Agency	Action Plan	Deadline
				2025
7	Road Engineering	All road engineering departments	- To enhance the road length - Widening the roads - Accessibility/linking rural to urban routes - To maintain the road safety norms - Sign and signage's - Removal of encroachment	2025 2025 2025 2020 2020 2019
8	Intelligent Transport System	Transport	- Mobile app/Passenger Information system - Fare collection system/E-ticketing - Vehicle Tracking system - Training to drivers/conductors etc. - Awareness in public - Setup of IT infrastructure	2019 2019 2019 2019 2019 2025

Institutional and Regulatory reforms

Commissioner of Transport under the Ports and Transport Department is the designated authority for transport regulations in the state. The State Transport Department is responsible for issuing permits for autos and taxis and for approving the fare structures of state transport corporations that run buses. Govt. of Haryana had also initiated the process to form Unified Metropolitan Transport Authority (UMTA) for Gurugram. However, it was decided to establish a Multi- modal Transport Authority (MATA) at state level, which is responsible for planning and implementation of all kinds of transport and mobility proposals in the State. For urban centres with 1 million population, a UMTA needs to be created; however, for other urban centres, MATA can be the nodal agency responsible for planning and implementation of urban transport projects.



Conclusion

Haryana has a strong network of all transport modes: roads, railways and airports taking care of rural and urban passengers and freight. Increased traffic has had adverse effects like air pollution, congestion, rise in road accidents, problems of parking space etc. The following are summarized suggested action points for transforming mobility in the state

- Improve usage of public transport (buses and metro rail) by making it efficient, comfortable and affordable in all municipal towns
- Promote city bus service in all municipal corporations and metro rail in Gurugram, Faridabad and Bahadurgarh
- Provide user-friendly information on public transport
- Parking demand management by development of pay and park multi-level parking complexes in all municipal corporation areas to ensure availability of sufficient parking space to reduce traffic congestion.
- Safety and security for urban transport users (Surveillance systems, better street design)
- All municipal corporations to prepare and implement parking policy in their cities. It is also planned to have multi-level pay and park base multilevel parking complexes in all municipal corporations
- 10 cities under AMRUT cities will develop cycle track and footpath to promote Non- Motorised Transport (NMT). It is also planned to develop exclusive cycle track in Gurugram to guide other cities of Haryana
- To reduce traffic congestion and to encourage people to use public transport, on pilot basis congestion charge for some area will be introduced in Gurugram and Faridabad

Himachal Pradesh





Introduction

Himachal Pradesh (HP) is a unique state located in the north-western Himalayan region, with tourism (almost 20 million tourists FY 2017-18) as one of the most important economic drivers for the state. The mobility strategy for the state is designed after understanding passenger and freight mobility, emerging issues, current and future transport strategies. The upcoming initiatives were also taken into account.

Due to the difficult and hilly terrain, the road network has always been an important mode of transport for Himachal Pradesh. The state had a total road length of 34,954 kilometres in 2007 which increased to 55,759 kilometres in 2016. The focus has been on the improvement of quality of roads in addition to enhancement of the network.

The rail network for the state is very limited. The total route length of the operational railway network in the state is 242 kilometre. The narrow gauge network includes the 96 kilometre Kalka–Shimla line, a UNESCO world heritage site and the 113 kilometre Pathankot–Jogindernagar line. Inland water transport in the state is also functioning at a very small scale. With respect to the aviation, there are only three airports in the state and there are 63 operational helipads.

The vehicle population in the state has shown a gradually increasing trend with 14.7 percent growth for the period 2009-2018. The state has a good public transport system mainly comprising of state-owned road transport undertaking buses and privately operated buses and taxis.

Himachal Pradesh's State Department of Transport launched the Transport Policy in 2014 with an aim of improving rural connectivity, upgrading existing roads, railways, inland waterways, public transport and enhancing road safety. City level initiatives have also been taken which focus on promoting low carbon and sustainable mobility. National missions, such as AMRUT and Smart Cities, are some of the existing initiatives in place that focus on addressing mobility demands of cities.

The state's mobility vision is focussed on the following areas:

- 1) Improve rail and air connectivity
- 2) Reduce dependency on road infrastructure
- 3) Develop freight infrastructure
- 4) Enhance road safety and maintenance
- 5) Develop sustainable transport solutions

Planning for the future

Vision

"To provide low carbon, eco-friendly, inclusive, safe, and reliable, integrated mobility solutions accessible to all, that plays a key role in fostering holistic development of the State"

State Objectives

1. First/last mile connectivity to all and unconnected habitations;
2. Extend railway network to connect remote and inaccessible regions so as to ensure overall economic development;
3. Promote low carbon mobility solutions to minimize adverse environmental impact;
4. Develop Mass Rapid Transportation System and non-motorised transport (NMT);
5. Provide efficient, safe, reliable, and sustainable public transport solutions;



6. Develop connectivity to unexplored tourist destinations;
7. Provide rapid mobility on high density traffic routes;
8. Mainstream road safety concerns and introduce zero tolerance initiatives through institutional integration and regulations;
9. Introduce state of art freight vehicles and multi modal logistic hubs for efficient freight movement;
10. Identify the exact quantum of transport service required and routes to ply vehicles through ICT solutions;
11. Capacity building (establishment of driving training centre, inspection & certification centre etc.).

Long and short term strategy

The long term and short term strategies identified for the state of Himachal Pradesh while planning the future mobility are clubbed under various themes such as road and network infrastructure, public transport, air pollution, road safety, freight and congestion.

The strategies for the road and network infrastructure are aligned to improving quality of existing infrastructure, and development of requisite road, air, and railway infrastructure. This would also include identifying alternate modes of transport for sustainable transport in the state. The strategy adopted for remodelling the public transport is through shared mobility and rural mobility. The state envisages taking immediate action towards decongesting the tourist cities while on a longer term, developing mass, connected and smart public transport. For rural mobility, specific actions are planned for connecting to the sparsely populated and remote habitations of the state.

Further, the state has planned to promote EVs/bio-fuel vehicles and non-motorised transport to reduce air pollution. The state also envisages strengthening state transport development and road safety council to oversee issues related to road safety, and inclusion of road safety modules in the state education curriculum, as a long term strategy to generate awareness about road safety.

For improving freight movement in the state, the government aims to establish state of art “Transport Nagar” for traffic management and movement of goods carriages with intelligent transport system, promote zero/low emission vehicles for freight movement, use technology for seamless freight movement and boost multi modal freight transport. For reducing congestion, the state aims to implement differential parking charges in and outside the towns/cities to discourage personal transport. As a long term strategy to reduce traffic congestion, the government has planned to establish exclusive zones in congested cities/towns for public transport/NMT, develop overhead transportation in important cities, create multi modal integrated transport and parking for cities, etc.

Conclusion

The Himachal Road Transport Corporation and the state aim to provide quality, safe, affordable, clean, and reliable public transport. The strategies proposed for improving public transport include promotion of clean fuels, intelligent and connected transport, route rationalization and other operational strategies.

Apart from these strategies, it has also been proposed that alternative modes of public transport, such as ropeways, heli-taxis, sky buses, and pod services should be assessed as options to meet the growing mobility demand. These new modes of transport, if viable, will not only decongest the roads in the tourist cities of the state but also relieve excess dependence on existing modes.

Further, the concerns of deteriorating air quality and rising pollution levels in urban centres will be addressed by the state by promoting the use of cleaner fuels and electric vehicles in the long run. The strategy adopted by the state is to raise awareness and introduce taxes to de-incentivize the use of emission intensive vehicles.



With regard to road safety, the casualties per 100 accidents in HP is higher than the national average. The government has recognized the importance of road safety and envisages its mainstreaming by undertaking all tangible actions for 'Zero Tolerance' by strengthening the regulatory regime for road safety. It is proposed that the 4 Es (Engineering, Enforcement, Emergency and Education) of road safety will be adopted.

Finally to improve the quality of freight services in Himachal Pradesh, it is proposed to develop a state as well as city-specific freight mobility plans, which prescribe the introduction of 'Transport Nagar', multi modal logistic hubs and improvement of vehicle efficiency of the existing freight.

The state envisages effective implementation of the strategies by developing a robust institutional framework, strengthening existing institutions and mobilizing sufficient funds. The institutional reforms will not aim to reorganize the existing institutional setup in the state, but will look at developing a more robust policy monitoring mechanism for effective implementation of the strategies. This will ensure a more coordinated development of the transport sector in the state, in line with the envisaged vision.

Jharkhand





Introduction

The state of Jharkhand has a rising urban population with almost one-quarter of the population living in the urban areas. Two wheelers comprise more than 75% of the motorized vehicles in the state. Summary of the transport infrastructure in the state is as below:

- Jharkhand has an average urban road density of 3.05 kilometres of pucca road per square km and 504 km per 1000 square km in rural areas;
- As of 2017, the total broad gauge network in the state was 2855 km;
- Airports in the state are under upgradation and efforts have been taken to improve air connectivity through helipads and RCS.

Planning for the future

Vision

To achieve sustainable, cost effective, user friendly, clean, inclusive, safe and seamless mobility, which will be people centric rather than vehicle centric and will emphasize on public transport systems, non-motorized transport including cycling and pedestrian facilities, and adopt disruptive technologies such as electric vehicles, shared mobility, digital-enabled mobility, etc. that promote employment opportunities and economic growth for the state.

