Improve Intermodal and Mode-wise System Efficiencies

For

Low Carbon & Sustainable Mobility in India
(Decarbonisation of Indian Transport Sector)

Lead

FICCI

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PREFACE

To move down the path of reduced emissions from the Indian transport sector and provide direction to low carbon and sustainable mobility for India, FICCI embarked on the initiative for Developing an **India Roadmap** for Low Carbon and Sustainable Mobility with thrust on decarbonisation of the Indian transport sector. FICCI is supported in this initiative by knowledge partners, WWF-India, Paris Process on Mobility and Climate (PPMC) and Shakti Sustainable Energy Foundation (SSEF). The India Roadmap has eight distinct components outlined below.

1. Urban transformation for healthier, inclusive lifestyles and efficient, resilient, prosperous cities
2. Low-carbon energy supply strategy
3. Improve intermodal and mode-wise system efficiencies
4. Optimise supply chains to manage freight transport emissions
5. Avoid vehicle kilometres for commuting, shopping and accessing services
6. Provide low-carbon solutions for the rural (non-urban) populations
7. Accelerate action on adaptation in the transport sector
8. Large scale deployment of economic instruments and leveraging finance

Each of these components is covered in detail under individual reports, available separately as Theme Reports. The India Roadmap provides summaries of each component and actionable recommendations for short-term (2020-22), medium-term (2022-30) and long-term (2030-50). For detailed narrative of each component, the reader may refer to the individual theme reports of the respective component. For getting an overview of all components, the India Roadmap provides the complete context for low carbon and sustainable mobility for India.

This report covers the third component on "Improve Intermodal and Mode-wise System Efficiencies".

The work on the India Roadmap has been guided by the FICCI Core Group on Sustainable Mobility consisting of eight working groups, each of which has worked on the eight components. The components are based on the Global Macro-Roadmap developed by PPMC. This methodological approach developed by PPMC is at the heart of the India Roadmap, with components of the India Roadmap being customised to Indian context and circumstances.

INTRODUCTION

"Driven by rising population, income, and urbanisation, under a business-as-usual scenario, India's energy demand from transport is projected to increase six-fold in 2050 from current levels" (Shukla and Pathan 2016). To begin with, urban India is facing multifarious challenges, such as an exploding growth in the number of private vehicles, severe congestion, increasing road accidents and alarmingly deteriorating air quality. And unless remedial measures are taken up immediately, the situation could easily get out of control and seriously hinder India's economic development efforts.

Clearly, transport networks cannot exist in silos. There is an urgent need to improve intermodal coordination, enhance accountability to improve efficiency, and, above all, focus on green initiatives to tackle environmental issues. The future planning of Indian transport is aimed at developing multimodal transport within the country, as well as for import-export trade. The transportation sector comprising road, rail, and air transport is one of the largest contributors of GHG (greenhouse gas) emissions globally. To be sustainable, the Indian transport sector needs to incorporate eco-friendly initiatives in all its modes and spheres of functioning.

Sustainable urban mobility calls for intermodal integration, i.e., integration of various modes of transport, to provide seamless connectivity for the commuters. Ironically, while the existing transport infrastructure favours multimodal transport, there is little intermodal coordination. The system exists with unclear responsibilities and weak accountability, resulting in inefficiencies.

According to NITI Aayog, last mile connectivity is a key factor for determining the success of the public transport system in a city. Policies need to focus on "ease of moving" by adapting and accommodating emerging, sustainable and eco-friendly forms of public transportation. The role of the private sector in the development of passenger mobility cannot be denied and in fact, should be encouraged.

This report discusses the existing gaps and challenges related to multimodal transport. In the Indian context, the future planning of Indian transport is aimed at the development of multimodal transport within the country, as well as for import export trade. Although the existing imperatives as well as transport infrastructure favours multimodal transport, there remains little intermodal coordination, and a system with unclear responsibilities and weak accountability, resulting in inefficiencies. It is critical to evaluate the current status, gaps and challenges with respect to improving different aspects of multimodality. This will help find ways for reduction of GHG emissions and other environmental performance aspects by addressing the existing gaps and challenges related to multimodal transport.

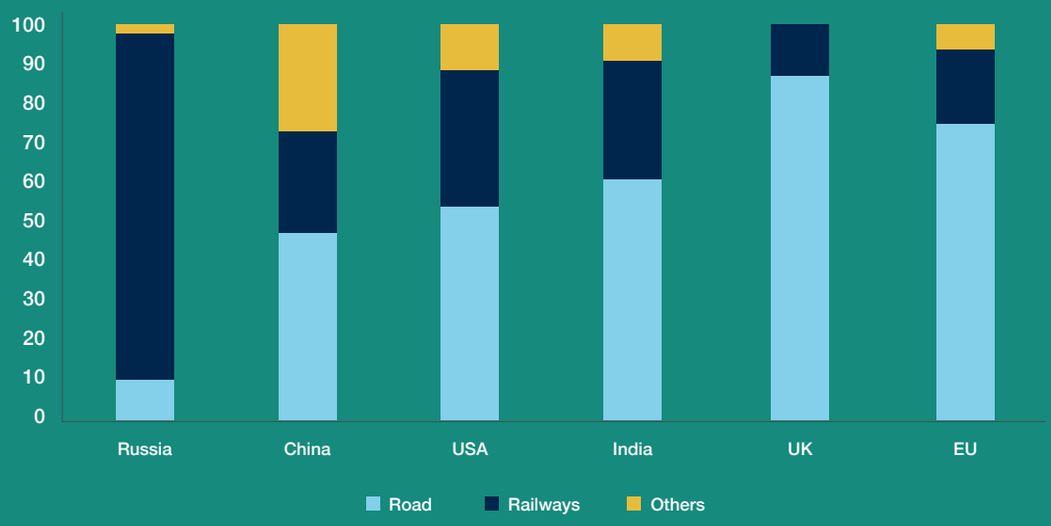
CHAPTER 1

HEART OF THE PROBLEM

Very often, a problem can be synonymous with opportunity.

India has a large and diverse transport system comprising a number of distinct modes, such as railways, road transport, ports, inland water transport, coastal shipping, airports, and airlines. However, there is a complete lack of integration between the various modes of transportation; most of the sectors work in isolation, and there are separate ministries for each mode of transport. In addition, each state has its own rules. This leads to a lack of coordination between various agencies involved in the process of transportation, and a National Level Transport Authority is conspicuous by its absence, hampering the integration between multiple modes.

Figure 1
Modal Share of Road in Inland Freight Transport (%)



Source: World Road Statistics, International Road Federation, Adapted from Ministry of Finance (2018).

The domino effect in the transport sector

The transport sector is confronted with enormous changes in terms of energy prices, demographic shifts, application of new discoveries, and changing consumer preferences and needs.

The public transport system in India remains inefficient, forcing people to use their own vehicles for daily commuting. This results in a domino effect of massive traffic congestion, and heavy pollution.

To add to this, urban transport is ignored by the State Governments; relevant authorities do not take steps to ensure that city transport services are provided to all citizens. And finally, there is a paucity of funds that can potentially help us strengthen the public transport sector.

As the majority of people in India do not own a vehicle, a system needs to be evolved to facilitate people to move from one place to the other on pay per use/ sharing per seat basis.

There needs to be a paradigm shift 'from building infrastructure to move vehicles' towards 'building infrastructure to move people'.

India's large transport sector comes with its own set of challenges. However, there are equal number of opportunities. Today, the need is for an integrated transport system which not only blends with all modes of transport - a multimodal technique - but also with all the sectors - public, private and joint - with a special emphasis on environment protection.

CHAPTER 2

IN RESPONSE

A good response makes way for a good resolution.

An efficient public transport system is a critical cog in the urban mobility wheel. It not only contributes to a healthier environment by lowering carbon footprint, but also helps in business development and work opportunities. A sustainable transport system should, therefore, be based on connectivity, accessibility, affordability, integration, and environmental considerations.

Sustainable transport networks can be built by improving the connectivity between multiple forms of transportation.

MMI (multimodal integration): It facilitates smaller trip durations, seamless as well as last mile connectivity, improved safety, lower air and noise pollution, higher land value and so on. Modal efficiencies result in optimal use, curbing GHG emissions and developing sectoral emission pathways, developing smart mobility options, and improving transport system efficiencies.

To enable this, personal vehicles need to be restricted and the quality of public transport services needs to be simultaneously improved. The Goverment of India has defined a substantive National Urban Transport Policy 2006, but has not yet ensured that the issues addressed in policy are resolved even after 14 years of its coming into existence. DC (development control) rules must now be changed to facilitate the changes as defined in the policy. This will enable the movement of people to get priority over movement of vehicles. Usage of personal vehicles should be restricted by introducing heavy taxation, congestion tax, and parking charges. It should also be mandatory for all township projects to develop multimodal/bus terminals within their premises and to have shuttle services integrate with city bus service at a regular frequency.

Immediate focus should be on developing quality infrastructure to facilitate better passenger mobility systems: such as developing a ring road around all cities so that vehicles need not enter the city for passing through it or a network of common charging infrastructure to promote usage of EVs (electric vehicles).

Private participation should also be encouraged in the development of passenger mobility by liberalising permits and conditions attached to it.

Unless the integration of multiple services happen, last-mile connectivity is going to remain a challenge and will remain the biggest barrier in getting more people on public transport.

By encouraging private participation, better public transport facilities can be developed. Development of infrastructures, such as bus and multimodal terminals on the lines of PPP (public-private participation) models for developing of airports in India can be replicated successfully.

ITS (intelligent transport system): It affects all the aspects of transportation—intracity and intercity, road (passenger and commercial), traffic management, warehousing & container management, network planning etc., even going to the extent of weather information and other macro factors affecting mobility. Adopting ITS will not only lead to innovative solutions to modern-day transport and traffic management problems, but will also enable safer, smarter, and better transport networks.