Objectives

- Mobility of passengers and goods through integrated approach by various transport modes such as road, rail, air, in-land waterways and non-motorized transport systems;
- Development of road infrastructure that enable faster, safe and seamless mobility of passengers and freight;
- Development of bus connectivity across the state down to rural areas;
- Development of railways in cooperation with the Ministry of Railways, Government of India for passenger and freight mobility;
- Development of air travel in cooperation with the Ministry of Civil Aviation, Government of India for connection to smaller cities;
- Leveraging inland waterways developed by the Inland Waterways Authority of India (IWA) for the economic development of Jharkhand; and
- Improving urban transport with public transport, shared mobility, electric vehicles, non-motorized transport such as cycling and walking.

Strategic levers for transformative mobility

Three levers of Integrated Seamless Mobility identified by the state are:

- Transport infrastructure
- Technology and new business models
- Transport systems

Jharkhand's mobility will focus on Integrated Seamless Mobility Strategy by:

- Making available multiple modes of transportation



- Increasing frequency of public transport
- Ensuring connectivity between various modal origin/destination points
- Ensuring availability of connectivity between any two points
- Data sharing

State action plan for mobility

The state action plan for mobility is as below:

Strategic Lever	Activity
Transport Infrastructure - Road Network	• Identify the Core Road Network(CRN) for prioritization • Address the funding requirement for road construction
Transport Systems - Intra and Inter State Buses	• Promote private bus operators • Promote comfortable travel • Enhance inter-state connectivity
Transport Systems - Urban Buses	• Increase number of buses, frequency and introduce new routes • Comprehensive Mobility Plans (CMP) prepared for six urban agglomerations
Transport Infrastructure - Rail	• Identification of tourist and pilgrim places, and developing rail infrastructure along the routes • Doubling/tripling of sections where capacity utilisation exceeds 100% • Electrification of routes • Extending lines to reach mineral spots
Transport Infrastructure- Eastern Dedicated Freight Corridor (EDFC)	• Develop connectivity between EDFC and state hinterland
Transport Infrastructure - Inland Waterways	• Develop inland waterways especially for cargo
Transport Infrastructure – Aviation	• Extension of UDAN airports • Feasibility for air cargo hub • Expansion of Ranchi airport
New Business Model - Shared Mobility	• Intermediary services • Pooled ride hailing services • Vehicle sharing • Peer to peer vehicle sharing
New Business Model - Peer to Peer Vehicle Sharing	• Develop Singapore model where private owner can provide 2 rides a day

Urban Mobility

The Comprehensive Mobility Plan for Ranchi focuses on developing inclusiveness and developing a shared, electric and connect mobility for the state. The key features for the same are as below:

- Non-motorized transport – bicycles
- Intelligent transport solutions
- Smart transport planning by developing technologies to support adaptive signal control,



- automobile sharing, walking/cycling facilities and bicycle sharing system
- Smart transportation-ICT
- Smart traffic management or intelligent traffic management system
- Zero emission mobility by promoting electric vehicles
- Improving road Safety
- Inclusive mobility

Conclusion

Jharkhand's Integrated Seamless Mobility Strategy is aimed at the following levers:

- Strengthening transport infrastructure: road, rail, air and inland waterways;
- Creating better transport ecosystems;
- Leveraging modern technologies like intelligent transport system, shared mobility, electric vehicles, global positioning system and latest information sharing systems to enhance the functionality of transport systems of both urban transport and intrastate transport systems.

The state has also supported the above with appropriate regulatory strategy especially to promote electric vehicles and develop an inclusive ecosystem within the state.

Karnataka





Introduction

Karnataka envisions to develop inter-modal, shared, clean, connected, inclusive, safe, and economical transport for citizens across urban and rural areas. The state government has proposed the following specific goals towards achieving this vision:

- Achieve a modal share of 75% passengers on sustainable modes of transport i.e. public transport, walk, cycle and other shared modes of transport;
- Reduce emissions intensity of Karnataka's transport sector by 33% per-capita by 2030, in line with India's INDC commitments;
- Provide public transport services within 500m of all habitations across rural and urban areas;
- Target 100% electrification in commercial passenger vehicle fleets by 2030 and private vehicles by 2040; and
- Make Karnataka the preferred destination for electric vehicle manufacturing.

Planning for the future

Strategy for transformative mobility

Karnataka's mobility strategy focusses on the following seven levers:

- Re-inventing the public transport for urban transport and rural connectivity;
- Harnessing shared mobility to complement public transport;
- Regulatory measures for Transit Oriented Development;
- Promoting electric mobility and other clean vehicle technologies such as bio-fuels, fuel cell vehicles;
- Prioritisation of Non-Motorised Transport (NMT) infrastructure and services;
- Adoption of Intelligent Transport Systems, connected vehicle technologies and data analytics for dynamic shared transport and maximising asset utilisation; and
- Capacity building to ensure that government agencies in-charge of implementing reforms have the required technical competencies.

Action plan on the above strategic levers are provided in following sub-section.

Action plan

SN	Interventions	Key Action Areas	Implementing agencies	Deadline
1	Re-inventing Public Transport for Urban transport and Rural connectivity	Adopting 'Public Transport Service Obligations' and 'Public Transport Fund'	State Transport Authority	2019
		Assessing service level gaps and preparing strategic public transport improvement and investment plan for Karnataka	DULT, KSRTC, BMTC	2019
		Constitute UMTA for Bengaluru and initiate 'Bengaluru Urban Transport Fund' through taxation and user pricing methods	State Urban Development Department (UDD)	2019
		Mobilising 'State Urban Transport Fund' and 'Bengaluru Urban Transport Fund' to meet public transport investment needs	DULT, UDD	2019
		Create bus priority lanes across all congested corridors in Bengaluru and other urban centres	BBMP, BMTC, DULT	2020



SN	Interventions	Key Action Areas	Implementing agencies	Deadline
		Develop transport hubs for multi-modal integration through Public-Private Partnerships	BMRCL, BMTC, KSRTC	2022
		Introduce open loop payment systems for common ticketing across public transport modes	BMRCL, BMTC, KSRTC	2020
2	Harnessing Shared Mobility	Introduce 'Mobility as a Service (MaaS)' pilots in Bengaluru	BMRCL, BMTC, Transport Department	2019
		Scale up MaaS across Bengaluru and other urban centres in Karnataka	State Transport Authority	2022
		Establish integrated regulatory, taxation and pricing mechanisms across shared modes of transport according to their congestion and emission implications	State Transport Authority	2020
3	Regulatory measures for 'Transit Oriented Development'	Time bound implementation of amendments to Town and Country Planning Act	UDD	2022
		Development of zonal development rules that promote transit oriented development	UDD	2019
4	Promoting Electric Mobility	Initiate induction of 500 electric buses in Bengaluru	BMTC	2019
		Mandate only electric buses, three-wheelers and taxis in new fleets from 2025	State Transport Authority	2019
		Mandate conversion of all existing and new commercial vehicles to electric by 2040	State Transport Authority	2019
5	Prioritising NMT	All urban roads in Karnataka to be mandated to follow Tender SURE specifications from 2022	UDD	2019
		Introduce 'Public Bicycle Sharing' and 'Cooperative Bicycle Sharing' across all urban areas	DULT	2020
		Implement parking policies across urban areas to minimise on-street parking of cars and two-wheelers	DULT	2019
6	Adoption of 'Intelligent Transport Systems' and 'Data Analytics'	Establish a 'Common Intelligent Transport System' across Karnataka covering public transport and traffic operations management	DULT, KSRTC, Traffic Police	2022
		Adopt state of the art data analytics techniques to improve demand responsiveness and performance efficiency of public transport systems	BMTC, KSRTC, BMRCL	2019
		Adopt real time control strategies for better traffic circulation and prioritisation for public transport	Traffic Police	2020
7	Capacity Building	Hire full time professionals and subject matter experts for advisory support across all Government departments	All Departments	2019
		Upgrade existing training centres to reflect technical skills required to handle latest technological and infrastructure developments	State Transport Authority	2019



Institutional and regulatory reform

Two levels of institutional framework are proposed:

- Directorate of Urban Land Transport (DULT) for state level urban transport policy, planning and financing; and
- UMTA for integrated planning and development of transport systems in Bengaluru.

DULT was established in 2007 and has been instrumental in providing policy, planning and financing support to various urban mobility issues in the state. It is expected to continue to play a key role in institutional integration and technical support for mobility issues in the state.

The budget of FY2018-19 declared the formation of UMTA for the city of Bengaluru. It was envisaged that an 'Executive Committee' under the chairmanship of Additional Chief Secretary would coordinate implementation of the decisions of UMTA. Further, a separate 'Shared Transport Committee' within UMTA would deliberate on matters specific to integration between public transport and other shared mobility operators. The 'Shared Transport Committee' would also be in charge of fixing the fares across shared modes and the number of permits.