Unlike all major sectors (banking, telecom, insurance, airports), the transport sector does not have a regulatory authority. Establishing a transport regulatory authority will facilitate focussed growth and development of this sector. A unified Transport Ministry will also facilitate the process of integration of different modes leading to effective planning, development, and coordination of services across India. Similarly, establishing a Planning & Monitoring body at the National, State and Local level will enhance the development of people mobility systems, and will help in managing central control centres.

The transport sector has a huge potential to create jobs. However, there is a tremendous shortage of skilled manpower in this sector. By focussing on establishing driver training institutes at district-level, and by introducing transport-related technical courses at educational institutes, the way can be paved for job creation, and more importantly for safer roads.

CHAPTER 3

CHALLENGES ALONG THE WAY

A challenge is only as big as the courage to surmount it.

3.1 Various Modes of Transport: Status, Challenges and Issues

Road Transport

Road transport is the dominant mode of transport in India, both in terms of share of traffic and contribution to the national economy. Apart from the movement of goods and passengers, it plays a key role in promoting equitable socio-economic and trade development across regions of the country. India has one of the largest road networks of over 5.6 million kilometre comprising National Highways, Expressways, State Highways, Major District Roads, Other District Roads and Village Roads (Ministry of Finance 2018). The Ministry of Road Transport & Highways (MoRTH) is entrusted with the task of formulating and administering Central/State Governments/Union Territory (UT) Administrations, organisations and individuals, policies for road transport, and national highways and transport-related research for enhancing the mobility and efficiency of the road transport system in the country.

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Green Initiatives Undertaken by the MoRTH

As per the year-end review of MoRTH for 2018, a lot of initiatives in the transport sector have been undertaken with a focus on reducing carbon footprint while enhancing road safety, efficiency, and convenience of road users.[1]

- Electric, ethanol and methanol vehicles exempted from permit
- Advisory on linking of PUC (pollution under control) data (emission-related data) with the VAHAN database
- Notification regarding registration mark of battery-operated vehicles
- M 15 (15%) methanol blending with gasoline
- Requirement of PUC certificate for vehicle insurance/renewal of insurance
- Emission standards for construction equipment, vehicles and tractors
- Quadricycles included as non-transport vehicles

As popular a mode as road transport is, it is also fraught with challenges:

Congestion

Traffic congestion happens when vehicles travel slower because there is too much traffic on roads, due to:

- Decrease in capacity: say accidents on the road or roads being closed
- Bad road layouts/poor roadway designs
- Increased traffic
- Unorganised on-street parking on major roads
- Encroachment on roads by establishments
- Wrong lane driving due to missing U-turns near a habitation, missing exits, necessitating either long drives for exits or drive in wrong lanes, missing underpasses and bad road conditions
- Lack of sufficient signage well before the exits, e.g., many times exit signs are almost on 'exit', necessitating backing up of the vehicle, rather than taking the next exit

Congestion makes trip times longer and increases queuing on roads.

With almost 0.15 billion vehicles using national highways across India, a 10-minute idling per vehicle at toll booths and check posts, results in losses of thousands of crores every day.

The Government of India has now made it mandatory for all vehicles, private and commercial, to have FASTags, which are prepaid rechargeable tags for toll collection that allow automatic payment deduction. The FASTags are expected to reduce the delays at toll booths across the country.

[1] http://pib.nic.in/newsite/PrintRelease.aspx?relid=186932

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Innovative Solutions Adopted by Different Cities for Decongestion

1. **London:** Launched in February 2003 by then-Mayor Ken Livingston, London's congestion "charge system" charges private car users who enter the zone - £10 ($16) per day between 7 am and 6 pm, Monday to Friday. The scheme has been a huge success, resulting in a 20% drop in car use, £120 million ($197 million) annual net-revenues, and the fastest growth rate for the city's bus system since the 1940s.

2. **Stockholm:** Introduced in 2006, under the Electronic Road Pricing scheme, motorists are charged for entering the central city on weekdays, between 06.30 and 18.30. Exemptions to the charge include emergency vehicles, buses, diplomatic vehicles, disabled persons vehicles, military vehicles, hybrid or electric cars, motorcycles and mopeds, and foreign-registered vehicles. The scheme had astounding results and the peak-period traffic volumes within the tolling zone fell by 25% (removing 1 million vehicles from the road a day).

3. **Beijing:** Once the definitive bicycle city, Beijing responded to growing congestion and ongoing smog by setting a new target: for 23% of commuters to pedal to work by 2015. To achieve this target, new infrastructure for cyclists was wheeled in, with improved bicycle lanes, more parking facilities and a rental scheme to put a further 50,000 bikes on the roads by 2015.

4. **Shanghai:** High-Speed Rail has become a buzzword in sustainable transportation, promising to marginalise regional air travel and cut congestion on the roads.

5. **Masdar:** More a city in theory, Masdar city in Abu Dhabi aims to be a carbon-neutral, car-free metropolis.

6. **Amsterdam:** With the average Amsterdammer owning 1.5 bicycles, many aren't being used. In fact, 15% of all bikes parked outside are believed to be unused, with 60% of all unused bicycles parked in the city centre. As part of the public information campaigns, the city is innovating with multi-storey bicycle parks.

Reviewing Regulation to Improve Private Participation

To promote competition, innovation, increase in capacity, seamless mobility, greater efficiency, and economical use of resources, transport policies need to demonstrate an integrated approach and enhanced private participation and public-private partnership.

According to the Motor Vehicles Act (MVA), a stage carriage permit holder carries passengers from one point to another comprising various multiple points/ stages in between the route. The contract carriage permit holder operates the vehicle from one point to the destination only. These definitions are outdated and are subject to misinterpretation. Hence, new relevant definitions need to be formulated as defined in the Draft of the Road Safety Bill 2015.

With the advent of high-cost battery-operated vehicles and alternate fuel vehicles in the mobility space, there is a need to increase the asset utilisation so as to provide viability and increase private participation. Currently, this viability is a concern that is being attempted to be addressed by the GoI through policies and schemes under the National Mission Mode Project (NMMP).

However, the focus of the Governments has been on public transport to be operated by city and state transport undertakings. These corporations operate buses with the positioning of providing public service. As a result, it does not allow them to adjust their revenues by:

1) Increasing ticketing revenue through fare increase, and

2) Augmenting capacity that will allow them to increase the number of tickets

This makes the entire business model unviable and the ecosystem unsustainable. A drop in alternate fuel prices would make the TCO (total cost of ownership) of alternate fuel vehicles viable compared with the current IC (internal combustion). Hence, in this context, the ecosystem needs to be made effective and cohesive to invite private participation as 90% of buses are private. Converting this large portion of the industry to sustainable and greener modes of commute will pave the way for the larger goal.

To deliver an integrated multimodal transport system and to address current and future challenges of the system, the MVA needs to amended as follows:

SECTION 66: Necessity for Permit: Permits for EVs has been lifted, and hence, the amendment to include the owner of EV should be exempt from the following:

> "No owner of a motor vehicle shall use or permit the use of the vehicle as a transport vehicle in any public place, whether or not such vehicle is actually carrying any passengers or goods, in accordance with the conditions of a permit granted or countersigned by a Regional or State Transport Authority or any prescribed authority authorising him the use of the vehicle in that place in the manner in which the vehicle is being used: Provided that a stage carriage permit shall, subject to any conditions that may be specified in the permit, authorise the use of the vehicle as a contract carriage: Provided further that a stage carriage permit may, subject to any conditions that may be specified in the permit, authorise the use of the vehicle as a goods carriage either when carrying passengers or not: Provided also that a goods carriage permit shall, subject to any conditions that may be specified in the permit, authorise the holder to use the vehicle for the carriage of goods for or in connection with a trade or business carried on by him".

With that context, there is a lack of implementation of the above at the State Level as RTOs (Road Transport Offices) still hold the power to regulate transport within their geographies, especially with regards to permits. Further inclusion of regulation in the amendments specific to EV is needed.

The role of public authorities needs to elevate as a regulator and allow the free flourishing of business, which brings an ecosystem of both MSME (micro, small & medium enterprises) and private operators.

- **SECTION 67: Power of State Government to Control Road Transport:** Sub-clause (b) mentions the desirability to control road and rail transport. More focus on efficient coordination of road and rail, both in case of the passenger through last-mile and freight, by means of efficient transport networks, needs to be brought in. Deep diving into the modalities of these focus areas is needed.

  Sub-clause (d) mentions the prevention of uneconomic competition among permit holders. This needs to be further defined with a clearly defined process for avoiding such competition. Technology-driven procurement processes (e.g. reverse auction methods) need to find place in the regulations.

- **SECTION 72: Stage Carriage Permit:** This section entails the operational aspects of the permit owner running the vehicles. Fare controls and ticketing should be deregulated and there should be scope to bring in innovative models through transformative mobility solutions. This will allow private players to come forward and implement these efficient solutions. While the classification of transport/public service can be made based on socio-economic factors and very low-ticket fares, it requires a systemic change to bring about efficiency in the transport mode.

- **SECTION 58:** Application for Stage Carriage Permit: Presently, the scope of this section is very restrictive. Clauses that will further invite applications from private MSMEs to apply for permits and operate need to be included. As there are different application formats, these should be reviewed in the light of increasing participation towards application of permits.

Further, the MVA, 1988 governing road transport has several outdated provisions.

For example, it also does not allow for an active engagement of the private sector to bridge the gap between transport demand and the availability of public transport. The transporter is recognised as the owner of the vehicle and not as an organisation authorised to work as a transporter. This hinders the focus on introducing mobility as a service and suggests an input-based, asset-oriented approach, rather than an outcome-driven approach.

Seamless movement of vehicles is the main purpose of the MVA, 1988. However, transport being a state subject, State governments can restrict the entry of vehicles from other states. Only in case of an All India Permit (AIP), individual states cannot restrict the entry of vehicles, which are covered under this permit. To overcome this issue, the State Governments have started levying heavy taxes on such vehicles.