Financing reforms

A 'Bengaluru Urban Transport Fund (BUTF)' is expected to be created in next six months under the UMTA to ensure funding of sustainable transport initiatives. The fund is expected to receive annual budgetary allocation similar to the funds allocated to road building programs, along with additional avenues of financing such as value capture financing, congestion pricing and other taxation measures. The BUTF is expected to fund public transport services on routes which are financially not feasible based on ticketing revenue. This fund is expected to be replenished through a variety of alternative sources of funding listed below:

- Parking fees from private vehicles: Parking policy is being developed by DULT for all urban areas aimed to price parking based on the market value of the space. The policy is expected to be implemented across the state. This is expected to be implemented in high-density/ highly congested corridors within the next one year;
- Green cess on polluting vehicles: Introduction of green cess on heavily polluting passenger and goods vehicles;
- Congestion pricing system to discourage private vehicles: Congestion pricing system is expected to be introduced on private vehicles to charge vehicles according to their road space requirements and emission impacts. This is expected to be implemented in high-density/ highly congested corridors within the next one year;
- Vehicle taxation based on their congestion and pollution impacts: The taxation system to be reviewed such that each vehicle is taxed according to their road-space requirements and the emissions; and
- Corporate Social Responsibility (CSR) proceeds for public transport: State is expected to raise additional funds for public transport through philanthropic foundations and CSR sources.

'Public Transport Service Obligation' is expected to be designed across rural and urban areas. The public transport fund is expected to be allocated according to the service obligations. A state-level planning activity is expected to estimate the existing and future travel needs in Karnataka. The modes of mobility required for these demands i.e. rail, bus, on-demand mobility etc. are also expected to be identified. Areas with low demand leading to losses for transport operator would be subsidized. Also total number of permits issued for private stage and contract carriage operators are expected to be determined based on the availability of state transport undertaking services. For instance, lower permits would be issued in areas with sufficient transport facility available.



Conclusion

The state task force on transformative mobility has identified a two-pronged approach to transform the transport sector in Karnataka:

- i. Addressing the traditional challenges like lack of integrated planning and governance, inadequate public transport and NMT infrastructure and services, inadequate financing for sustainable transport etc; and
- ii. Harnessing opportunities offered by new mobility solutions like electric mobility, on-demand mobility, intelligent transport solutions to enhance sustainable transport solutions like public transport, and utilization of street infrastructure.

Kerala





Introduction

Kerala has a state-wide rural urban continuum and so there is continuous and mass movement of people and goods between rural and urban area. This has led to a demand for public transport for the same. Key points to note about the existing transport infrastructure for the state are:

- There is an exponential growth in the number of vehicles in the state;
- Transport infrastructure includes 2.19 lakh km of road, 1,588 km of railways, 1687 km of inland waterways and 18 ports; and
- Geographic peculiarities require roads to play a prominent role in public transportation over other modes.

Planning for the future

Vision

The state's vision for transforming mobility envisages a **connected, safe and energy efficient public transportation system**.

Opportunities

The Unified Metropolitan Transit Authority (UPTA) legislation is to be passed which would entail a Metropolitan Transit Authority (MTA) to be set in Kochi. This would ease the process for providing seamless and multimodal transportation in the cities. The state has a clear vision to move towards shared mobility, connected public transport and reduce pollution and congestion in its urban sprawl.

Challenges

The key challenges identified by the state are:

- 1) Policy regulations which limit the number of buses and routes plying in the city;
- 2) Regulatory issues that limit route rationalisation of various private and public routes;
- 3) Policy hurdles for mini and midi buses to ply in narrow and low intensity routes;
- 4) Grid improvement for electric vehicles;
- 5) Incentivising electric vehicles, especially in the IPT and PT sector such as auto-rickshaws, private buses, etc.;
- 6) Regulatory issues for shared public transport in cabs, auto rickshaws; and
- 7) Stage carrier vs contract carriages.

Objectives

The state foresees that the formation of the MTA will provide common command and control systems for transport planning, scheduling operations and integrating various modes. A paradigm shift can be achieved in the state's public transport by:

- Strengthening policies and investment; and
- Establishing formal systems of high quality and capacities.

The objectives formulated by the state government to transform mobility in the state are:

- Citizen centric transport infrastructure to be created;
- Provide safe and comfortable public transport to all citizens across the state;
- Reduce road crashes by 50%;
- Reduce carbon emissions;



- Foster inter modal integration;
- Integrating land use planning along with transport planning; and
- Setting up of UPTAs.

Strategic levers for transforming mobility

The strategy for transforming mobility and the activities underlying them are tabulated below:

Strategic Lever	Activity
Expanding / Enhancing the Network Infrastructure for various modes (Road, Rail, Air, Waterways)	• Completing the network for various modes
Shared Mobility including Public Transport, 3 Wheelers and Autos etc.	• Policy level interventions • Promoting EVs for last mile connectivity
Intelligent Transport Solutions and Digitization	• Policy provisions in the form of section 151A in the Motor Vehicle Rules • Setting up Operation Control Centre which would be funded by the Cochin Smart Mission Ltd. (CSML)
Non-motorized Transport / Pedestrian facilities	• Developing standards for roads and streets to create universally accessible infrastructure, thus improving inclusivity
Inclusive Mobility	• Smart cards for multimodal transport
Regional Connectivity	• Inter-state connectivity through private bus operators, rail and air. Further, other modes of travel like Bus Rapid Transit, Light Rail Transit, etc. to be explored for better connectivity between districts
Transport Oriented Planning	• Draft TOD policy for the state
Freight Movement	• Developing feasibility studies for freight hubs and harnessing potential of inland waterways
Safety	• Introducing a slew of measures including enforcement, education, engineering and better emergency response
Mobility Financing & Entrepreneurship	• Innovative models for financing mobility such as CSR funding, NGOs, multilaterals, land value capture etc.
Rural Mobility & Farm Logistics	• High speed rail connectivity from North to South region of state via agriculture and related industries' hubs
R&D and Advanced Manufacturing	• Focussing on home grown technology and manufacturing
Employment and Skilling	• Capacity building of existing workforce
Cyber/Data Security & Safety mechanisms	• Improving efficiency with use of technology to have tight data security and safety mechanisms
Electric Mobility	• State Level Task Force (SLTF) to constitute a road map for E-Mobility



Conclusion

The state has prepared a robust roadmap and strategy for implementing the vision for future of mobility of the state. The colossal floods in the state emphasize that the most important challenge for the state is to prepare all weather transport/mobility infrastructure. The state has taken prudent policy initiatives such as formation of MTA and state level task force for e-mobility and has a clear vision towards building a connected, safe and energy efficient public transportation system.

Lakshadweep





Introduction

Union Territory (UT) of Lakshadweep is the smallest territory in the Indian Union. It is at the West Coast of India, in the Arabian Sea with no national or state highways. The available means to reach the islands are: by ship (from Kochi, Calicut and Mangalore) and by Air (from Kochi to Agatti). Currently there are no ports in this UT where the ships can berth and the embarkation and disembarkation exercised carried out in open sea. Some of the unique conditions of transport in this UT are mentioned below.

- Each island is an independent entity by itself as there are no means for connectivity by road from mainland and from any other island
- The roads in the islands are narrow concreted paths
- There is no scope for widening roads due to the inherent geographic conditions
- A public transportation system does not exist and there is no scope for it as the area of the islands is too small

The Vision of this UT is to shape a modern, efficient, economical and safe transportation system that balance the needs of the economy, society and eco-friendly environment and transform Lakshadweep Islands as 100% accident free, pollution free and the most lovable living space in the country and further positioning these islands as a visible global brand in eco- friendly tourist destination by 2020.

Planning for the future

Strategy for mobility

Following actions are proposed since there is no scope of road expansion and widening:

- Existing major and important roads to be declared as one-way (wherever possible)
- Pedestrian lanes to be constructed on all major roads
- All bigger goods vehicles (Tractor & Tipper) to be allowed to operate during night time from 10.00 PM to 6.00 AM only

Facilities for tourists and floating population

Following actions are proposed to discourage the use of 4-wheelers, to help reduce traffic and pave the way for clean environment.

- Bicycles to be promoted as substitute for two and four wheelers
- Use of bicycles to be encouraged for sight-seeing at the island
- Bicycle lending hubs to be established in different areas of the islands
- Provide GPS enabled bicycles tracking
- Two wheelers to be made available on rental
- Promotion of Eco-friendly vehicles

Strengthening of existing road infrastructure

- Road sides to be kept clear of obstructions to ensure clear visibility
- Speed breakers to be constructed at all major junctions, turning points and at sharp curves with proper signage
- Road Signage & markings on all major roads to be clearly marked with reflective paints



- Sight distances at curves and junctions to be improved by removing all obstructions and by enacting necessary land use control legislation
- All unnecessary hoardings and advertisements to be removed from the road side, which are obstructing the visibility and diverting driver's attention
- Sharp curves and bends to be straightened subjected to land availability with convex mirrors fixed in all sharp curves and bends and black spots
- Yellow flash lighting to be erected at all major junctions, intersections and other important road sides for indicating a junction / intersection ahead

Improving law enforcement

- Steps to be taken to improve quality of enforcement to ensure effective and uniform implementation of safety laws
- Steps to be taken to establish and strengthen the training programs for traffic police for effective law enforcement, use of modern equipment, and dealing with traffic law offenders
- Strict enforcement to be carried out against all traffic violations using IT based intelligent transport devices such as speed radar / cameras, GPS etc. and enhance penalty clauses and amount
- Inspection & Certification (I&C) of vehicles to be made compulsory by covering both safety and emission norms and linking registration & insurance of vehicles with I&C.
- Ensure effective enforcement to check violation of basic safety requirements and drunken driving, and implement deterrent penal provisions
- Appropriate use of technological measures like smart cards for issuance of license and registration certificates
- Promote establishment of an adequate number of properly equipped driving schools, soft policing on first time traffic violators and educating them the type of violation and its impact of other road users along with hard policing for habitual violators
- Strategies should be evolved for sustained enforcement on over speed, rash driving, non-wearing of seat belt and helmet, using mobile phone while driving, drunken driving and other traffic rule violations
- Task force or traffic police to be established to control traffic and check traffic violation. Training may also be imparted to such police personnel

Limitation of vehicles

Restrictions to be taken to stop the practice of bringing old vehicles by fixing the age limit to all categories of vehicles and fixing the size/ dimensions of the vehicles.