It is not mandatory for ULBs to provide public transport services to its citizens. Additionally, in order to keep the public transport services economical, RTO keeps ticket rates very low - such services are then under a monetary loss; eventually resulting in poor quality. ULBs do not have enough funds to support the loss-making services, hence, they either do not take initiatives to start such services or when they start, they do not provide the required quality and the adequate services. The result is that the RTO allows unorganised private players to operate such services without planning, and completely ignore the ULBs future plans. There is little focus on the quality of service and customer experience, nor is there a well-defined way to screen private players. This results in a penny war on some of the routes, while some of the routes are not serviced at all.

People from rural areas near urban or semi-urban areas commute to the city for various purposes and require frequent services from their town to the city. STUs serve these towns only once or twice in a day whereas people want services throughout the day. As these routes are a monopoly for STUs, the RTO cannot issue permits to serve this requirement. Under these circumstances, private vehicles ply vehicles on these routes without having any permit or using the permits given for another purpose, thus violating the norms. For long distances, people require more comfortable buses. STUs do not have enough of such vehicles, and are not tuned to serve this class of travellers. This void is being filled by buses having AIP, in the states where there is no other permit available to serve this purpose. However, these buses are being heavily taxed, similarly, if regular services are offered by these buses, RTOs take action against such services stating that these buses are being operated as stage carriage, violating permit conditions of contract carriages. These are just a few reasons why this sector has remained unorganised for several years.

Railways[2]

Indian railways is is the largest passenger-carrying system in the world and commonly used as a long-distance mode of transportation, given the low cost of transportation, faster service, reliability, and safety offered. Indian railways are considered to be a green mode of transportation as they have committedthemselves to the cause of reducing carbon emission by adopting renewable energy on a priority basis.

Indian Railways carried approximately 1221MT of revenue earning freight traffic in FY19, compared to 1160 MT in FY18 and 1107MT in FY17.[3]

ALONG THE ROAD

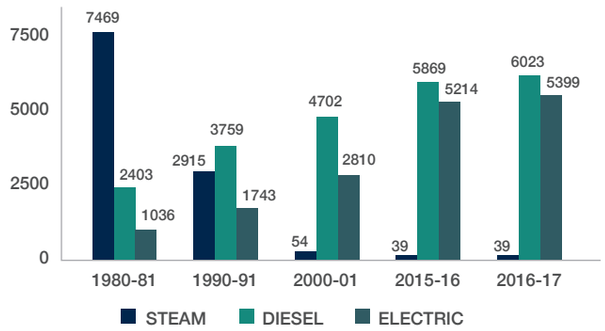


In a report presented by the Railway Convention Committee presented in the Parliament on 31st March 2017, the Railways have committed to reduce the carbon footprint and heat intensity by almost 30%.

Indian Railways is taking a holistic approach towards achieving the NDCs and moving towards Deep De-carbonisation Pathways. Indian Railways has already achieved 25% reduction in GHG emission as per the data available for the year 2017-18, in consideration of India's NDC target of 33-35% of reduction of emission intensity by 2030.

[2] Please refer to Report on Optimising Supply Chain to Manage Freight Transport Emission for detailed analysis of challenges facing the Indian Railways in terms of system efficiencies.
[3] https://www.ibef.org

Figure 2
Number of Locomotives



Source: Indianrailways.gov.in

Metro Rail

The GoI has been providing financial assistance to cities for improving public transport, including metro rail projects. There are more than 650 km[4] of metro rail lines operational in the cities of Delhi, Noida, Gurugram, Kolkata, Mumbai, Chennai, Bengaluru, Hyderabad, Jaipur, Lucknow, and Kochi, and 900 km[5] are under construction in various cities.

As metro rail projects are highly capital intensive, the GoI notified Metro Rail Policy, 2017, to learn from international experiences and bridge the gap for enhancing the feasibility of metro rail projects from an economic, social, and environmental perspective.

A metro system is considered as one of the least polluting mode of transport. The Delhi Metro Rail Corporation (DMRC) has been a forerunner in quantifying climate change benefits from its operations.

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DMRC is the first metro system in the world to earn carbon credits from CDM (clean development mechanisms) projects registered under the United Nations Framework

Convention on Climate Change (UNFCCC). Projects Developed by DMRC under the CDM to Demonstrate Savings in CO_2 Emissions from its Activities

(i) Installation of low GHG emitting rolling stock in the metro system, Project No. 1351.
(ii) Metro Delhi, India, Project No. 4463.
(iii) The MRTS PoA, Project No. 9863.
(iv) DMRC Solar Photovoltaic (PV), Project No. 6161.
(v) Gold Standard Energy Efficiency projects.