Promotion of eco-friendly vehicles

Administration is expected to provide financial assistance for procurement of Battery operated Vehicles (BoV) / Electrical vehicles with installation of sufficient number of charging stations. Department of Road Transport to provide 50% subsidy with a limit of INR 50,000 for e-rickshaws. Bicycles to be promoted as the potential substitute for the two and four wheelers for a better environment and healthy life.

Government would also ensure that all persons involved in road accidents benefit from speedy and effective trauma care and management. Hospitals would be adequately equipped to provide for trauma care and rehabilitation.



Conclusion

Considering the limited scope of public transport in Lakshadweep, this UT has proposed an action plan to improve current road infrastructure aimed at reducing road accidents and has also proposed several measures to reduce the pollution from vehicles by proposing measures to promote NMT and green mobility technologies.

Madhya Pradesh





Introduction

Madhya Pradesh (MP), despite the split of Chhattisgarh, is still a large state with large number of national and state highways crossing its border due to its central location in the country. The state has complex network of 18 national highways and 53 state highways connecting approximately 50,000 villages with each other and big cities. More than 425 trains transition in the state daily. Raja Bhoj, Devi Ahilya Bai Holkar, Gwalior airport, Jabalpur airport, and Khajuraho airport are the five commercial airports in the state. Seven inland containers depots are operational in the state. Also, seven smart cities would be developed in the state.

Planning for the future

Vision statement for transforming mobility in the state – “By 2023, Madhya Pradesh will connect 90% of its villages on public transport services, supported by extensive community transport partnerships which will strengthen the social and economic growth in the state. MP will lead the nation in deployment of solar based vehicle charging infrastructure, which will act as a catalyst for transition to green mobility in the state”.

Based on state specifics, the strategic plan has been developed in three segments.

1. Passenger mobility and connectivity
2. Logistics and economic development
3. Sustainable transportation

The above segments are further sub divided as follows:

Passenger mobility and connectivity

- **Market led urban mobility management:** This initiative is expected to address the connectivity of major intra-city routes
 - **Policy support**
 - a) Setting up state transport development and coordination body
 - b) Revamping permit system
 - c) Approval for Transit Oriented Development (TOD) and Transfer Development Rights (TDR)
 - d) Green mobility – a policy addendum on vehicular emission, discarding old vehicles, and adoption of cleaner fuels
 - **Technology led operations**
 - a) Technology Platform – Information technology (ITS) based data collection, enforcement of laws, and aid in mobility applications such as passenger information, route planning, public transport frequency management, new route planning, traffic management, tariff calibration, online pollution check data, etc.
 - b) Uplifting ITS - Enable unifies ticketing, payment solutions, and integrating multicity urban transport
 - c) Open data policy – create open data policy
 - d) Safety – Integrated emergency response, command and control centre, automated drive testing tracks, automated fitness inspection and certification centres, and focus on vehicle related to educational institutions
 - **Energizing governance**
 - a) Active governance role in managing the services through private operators.
 - b) Technology supported and data backed operations management
 - c) Strengthen departmental capabilities in efficient service delivery
 - d) Pursue incorporation of ‘same day services’ under Guarantee to services Act



- **Rural connectivity:** Encouraging private and local operators to improve transport mobility
 - **Leveraging current Hub & Spoke model** - Adding more service loops encompassing 30 km radius in the network
 - **Rural cluster network** - Developing cluster network model primarily in semi-urban to rural locations
 - **District Transport Authority (DTA)** - Identify routes, frequency and mode of transport, and assign permits to private operators at DTAs
 - **Mobility on micro rural routes** - Enable local communities (SHGs) to ply shared mobility options, preferably electric

Logistics & economic development

- **Transitioning the economy** – Specialized infrastructure which can enable the private sector entities
 - **Empowering rail connectivity**
 - Prioritize strengthening of railway network on three major sub-regions in the state
 - Strengthen route infrastructure through formation of SPV with railways for identified routes / projects
 - **From Transport to trade corridor**
 - Broaden connectivity of logistics that deals with agri-produce
 - Development of logistics nodes comprising warehouses, distribution centres and inter-modal connection capabilities, supported by trucking network for connecting warehouses
 - **Giving impetus to air connectivity**
 - Provide an enabling platform to leverage the need for air connectivity to high value perishable horticulture produce via air freight model
 - Develop cargo terminals with perishable goods handling capacity at major airports
 - **Last mile logistics**
 - Develop the last mile logistics infrastructure in top 20 cities
 - Make required changes to facilitate the cargo handling capacities in transport hubs
- **Growth Corridor between twin capitals** – Renew the appeal for investments and service offerings by the private sector firms
 - **High speed connectivity**
 - Enable high level of 'within a day job' travels among the twin cities (Bhopal and Indore)
 - Strengthen rail network for direct non-stop shuttle services for day travellers
 - Bolster road connectivity with more direct expressways
 - **Inter-modal set-up** - Develop multimodal and intermodal set-up for twin city
 - **Industrial Township** - The distance between two cities would be further shortened by increasing the density of industries between these cities. There would be concerted efforts made to attract establishment of suitable PSU investments, which can spur ancillary units, along with special promotion package for entities interested in establishing residential compound adjoining to this belt.

Sustainable transport

- **Incentivizing electric vehicle (EV) Adoption** – Harness solar energy having high sunshine (5.5kwh/day) for roughly 300 days in the year in state
 - Introduce an incentive model for discarding, old/polluting vehicles and link this incentive to purchase of Electric vehicle
 - Incentivize retro-fitment kit for hybrid or fully electric conversion of conventional fuel based vehicles
 - Adoption of EV in public transport and for government use
 - Phase wise targeted migration of urban public mass transport systems to EVs



- **Setting-up enabling Infrastructure**

- Setting-up of EV charging infrastructure at Railway Stations, Bus stations, government offices etc.
- Provision of reserved slots and charging infrastructure for EV at public parking shall be made available
- Government shall incentivize solar based charging infrastructure by private players and mandating provisions for EV charging infrastructure at new residential and commercial complexes.
- Installation of smart grid network for charging infrastructure and fast charge infrastructure on commercial routes such as Bhopal-Indore

Conclusion

Like most of the central India, MP is endowed with high sunshine (5.5KWH / day) for roughly 300 days in the year. This bounty is evenly spread across the state and becomes more valuable with evenly spread low population density. The availability of tracks of open lands can significantly help the deployment of solar generation capacities. Further, the state's decision of winding-up the Road Transport Corporation (RTC) opened up an opportunity for the private operators to play a larger role in intra and inter city transportation. Industries have started seeing merit in setting up their base in MP in last few years. There is a need to further develop the newer mobility model to leverage the more synergistic transport operations involving intercity travel, en-route service extensions and community determined local transport operations.

Maharashtra





Introduction

People centric and sustainable mobility solutions are key to Maharashtra's mobility strategy. Maharashtra's vision is to provide sustainable and safe mobility for all people by eliminating dependency on PMVs (Personal Motorized Vehicles), by providing 65,000 high quality buses (at least 75% electric) and 10,000 km safe Non-Motorized Transport (NMT) network. State intends to achieve the following mobility goals by 2030:

- Sustainable mobility: Reduce per capita transportation emissions by 33%
- Safe mobility: Reduce road crash fatalities by 75%
- Mobility for all: Achieve 80% modal share by sustainable modes by focusing on public transportation and NMT
- Mobility for all: Make all transportation infrastructure universally accessible

Planning for the future

Maharashtra has already published a draft Maharashtra Urban Mobility Policy (MUMP) to transform mobility in the state. MUMP will induce a paradigm shift in the way urban transportation is planned. It includes the following key reforms:

1. **Budgetary reforms:** MUMP encourages cities to allocate a large part of their transportation budget towards public transportation and NMT projects
2. **UMTA and UTF:** Unified Metropolitan Transport Authorities (UMTA) to be set up to ensure that all agencies related to transportation act in unison. Urban Transport Funds (UTF) to be set up to pool all financial sources of the cities like farebox revenues, parking fees, municipal taxes etc., to fund sustainable transport projects
3. Regional Transport Fund is also envisioned to fund sustainable transport projects in regional and rural settings

Maharashtra focuses on following six themes to achieve the aim of sustainable mobility.

Theme	Details
Maximize asset utilization and services	State is expected to focus on improving mobility by promoting public transportation and NMT. Using technology, the state aims on making public transportation more efficient.
Comprehensive electrification	State aims electrification of 100% urban buses and 33% regional buses. State plans to promote electrification of PMVs while making sure that it doesn't encourage putting more vehicles on the roads. Further, it will be ensured that electrification is not cross-subsidized by people who use public transportation and NMT. To reduce the strain on the power grid, the state aims to focus on distributed energy resources such as wind and solar energy.
Alternative energy	State aims to harvest alternative sources of energy such as wind, solar, ethanol and hydrogen cells. State also plans to promote CNG to reduce the health hazards caused by diesel emissions.



Theme	Details
	State also plans to build 10,000 km of safe, high quality and attractive NMT infrastructure: 6000 km footpaths, 3000 km cycle tracks in cities, and 1000 km cycle-safe regional roads.
Reinventing public transport	The state will henceforth consider public transportation (including both formal and informal modes) as an investment than a liability. State envisions to establish a formal public transportation operation in every municipal corporation with well integrated informal public transportation to provide end-to-end mobility solution. These services could be provided either at city level or by a dedicated state level transport undertaking. The urban public transportation operations would be supported by a fleet of 40,000 buses and regional connectivity to be supported by 25,000 buses in MSRTC's fleet. Cities would allocate 100 sqm space per bus for depot facilities. The state also looks to include all shared vehicles as public transport. This will also include shared bicycles, shared autos, taxis and rickshaws, app-based shared mobility solutions etc. The state will also provide a technology solution to provide seamless mobility, where an app can help a commuter reach his destination primarily using public transportation modes.
Logistics and Goods Transport	State government has recognized that an effective logistics mobility system requires a strategic approach for transporting goods and freight between suppliers, manufacturers and distributors, warehousing facilities and clients, and all other points in between. This also implies effective cost management, to add to the sustainability of this system. In order to do so, GoM will formulate and implement a mobility system that utilizes the complete range of transportation options available
Data Analytics and Mobility	Adequately anonymized mobility data generated by mobile devices, smart fare collection cards etc. are expected to be used to identify public transportation and NMT deserts. Accordingly steps would be taken to provide attractive sustainable transport alternatives

State has developed mobility sub-plans to implement MUMP. Details of these sub-plans are provided below.

Urban Plan

Cities of Maharashtra

- Achieve 80% modal share by public transportation and NMT from the current level of 60%
- Prioritize public transportation and NMT projects and allocate 60% or more of transportation budget against the current level of 10-20%. Cities to reduce/stop spending on projects that benefit PMVs for example flyovers and grade separators designed for better movement for personal motor vehicles, road widening, and mechanized parking
- 1% of the transportation budget to propagate sustainable transportation fundamentals
- Provide 50 or more standard buses (or equivalent) per lakh population served.
- Develop walkable footpaths along all roads that are 12 m or wider - which would be of the order of 8 km footpaths per lakh population. The footpaths to also provide planned and designed spaces for vendors to fulfil people's local needs avoiding motorized trips.
- Develop a network of cycle tracks of the order of 4 km cycle tracks per lakh population
- Establish Urban Design Departments to ensure usability of infrastructure



- Cities with more than 10 lakh population to develop bus-based MRT systems. Mumbai, Pune and Nagpur may need high capacity Metro systems

Government of Maharashtra

- Conduct capacity building workshops for cities
- Develop templates, standards and guidelines for projects that promote public transportation and NMT
- Set up a data center for systematic collection and analysis of mobility parameters in cities
- Monitor and evaluate mobility parameters, and recommend data driven remedies to help cities remain on track of achieving the mobility targets
- While promoting public transportation and NMT, in parallel, also take steps to disincentivize use and ownership of PMVs
- Provide funds for innovative pilot projects that promote public transportation and NMT
- Adopt land use regulations that incentivize higher density commercial and residential development within walking distance of major public transport corridors.
- Recalibrate taxation system to encourages modes that contribute to state's mobility goals
- Promote shared mobility of various types while ensuring that it doesn't increase at the cost of modes that have an even lower carbon footprint, and easy availability of new modes does not trigger unduly large latent transportation demand, thus leading to higher congestion levels.

Rural Plan

In order to formulate a comprehensive rural mobility plan, the following subjects were scrutinized towards establishing an effective rural plan and its implementation.

Subject	Details
Integration of informal public transport in rural areas	To allow fixing of routes and rates and subsidization of costs and cater to central work areas/markets, schools and colleges, and also goods movement
Promotion of water transport	Promote use of boats as regular and mainstream means of transport, to ensure utilization of the state's waterways and help subsidize the cost of boats itself. Due training would be given to villagers, viz. usage and working of the boats, and safety / precautionary measures to be exercised.
Promotion of non-motorised transport options	State is expected to promote use of bicycles for last mile connectivity by measures such as providing safe bicycle parking at MSRTC stands. State has also recognized the practicality of non-motorised vehicles such as cycle rickshaws and animal carts in rural areas, especially for short distances. There are ongoing discussions regarding new legislations at the state level, exclusively pertaining to non-motorised transport
Route rationalization for state transport buses	As of 2018, MSRTC serves 96% of rural areas in Maharashtra. State has identified the need for rationalizing bus routes to improve their frequency and load factor.
Development of bus infrastructure	State envisions a number of bus depots and multi-modal transit terminals to develop a highly inclusive mobility plan. The government plans to make buses compliant to urban bus specifications, while deploying sophisticated technology such as Automatic Vehicle



viz. depots and terminals	Location System (AVLS), Automatic Fare Collection System (AFCS), e-Ticketing, collision avoidance, emergency notification and other intelligent transport management systems. State also intends to develop smart bus depots, state-of-the-art multi-modal transit terminals and maintenance facilities for passengers, operators and visitors. Multi-modal transit centers are at the core of this fortification effort, in order to minimize transit time and develop high quality public transport.
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Regional plan

The state plans to strengthen its regional public transportation service. Considering expected increase in population, increase in trip rate and need to improve the regional public transportation share, state intends to increase its regional bus fleet by at least 30 to 40%, while encouraging a similar capacity improvement in private operators. This is expected to be achieved by the following measures.

- Increasing and improving MSRTC fleet to 25,000 from 18,500 today
- Building and modernizing MSRTC stands, terminals and depots
- Providing facilities like terminals for private operators, though this may come at a fee
- Employing Traffic Demand Management (TDM) measures like tolls and road tax
- State is planning to work with the central government to strengthen its rail connectivity to improve the regional modal share of rail compared to road travel

Across the state

Awareness about sustainable transportation: State to conduct campaigns to create awareness about sustainable transportation planning.

Protecting the environment: State to avoid roads construction in fragile ecosystems and restrict it to only NMT infrastructure in eco-sensitive areas.

Road safety: Going beyond WHO's Brasilia Declaration on Road Safety, state plans to reduce the number of fatalities by 75% or more by 2030. A data driven system for collection and analysis of road traffic crashes is expected to be established. Enforcement components such as e-challans and a penalty point system are expected to be tied up with insurance and validity of driving license. Post-crash trauma care system is expected to be strengthened while ensuring a faster response time and availability of trained paramedics along the entire National and State highway network.

Universal Accessibility: All new transportation infrastructure is to be designed for universal accessibility while retrofitting the existing transportation infrastructure for the same.

Women's safety: Special efforts to ensure that transportation, especially the streets and public transportation, are safe and convenient for women would also be taken by the state.

Freight and logistics

State is examining the following measures to smoothen the freight and logistics in the state

- New railway lines connecting the industrial development corporations, Special
- Road networks to bypass the city
- Stringent timings of road usage for goods movement in cities.



- Economic Zones, ports and airports to avoid road freight movement
- Replacing diesel goods vehicles with greener alternatives
- Development of centralized warehouse and distribution centers to better distribute goods on the basis of delivery location and trucking schedules.
- Development of truck terminus at periphery of the city to provide parking, re-fueling, boarding and lodging facilities.
- Strengthening of road and rail connectivity with ports across the state.
- Deployment of sophisticated technology for inventory management, vehicle tracking, book-keeping and automation of warehouse terminals.
- Stringent inspection of goods and warehouses on regular basis.
- Collation of feedback from end consumers to further upgrade quality of logistics.

Conclusion

The state has identified particular projects to fulfil its mobility vision. Under public transport, state aims at a fleet of 40,000 urban transport buses (100% electric by 2030), 25,000 of regional transport buses (33% electric by 2030) and a total network of 900 km of Mass Rapid Transport system. For non-motorized transport, state plan 12m+ urban roads to have footpaths (6000 km), and cycle track network of 4 km per lakh urban population (3000 km) along with 1000 km NMT-safe regional roads. The existing and new transport infrastructure would be made universally accessible. A data driven approach and responsive system for road safety is also envisaged.

Manipur





Introduction

Manipur is a small but fast growing state of the north east region of the country having total area of 22,327 square kilometers, and a population 28,55,794 (2011 Census). The population density of the state is 130 people per square kilometer. The state is surrounded by Nagaland on the north, Mizoram on the south, Assam on the West, and Myanmar on the eastern front. Imphal is the capital city of Manipur and it has 16 districts out of which only 4 districts namely Imphal West, Imphal East, Bishnupur & Thoubal are valley districts and the remaining 12 districts are hilly regions creating challenges to public/private transport systems.

The state is connected by two national highways (NH). One is NH – 39 (Imphal – Dimapur), and the second is NH – 37 (Imphal – Silchar). Essential commodities including petroleum is transported into the state using these highways.