[4] swarajyamag.com
[5] indusdictum.com

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Facilities Being Created at Metro Stations as a Part of the MMI Scheme

- Pedestrian zones are being created around stations for easy and safe dispersion of commuters towards the bus stop, NMV (non-motorised vehicle) lanes, TSR (Three-Seater Auto Rickshaw), cycle stand
- Dedicated bays for three-wheelers, e-rickshaws and feeder buses are being created for seamless connectivity
- Drop-off facilities, pedestrian crossing facilities
- Road junction improvement for improving visibility
- Shortening crossing time, wayfinding measures
- Dedicated zone for hawkers

'Last-mile connectivity' refers to getting people from a transportation hub like a railway station, bus depot, or metro station to their final destination or vice versa. In other words, from origin to the transit system, or transit system to the destination. To attract more users to the public transportation system, commuters should be facilitated to arrive at the station in a manner that is time-saving, convenient, and comfortable. To improve last mile connectivity services at the metro stations, the following services are offered by DMRC:

i. Feeder Bus Services: At present, 174 Midi feeder CNG Non-AC buses (149 Semi-Low Floor and 25 Standard Floor) are being run on 32 State Transport Authority (STA) approved routes, which cater to the requirements of about 0.1 million commuters/general public. With the objective to strengthen the feeder bus services with defined Service Quality Parameters, 6 clusters were prepared based on an in-house survey and survey reports of UMTC (having 48 routes with 427 buses). Accordingly, DMRC started the process of Open e-tender process for the induction of Air Conditioned 427 Battery–16-22-seater buses (7-9.4 meter). These tenders are being processed. Recently, Kochi Metro Rail Ltd (KMRL) decided to commence feeder bus services in partnership with Kerala State road Transport Corporation, connecting the Cochin International Airport (CIAL) with the metro station.

ii. E-rickshaw Services: The operation of e-rickshaws at the Metro stations has enabled commuters to use non-polluting public transport modes over personal vehicles. DMRC has engaged private operators for operating eco-friendly E-rickshaws at metro stations. It has also provided space, wherever available, to the operators for stabling/parking and installing battery chargers. At present, 600 E-rickshaws are in service.

iii. Public Bicycle Sharing (PBS): The scheme available at selected metro stations not only provides last-mile connectivity to commuters, but also comes with the added benefits of pollution control, physical fitness, money-saving and non-dependence on public/ private transport.

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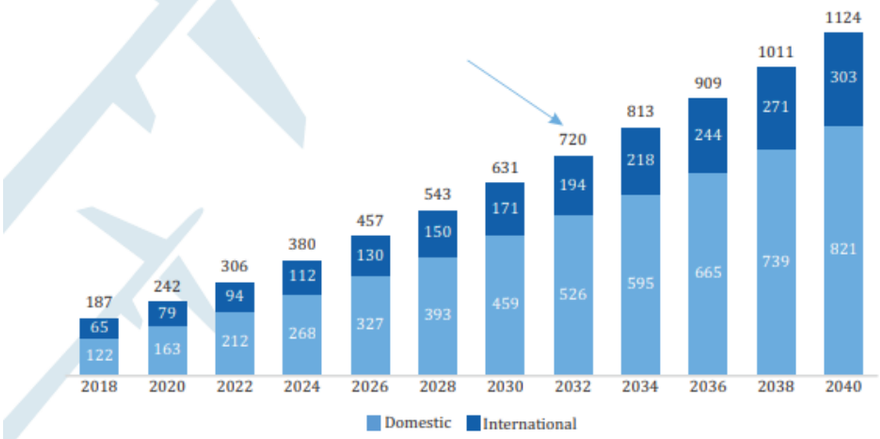
Delhi Metro Ties Up with Cab Aggregators on a Pilot Project Basis to Facilitate Last Mile Connectivity for its Commuters

To ensure last-mile connectivity, the Delhi Metro in association with cab aggregators Uber and Ola kick-started a pilot project. Kiosks have been set up by Uber and Ola at Dwarka Sector-21 and Rajiv Chowk Metro stations respectively. These kiosks will provide booking facility of cabs for Metro's commuters. They can get information regarding their booking status and the location of their already booked cabs, and so on.

Aviation

India is the third largest and fastest-growing domestic aviation market. Aviation contributes about US$30 billion annually to India's GDP. The overall CAGR (compound annual growth rate) works out to around 9% in domestic and 7% in international traffic during 2018-2040 (Figure 3). The traffic projections can be found in the graph:

Figure 3
Total Passengers to, from and within India (million)



Source: FICCI Global Aviation Report, 2019.The GoI launched the RCS-UDAN scheme in October 2016. This is a first-of-its-kind scheme globally to stimulate regional connectivity through a market-based mechanism. 27 States/Union Territories (UTs) have already signed MoUs (memorandum of understanding) with the Central Government under RCS-UDAN. Many private sector airlines are actively participating under this scheme.

Shipping

Around 95% of India's trade by volume and 68% in terms of value is transported by sea. The 'Sagarmala' programme is the flagship programme of the Ministry of Shipping to promote port-led development in the country by harnessing India's 7,500 km long coastline, 14,500 km of potentially navigable waterways and strategic location on key international maritime trade routes. The programme saw the completion of 89 projects. Now 443 projects worth Rs. 4.32 trillion are under various stages of implementation and development.

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The vision of the Sagarmala programme is to reduce logistics cost for EXIM and domestic trade with minimal infrastructure investment, by:

- Reducing the cost of transporting domestic cargo through optimising modal mix
- Lowering logistics cost of bulk commodities by locating future industrial capacities near the coast
- Improving export-competitiveness by developing port-proximate discrete manufacturing clusters
- Optimising time and cost of EXIM container movement

Components of Sagarmala programme are:

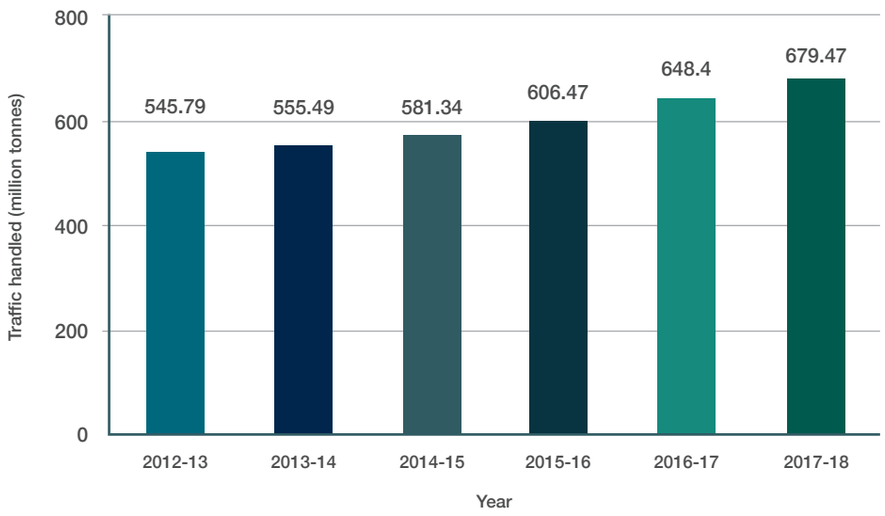
- Port Modernisation & New Port Development: De-bottlenecking and capacity expansion of existing ports and development of new greenfield ports
- Port Connectivity Enhancement: Enhancing the connectivity of the ports to the hinterland, optimising cost and time of cargo movement through multimodal logistics solutions including domestic waterways (inland water transport and coastal shipping)
- Port-linked Industrialisation: Developing port-proximate industrial clusters and Coastal Economic Zones to reduce logistics cost and time of EXIM and domestic cargo
- Coastal Community Development: Promoting sustainable development of coastal communities through skill development & livelihood generation activities, fisheries development, coastal tourism etc
- Coastal Shipping & Inland Waterways Transport: Impetus to move cargo through sustainable and environment-friendly coastal and inland waterways modes

Source: http://sagarmala.gov.in/about-sagarmala/vision-objectives

Port Development

Ports in India handle 90% by volume and 70% by value of India's external trade.[6] To meet the increasing trade requirements, the focus of the nation is on the infrastructure development and capacity building of ports. A roadmap has been created for increasing the Indian port capacity to 3500+ MMTPA (million metric tonnes per annum) to cater to the projected traffic of 2500 MMTPA by 2025.

Figure 4
Improvement in Traffic in Major Ports



Source: Ministry of Shipping, http://pibarchive.nic.in/4YearsOfNDA/Comprehensive-Materials/shipping.pdf

3.2 Multimodal Integration (MMI)

MMI refers to integrating all transport modes in a unique network and providing development strategies for transport facilities. MMI translates to smart mobility options, reduction in trip durations, improvement in safety, reduction in air and noise pollution, improvement in land value, and so on.

All kinds of transport systems may coexist in a city. However, different cities (Metro, Tier 1, Tier 2 cities) have different problems. Likewise, there are issues of catering to last-mile connectivity, problems in fringe areas, rural transport, etc. The solution should hence, be demand-driven. At the city level, the focus should be on enhancing connectivity and optimisation of the transport service delivery (e.g. type of vehicle, efficiency, load type etc.). Buses should be looked not in terms of fleet, but as a fulfilment of transport service requirement for the city as a whole.

The Need for MMI

India's vast transport system comes with its unique set of challenges. To enable a significant improvement in productivity, it is important that the development of the transport sector is multimodal.

Future planning of India's transport network should not only include medium and long-term strategies but should also be able to respond to the current and ongoing changes.

The urgent need for modernisation and expansion of all the segments of transport can be seamlessly achieved through MMI. It can also help in maximising the impact of public transportation and enabling efficient and sustainable mobility systems. MMI also reaps in environmental benefits by helping in reducing carbon emissions, and also economic benefits by connecting more people to jobs and other opportunities.

[6] https://pibindia.wordpress.com/2018/12/14/achievements-of-ministry-of-shipping-during-2018/

CROSSROADS OF CHANGE



DMRC is a fine example of MMI. There are 253 stations in the DMRC network at present.