The total number of vehicles in the state as on March 2018 is 3,74,968 and it has increased by 10.2% over the last year. Two wheelers and four wheelers (personal cars) constitute 85% of the total vehicles. There are approximately 1,600 buses and 20,000 intermediate public transport vehicles including school buses.

The international airport is in Imphal, however regular flight services are not fully functional yet. The transport department also operates two separate helicopter services covering Thanlon, Parbung, Tamenglong, Jiribam, and Moreh region of the state.

A survey on identifying and developing inland waterways was completed in 2011, and the transport department is actively working on completion of the identified waterways on Loktal lake and Barak river.

In the last 5 years, from 2013 to 2017, on an average 139 persons died, 1,117 got injured in road accidents and a total of 605 cases of accidents were recorded in the state annually. However, the period from January to June 2018 has seen a reduction of 11.84% in fatal accidents, 9.21% reduction in injuries due to road accidents, and 4.75 % reduction in total number of accidents as compared to the numbers in the same period in 2017.

Planning for the future

Manipur has been working on the transport sector to improve overall transport mobility in the state. Strategic initiatives have been identified in key focus areas which as follows:

- **Road Safety**
 - Reduction in number of fatal road accidents by 50% by 2020
 - Creation of road safety fund with direct transfer of 50% revenue generated from penalties.
 - Creation of Lead Agency under the supervision of Director of Transport.
 - Setting up more number of driving schools across the state
 - Regulation of buses and vans for safety of school going children
 - State sponsored safety awareness programs/workshops across the state
 - Strict enforcement of safety laws among the masses
- **Public Transport**
 - Road:**
 - District wise focus on improving connectivity in the poorly connected places.



- Involve private players on Public-Private-Partnership (PPP) mode to improve number of public transport vehicles.
- Minimize financial deficit of the department of transport and sustain infrastructure development.
- Create affordable, reliable, and sustainable public transport system in the state.
- Increase number of electric vehicles such as e-rickshaws in public transport.
- Development of international bus service viz. Imphal-Mandalay bus service

Air Transport:

- Bridge gaps in regional connectivity through UDAN scheme.
- Operationalize regular flights via international airport.
- Introduce higher number of chopper services across the state.
- Actively pursue and implement air ambulance service in the state.

Inland Waterways:

- Actively pursue and complete the Barak river inland waterways project.
 - Construction of Jetties and Terminal buildings.
 - Connect left out villages with inland waterways through Loktak inland waterways project II
- **Inter-state Freight movement**
 - Actively pursue uplifting of restrictions on vehicles' load carrying capacity on national highways
 - **Non-Motorized Mode of Transport (NMMT)**
 - Systematic improvement in pedestrian foot path, and cycling infrastructure.
 - Allotment of parking lots on public places to ease congestion
 - Traffic regulation implementation and removal of unauthorised street vendors

Conclusion

While there are challenges of hilly terrain, the state is also blessed with opportunities for transport mobility via inland water ways and better air connectivity. State has a clear focus on providing residents with safe, reliable and sustainable mobility options by exploiting the existing resources of the state. The state is embracing eco-friendly initiatives such as EVs, pedestrian footpaths, and higher usage of inland waterways.

Nagaland





Introduction

In the mountainous state of Nagaland, road transport plays a major role in connecting people of various districts, talukas and villages. The other modes of transport in the state are not sufficiently developed.

- The State has only one Airport located in Dimapur.
- The lone Rail junction at Dimapur is the only rail link to Guwahati and Upper Assam.

Moreover, due to exposure to heavy monsoon, even maintaining road transport infrastructure is a significant challenge as the hilly terrain is prone to calamities such as mud slides and floods. These underlying conditions of the present state of transport infrastructure warrant a comprehensive mobility strategy for the state focusing on connecting people and movement of goods in such arduous conditions.

Planning for the future

Vision

“The State of Nagaland will have a choice of affordable, healthy, sustainable, and connected travel options for moving people and goods through integrated transportation and land use planning.”

The comprehensive mobility strategy for the state gives priority to non-motorized transport, growth of all modes of transport to create a safe, convenient and efficient mobility for all.

The Comprehensive State Mobility Strategy seeks to have a short-term, medium-term and long-term vision for accessibility for people and goods across regions. It focuses on the mobility of people by overcoming existing state transport problems and promoting better use of existing infrastructure (i.e. improvement of public transport, pedestrian and NMT facilities) to provide, safe, secure, efficient, reliable and seamless connectivity that supports and enhances economic, social and environmental sustainability.

Objectives

The objectives of the mobility strategy are laid down in order to address the existing challenges and to fulfil the vision for the state by 2030. The objectives envisaged will primarily help the state to achieve the following three main objectives:

- **Accessibility:** Making smooth and seamless mobility available for goods and people
- **Smart mobility:** Utilizing unique technologies to improve the way people and goods move
- **Safe Transportation:** Utilizing unique technologies to enhance safe mobility

Mobility Plan Strategies

The Nagaland State Mobility Strategy Plan is in accordance with the guideline outlined under **“Transforming Mobility” by NITI Aayog** and aims to serve as the basis for implementation of a series of initiatives, for fostering sustainable and inclusive mobility growth of the State. The mobility strategy designed for the 12-year period ensures achieving sustainable mobility for the state by planning for integrated land use and transport planning, bringing a control on movement of personal vehicles and encouraging Public Transport System and other Sustainable modes. The Nagaland State Mobility Interventions have been designed to achieve the following:



- Seamless Integrated Mobility System that responds to travel demand and provides Shared and Economical Inter- State, Inter-District and Infra-City Transit connecting urban and remote areas. This is to be achieved by means of technological and governance solutions (mainly IT/ITES based), intelligent transport solutions and digitization, improving road connectivity to save time and costs, improving road quality and improving connectivity through rail and air.
- Introducing inland water transport and tunnelling projects in the state to enhance passenger movement and overall socio-economic development. This will be achieved by leveraging the dense river network and setting up a state tunnelling wing respectively. A special EVs transport wing is also envisioned.
- Application of space based technology and geospatial technology for decision support. For the same, knowledge partnership with Nagaland GIS and Remote Sensing Centre and other space application centers/ organizations will be done.
- Effective implementation of road safety policy by human resource development through capacity building and training.

Conclusion

The state of Nagaland envisions to provide safe, efficient, and environmentally sustainable means of transportation system for improving mobility of people and goods. These objectives can be effectively achieved by improving the connectivity through all means of transport especially leveraging inland waterways and the roads. The new mobility paradigm for the state shall be to move towards shared, electric and connected mobility for people and goods.

Puducherry





Introduction

The Union Territory (UT) of Puducherry consists of four regions viz. Puducherry, Karaikal, Mahe and Yanam which are geographically separated from one another. Puducherry's vision for transformative mobility is to "Shape a modern, efficient, economical and safe transportation system that balances the needs of the economy, society and the environment and to meet the mobility needs of all sections of the people by 2036".

Planning the future mobility

Mobility strategies

The sub-sector wise broad policy objectives to meet the desired vision statement are described below. The strategies are provided in the Detailed State Strategies Compendium.

Sub-sector	Objectives
Roads	- The highways, intra-city and inter-city roads to be developed to national standards with all modern facilities - Ensure proper upkeep of roads
Road Maintenance	Ensure timely maintenance
Public transport	- To revamp public transportation system to increase its share from existing 20% to 50% by 2036 in modal mix - Discourage the tendency among people to adopt personal vehicles and instead encourage mass transport facilities in urban areas
Intermediate Public Transport (IPT)	Strengthen their operations by proper regulation and discipline
Parking	Encourage measures that allocate road space on a more equitable basis for road traffic rather than dead usage of valuable road space for parking purpose
Rural transport	- Ensure easy access and reliable public transport to all classes of rural society - Improve standards of rural roads connecting the villages to allow bus services
Goods transport	- Ensure high quality goods transport service to the consumers through intermodal freight transportation and strengthen its infrastructure development - Provide barrier free movement of long haul goods vehicles entering the state
Private Transport	- Arrest the trend for sharp rise in private vehicle ownership and improve driving skills and vehicle fitness to improve road safety - Encourage cleaner, eco-friendly and energy efficient vehicles and phase out old vehicles that pollute the environment. - Make issuance of driving license and vehicle inspection strict and IT based so as to reduce scope for subjectivity and extraneous considerations



Road Safety	• Reduce the occurrence and severity of road accidents and consequently, the level of fatalities and injuries in an efficient and professional manner. • Reduce road accidents by at least 50% by 2020 and to maintain zero growth level thereafter
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• **Transport Oriented Planning:**

According to the objectives of the National Urban Transport Policy, the following policy framework / guidelines are proposed to be devised:

- Public Transport Improvement Plan: Policy and Options
- Non-motorized Transport (NMT) Policy and Options
- IPT/E-Rickshaw Policy
- Policy for Pedestrian Facilities
- Parking Policy and Options

Mobility plan and strategy

A Comprehensive Mobility Plan (CMP) is expected to act as a short and long term solution for mobility strategies of the UT. The main goals of the improved mobility strategies include more efficient vehicular traffic, enhanced public transit systems and non-motorized transport to provide safety and security to the users and provide efficient connectivity with accessibility to all sections of the people including tourists, elderly, children, differently abled, and infirm.

A three phase action plan (briefed below) has been formed which includes components of short-term, medium and long term measures (Phase I: 2015-20; Phase II: 2020-25; Phase III: 2025-36). In addition, interim proposals (implementation within 2 years) have also been laid out as an immediate improvement plan. The key features of interim proposals include strengthening of existing bus service; identification of new city bus routes; regulating auto routes; junction improvement plan; traffic management schemes; and model streets (street development plan).

SN	Interventions	Key action areas	Implementing agencies
Deadline: 2020-25			
1.	Traffic Safety & Traffic Education	• Conduct traffic awareness among all categories of road users • Make wearing helmets and wearing seat belts compulsory with heavy penalty for defaulters • Deploy traffic marshals to increase patrolling	Traffic Police, Transport Department and Education Department.
2.	Efficient Public Transport System	• Increase frequency of buses in villages during peak hours • Rationalize IPT routes to cover villages • Introduce Midi and Mini buses	Transport department
3.	Road Infrastructure	• Study of signages required for the Puducherry region and install specific types of signages • Improve road geometrics especially at the intersections and covering of all drains for pedestrian walkways. • Restrict traffic movement and enforcement through geometrics.	PWD and Traffic Police



SN	Interventions	Key action areas	Implementing agencies
4.	Rail Infrastructure	• Cuddalore-Puducherry Railway Line • Additional Platform at the Railway Station • Convert VIP platform to EMU Platform	Southern Railways
5.	Air Infrastructure	• Expansion of Airport – Runway	Airports Authority of India
Deadline: 2025-36			
1.	Parking Management	• Explore new parking sites • Explore new technologies to maximize the capacity of parking lots • Create off-street parking supply • Regularize parking bays (with premium and regular parking fees) • Retro-fit the road cross section to accommodate on-street parking	PWD, Municipalities/ Local bodies
2.	Traffic circulation and Management	• Enforce one-way traffic movement to accommodate on street parking • Improve road cross sections for the commercial streets to minimize bottlenecks and to optimize road space • Provide medians along major stretches	Traffic Police and PWD
3.	Pedestrian infrastructure	• Introduce pedestrian crossing at major intersections • Build pedestrian walk network to encourage walking • Create adequate walkable widths and accessible footpath height along the residential and commercial streets • Provide pelican (signalized pedestrian crossings)	PWD and Municipalities/Local bodies.
4.	Inland Waterways	• Inland Waterways-4 as a project to be developed connecting Kakinada of Andhra Pradesh to Puducherry via Tamil Nadu	Inland Waterways Authority of India (IWAI)

Institutional and regulatory reforms

- State level road safety council has been constituted under the chairmanship of Hon'ble Chief Minister
- District level road safety council has been constituted under the chairmanship of district collectors
- Road safety cell under transport department has been constituted with line departments and fortnightly meeting is conducted to address the road safety issues
- Regular enforcement activity is being carried out by concerned authorities as per the Motor Vehicles Act/Rules
- Public out-reach programmes /awareness is being regularly carried out by the Transport Department to educate the general public on road safety aspects.



Conclusion

Puducherry is emerging as one of the main tourist and knowledge hubs in South India and with the presence of administrative institutions, growth of the city is imminent. This can lead to an increase in the vehicular trips and thereby deteriorating the urban environment. So, mobility plan measures will be formulated in such a way that efficient connectivity and inclusive developments strategies can be implemented. With improved mobility between villages and Puducherry city area, the strategies are expected to support and enhance economic, social and environmental sustainability.

Rajasthan





Introduction

With rapid growth in population of Rajasthan (around 6.9 crore in 2011), industrialization and urbanization, demand for mobility has increased manifold for commuting inter-city, intra-city and to remote areas. The state level task force has identified the key mobility challenges and suggested measures to overcome them. The following challenges have been identified:-

- Infrastructure for Multi Modal Transport
- Congestion
- Pollution Control
- Public Transport Service Quality
- Road Safety

Planning for the future

An action plan has been framed to tackle challenges identified in the state. The action plan is planned in three phases: Phase I - All Smart Cities & AMRUT Towns; Phase II - Towns more than 50,000 Population and Phase III - All Other Towns.

Infrastructure for Multi-modal transport

Transport infrastructure is the most vital component to facilitate increased use of public transport leading to lower congestion and pollution. Together with infrastructure, various modes of transportation are necessary to supplement each other in providing last mile connectivity.

Proposed Actionable Points	Phase I	Phase II	Phase III
Construction of ROBs/Flyovers at traffic bottleneck points	Dec. 2020	Dec. 2022	Dec. 2025
Improvement of Roads and Street Design	Dec. 2020	Dec. 2022	Dec. 2025
Roads and Junction improvements	Dec. 2020	Dec. 2022	Dec. 2025
Dedicated On-street parking	Immediate	Immediate	Immediate
Multi-level parking provisions in congested areas	Dec. 2020	Dec. 2022	Dec. 2025
Reducing Road Accidents and identifying Black Spots and improving Road Engineering	Immediate	Immediate	Immediate

Further it is suggested to include barrier free planning in public transportation, designing of safe pedestrian paths for senior citizens, children etc.

Congestion

In addition, some other ways are proposed to de-congest the roads of Rajasthan.



Proposed Actionable Points	Phase I	Phase II	Phase III
Construction of Ring Road and Bypasses to direct heavy traffic entering the city.	Dec. 2020	Dec. 2022	Dec. 2025
Removal of unauthorized construction and encroachments along the ROW (Right of Way).	Immediate	Immediate	Immediate
Demarcation of HDZ (High Density Zones).	Immediate	Immediate	Immediate
Shifting of wholesale markets and commercial activities not desirable in High Density Zones of the walled city/ core city area.	Dec. 2020	Dec. 2022	Dec. 2025
Identification and marking of Parking and NO-parking zones	Immediate	Immediate	Immediate
Identification of vending, non-vending and restricted vending zones in heavy traffic zones	Immediate	Immediate	Immediate

Pollution control

The transport department is developing a web based application for issuance of Pollution Under Control (PUC) certificates to the vehicles. This application is expected to monitor the vehicles without valid PUC certificates. The transport department is also operationalising e-challan system to strengthen the enforcement. This system is expected to help in quantifying data and analysing action against defaulter vehicles including vehicles without valid PUC certificates.

Proposed Actionable Points	Phase I	Phase II	Phase III
Encouraging Green Mobility and NMT	Dec. 2020	Dec. 2022	Dec. 2025
Pedestrianization, Dedicated Cycle Tracks etc.	Dec. 2020	Dec. 2022	Dec. 2025
Creation of separate lanes for Public Transport System	Dec. 2020	Dec. 2022	Dec. 2025
Creation of Dedicated Parking/Charging stations for Battery Operated Vehicles/ E-Rickshaws	Dec. 2020	Dec. 2022	Dec. 2025
Web based application for issuance and monitoring of PUC certificates	Dec. 2018	Dec. 2019	Dec. 2020
E-challans to check non adherence to PUC scheme	Dec. 2018	Dec. 2019	Dec. 2020



Public Transport Service Quality

Quality of service and convenience is one of the deciding factors for use of Public Transport. Some of the measures suggested are summarized below.

- Sufficient Availability of Transport at Regular Intervals
- Integrated Public Transport Facilities Assisted with Information Tracking
- Integrated Ticketing
- Common Mobility Card
- Cashless Payment Options
- Fair and Uniform Pricing Round the Clock
- Universal Accessibility in Public Transport
- Covers Last Mile Connectivity
- Wider Coverage Areas by Metro
- Rail /Bus for Connecting Distant Sub-urban and Rural Areas

The task force proposes following action points: Creation of a Unified Urban Transportation Authority (UMTA); Integrated Public Transport System in all major cities; Capacity Building of institutions involved in Planning and Management of Urban Mobility related works; and strengthening of the urban transport fund to finance transport infrastructure projects.

Road Safety

The Transport Department, Government of Rajasthan has incorporated Safe System Approach in their Road Safety Action Plan 2018 - 2020. Various road safety measures have been taken in the state viz., issuance of State Road Safety Policy, constitution of inter-departmental lead agency, creation of dedicated road safety fund, formation of road safety action plan (2018-2020), inclusion of road safety in school curriculum etc.

Further the task force proposed to develop a comprehensive transport system to tackle identified challenges as well as new & unforeseen challenges by creating institutional infrastructure involving various departments and experts/consultants for planning and implementation. It proposed to develop an eco-friendly and commuter friendly transport system by using new technology, information education and communication (IEC) activities for encouraging non-motorized transport and an intelligent transport management system.

Table 1: Proposed timeline to reduce road accidents and fatalities by the state task force

Year	Target for reduction
2018	15%
2019	15%
2020	20%

Conclusion

With rapid growth in population, industrialization and urbanization, demand for mobility has increased manifold for commuting inter-city, intra-city and to remote areas. The Rajasthan task force has identified key mobility challenges and proposed action plan with timelines for the same.

Tripura





Introduction

The state of Tripura is located in the extreme south-western corner of the North Eastern Region mostly surrounded by Bangladesh (856 kms) leaving a chicken-neck access to the main land through Assam, Meghalaya and Bengal. The topography of the state is hilly terrain and full of hillocks, rivers and rivulets. Due to its topography, intra state connectivity was practically absent up to the pre-independence period i.e. prior to merger with Union of India and the movements were restricted through Roadway, railway and waterway through erstwhile East Pakistan, now Bangladesh.

The key components of the state's mobility strategy are planned around the following areas:

- 1) Development of Inland Water Transport (IWT) infrastructure
- 2) Creation and upgradation of rail infrastructure
- 3) Upgradation of air connectivity and modernization of airport
- 4) Development of new highways and maintenance of existing road infrastructure
- 5) Sustainable transport solutions
- 6) Use of information technology

Key issues facing the transport sector are:

- i. Promoting universal accessibility of all public mobility services and public spaces
- ii. Improving efficiency through integration of modes
- iii. Increasing access to services
- iv. Electrification of public transport systems
- v. Low carbon transport.

Planning for the future

Vision

"To provide, safe, connected, shared, secure, efficient, reliable and seamless connectivity (for people and goods) that supports and enhances economic, social and environmental sustainability"

Integrated vision for the Transport Sector till 2030

The State intends to develop a three tier planning approach- regional level, state level and district level (HQ cities). A Seamless Integrated Mobility System (SIM System) will be the solution for the challenges foreseen by the state.

There will be development of sustainable mobility solutions with focus on electrification and inter modal connectivity: electrification of public transport systems, personal transport options and also the inter-modal freight and passenger transport.

Access to ports, development of waterways, upgradation of rail connectivity, international projects such as port access, trans-national infrastructure etc. are key in development of seamless mobility for the uniquely positioned state.



Following are the planned timelines for institutional requirements and electrification of public transport:

Year	Institutional	Electrification of Public Transport
Phase-1 (2019-21)	1) Set –up State Nodal Authority to supervise the State Mobility Plan. 2) Define roles and responsibilities of the Nodal Agency.	1) Regulatory Policy to incentivize private electric vehicle aggregators for both surface and water transport. 2) Procure Electric Fleet- Buses, Rickshaws, Cabs, Ferries
Phase-2 (2022-26)	Dedicated State Mobility Fund for infrastructural/ technological improvements.	1) ICT enabled Public Transport. 2) Command Centre for Integrated Monitoring / Surveillance
Phase-3 (2027-30)	Integrated payment system across all modes of transport.	Integrated Transport Management System to streamline traffic flow

Initiatives taken by the Government so far under transport sector are provided below.

- i. App based taxi/auto/bike services: The Transport department has already taken the decision to introduce the service in the State. The Rules under “Tripura on Demand Transportation Technology Aggregator (TODTTA)” Rules, 2018 has been notified.
- ii. Electric bus service: The Transport department is examining the proposal of Indo-European Sustainable Development and Energy X for running electric buses on PPP model. The state government shall provide suitable locations for installation of charging points.
- iii. Exemption of road tax for electrical vehicles: To popularize using of electrical vehicles, the state government has already taken a decision to exempt road tax for electric vehicles.

Conclusion

Tripura is uniquely positioned from a geographic point of view. The state requires intra-state connectivity as much as inter-state and international connectivity to realize its true economic potential. The multi layered approach to build sustainable transport solutions and tapping its strengths which include traditional waterways may enable the state to leapfrog into transforming mobility.

Uttar Pradesh





Introduction

Uttar Pradesh (UP) is the most populous state of India, and 11.80% of the urban population of India resides in Uttar Pradesh. UP is the 4th largest state in the country with 75 districts, 915 urban bodies, 13 municipal corporations, 226 municipal boards, and 97,941 populated villages. Its largest cities are Lucknow, Kanpur, Agra, Varanasi, Allahabad, Ghaziabad, and Meerut.

The state is primarily dominated by the tertiary sector followed by the primary and secondary sectors. The tertiary sector has been driven by trade, hotels, real estate, finance, insurance, transport, communications and other services. Uttar Pradesh is one of the most favored states for tourists in India and is ranked second (2016) in terms of total tourist arrivals. The state has the highest number of Micro, Medium and Small Enterprises (MSMEs) and contributes more than 8% of national manufacturing output.

With a new wave of economic development and spur in manufacturing in India, Uttar Pradesh is leading the stride in industrialization. Alongside, UP is undergoing rapid urbanization. Many of the planned Smart Cities in India are coming up in Uttar Pradesh. The state is focusing on last mile connectivity in rural areas. Mobility plays a vital role in spurring the economic activities in the state.

Connectivity is an absolute necessity for ensuring access to markets and achieving greater economies of scale leading to higher growth and living standards. A brief look at the existing mobility infrastructure shows that the state has a total road length of 412,422Kms (2015-16, MoRTH) which is broadly divided into two network categories: the core network which comprises of national and state highways, and the balance non-core network of mobility comprising district roads, village roads etc. New expressways have also come up such as Yamuna expressway (165 km) and Lucknow – Agra expressway (302 km).

The total vehicle population in the state has increased by 80% over 2010 in 2015, and presently the total number of vehicles in the state is 2,93,94,816 (UPSRTC statistics). There has been a significant rise in the number of private vehicles, particularly 2-wheelers and cars. In addition, the state is served by five of the 17 railway zones in the country and has the biggest rail network. The Delhi Metro Rail links Noida and Ghaziabad with Delhi. Further, Inland Waterways Authority of India has initiated the project of “Capacity Augmentation of National Waterway-1” between Haldia and Allahabad named as “Jal Marg Vikas Project”, connecting Allahabad to Haldia (1,620 kms), of which 370 kms falls in UP (Allahabad – Ghazipur). Also, the passenger air traffic in Uttar Pradesh has grown in the year 2016-17 by 30% to 6.1 million. Uttar Pradesh has two international airports in Lucknow and Varanasi, four domestic airports in Agra, Kanpur, Gorakhpur and Allahabad. The Delhi Mumbai Industrial Corridor and Amritsar Kolkata Industrial Corridor pass through Uttar Pradesh and intersect in the Gautam Buddha Nagar in the state.

Planning for the future

The following ten objectives articulate the broad mobility vision of the state.

1. To provide greater access to rural areas and connecting them to key economic centers and social services
2. To create an affordable, reliable and convenient urban public transit system to reduce single-occupancy vehicles and road congestion
3. To ensure safe commuting for all using an education-enforcement-engineering-emergency services approach and mitigating in-transit crime against women
4. To promote R&D and technology upgradation through intelligent transport solutions and digitization for efficient mobility, last mile connectivity and safety for commuters



5. To improve urban transportation by parking management and creating taxi aggregator hubs to decongest the roads
6. To encourage shared mobility and transit oriented development to decongest urban traffic and ensure last mile connectivity
7. To plan and develop complete streets, which divide equitably road space between various public, private and non-motorized modes
8. To promote green mobility for improving air quality by reducing CO2 emissions
9. To mobilize the connectivity advantage and enhance the infrastructure for various modes including high quality air connectivity, inland waterways etc.
10. To encourage new models of business and mobility financing to create entrepreneurship and employment opportunities in the mobility sector.

The key strategies and action plan to achieve the objective of mobility plan is divided into various intervention categories:

- **Rural Mobility:** Connecting all 35,000 unserved villages with the nearest urban center, giving last mile connectivity from bus depots to within 500m of walking distance, promoting non-motorized transport infrastructure and multimodal systems, increasing frequency, penetration, quality and safety of buses, and promoting private participation in transport.
- **Provide efficient urban public transit:** providing multimodal integration for last mile connectivity, giving high quality bus service with increased frequency, implementing integrated traffic management system, and collaborating with taxi aggregators.
- **Safety:** Reducing fatalities due to road accidents by 50%, correcting road design and calming traffic, implementing specialized safety norms, running awareness programs, online/app based helpline services for women and children.
- **R&D and Intelligent transport solutions:** Implementing common mobility cards, and development of command and control centers with CCTV monitoring and vehicle tracking.
- **Parking and congestion:** Improving public transport usage, parking demand management and limiting parking spots, implementing congestion charging, dedicated hubs for taxi aggregators, and removing road side encroachment.
- **Shared mobility and Transit oriented development:** Car and bike sharing, public bicycle sharing, ride services in rural areas, and creating land use policy along metro rail lines and key bus terminals.
- **Non-motorized Transport /Pedestrian facilities:** Dedicated cycle tracks, pedestrian foot paths, development of public spaces, and pedestrian and cycling infrastructure.
- **Green mobility:** Promoting electric vehicles (EV) for last mile connectivity, employing EVs for public transport, collaborating with electricity sector for EV charging infrastructure, improving pollution check centers and skill development, and creating distribution infrastructure for alternative fuel such as CNG, ethanol, biofuels, etc.
- **Multimodal integration:** Developing intermodal transport infrastructure, developing industrial corridors, promoting expressways, highways, waterways and airways, and affordable housing within 300m of public transport.
- **Mobility Financing and Entrepreneurship:** Creating a program for fostering local entrepreneurship, creation of an urban transport fund, creation of viability gap funding mechanisms for public transport, using Private-Public Partnership (PPP) models and promoting non-fare revenue.



Conclusion

In the context of rising urban population with three fourths of the population still residing in rural hamlets, UP has wide ranging socioeconomic development needs. To address the vision for mobility, Uttar Pradesh aims for multimodal, seamless, efficient and integrated systems that are economically viable for operators, affordable, reliable and safe for users and follow a low carbon path.

NOTES

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