- Out of these 96 stations (60 stations of Phase-III, 28 stations of Phase-II and 8 stations of Phase-I) have been identified for implementation of MMI.
- The MMI is proposed to be implemented within the station influence area of 300 metre radius by the land-owning agency.
- Implementation of MMI of all 96 stations is expected to be completed in 18 months viz., June 2021.
- For the balance 157 stations (253 – 96 = 157), MMI plans would be taken up subsequently in the second phase.

As per Union Budget 2019-20, government plans to enhance the metro railway initiatives by encouraging more Public Private Partnership (PPP) initiatives and ensuring completion of sanctioned works, while supporting Transit Oriented Development (TOD) to ensure commercial activity around transit hubs.[7]

All Stations of Delhi Metro Phase-III are incorporated with all components of MMI and connectivity guidelines of UTTIPEC. Additionally, some existing stations have been retrofitted to provide provisions of MMI.

The Challenges of MMI

- The absence of a national-level transport authority, state-level transport authority and UMTA at city/ metropolitan region-level is a big hindrance in the integration of multiple modes to effectively plan and monitor passenger mobility across India.
- Urban Local Bodies (ULBs) do not take the responsibility to ensure that transport services are provided to all of its citizens.

There is a lack of coordination between various agencies, which are involved in the process of transportation. Laws are made by the Ministry of Road Transport, GoI. Some rules are made by the State governments, permits and ticket rates are issued and defined by RTO, traffic is monitored by the traffic police and ULB is expected to provide city transport services. This indicates the absence of a unified transport governance structure at the city level.

- Transport being a subject from the concurrent list, there is a lack of uniformity in the application of rules. Each state has its own rules of issuing permits, and this tends to provide monopoly powers to STU to the exclusion of private operators who can bridge the demand-supply gap
- Lack of proper infrastructure, last-mile connectivity and integration with other modes for inland waterways, and navigational channels development and maintenance for them is a concern.
- Lack of IT-enabled integrated ITS and lower adoption of technology for seamless intermodal integration, and the problem of ICT usage at each level is a problem too.
- There are insufficient large trucks for road transportation and related infrastructure.
- Lack of private sector presence and a dearth of private investments in railways and inland waterways are a major gap.
- There has been a delay in implementing two Dedicated Freight Corridors (DFCs) and there is no clear planning for future DFCs connecting major traffic nodes.
- Further, there is a lack of common process and documents for different modes of transportation, skilled manpower to run large-scale, high-tech logistics network, competition in the multimodal transport system and integrity in stakeholder relationship.
- The length of procedures, the involvement of different stakeholders in the process is a barrier.
- Transparency and accountability across all the stakeholders are missing, while transport safety is a concern.
- Cost-effective, on-demand services with maximum asset utilisation is missing too.

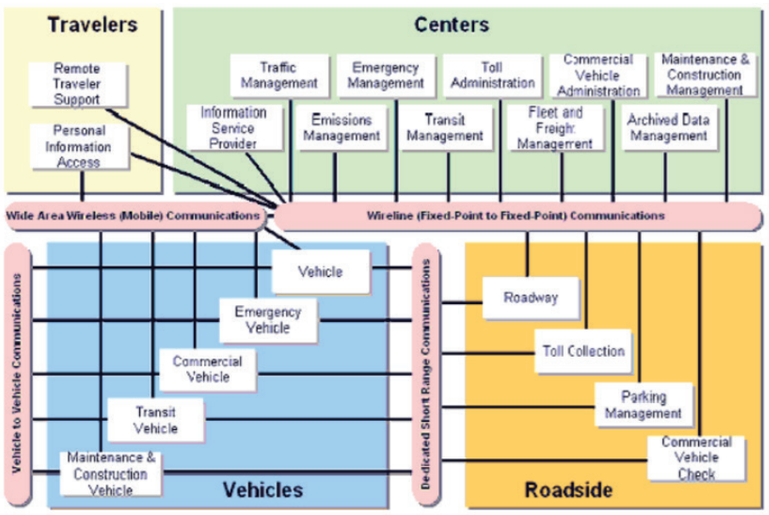
[7] ibef.org

3.3 Contributions to GHG Emissions from Different Modes of Transport

The transport sector emissions currently fall under the Scope 3 category for organisations accounting their corporate GHG emissions. Of the three major modes of transport in India, road transport is the dominant form of transport for both passenger and freight. It carries almost 90% of the country's passenger traffic and 65% of the country's freight, 30% of freight is via railways and only 6% freight moves through coastal and inland waterways. Road transport also utilises 78% of the energy share used for transport, while rail and air each utilise only 11% of the energy share.

The transportation sector is one of the main contributors to global GHG emissions. At present, the sector as a whole (mobility of people and transportation of goods) accounts for about 7.7 Gt of CO_2 emissions. Multimodal transportation is the best possible solution for not only reducing logistics cost, but also reducing GHG emissions.

To make the modal shift in favour of less polluting modes of transportation, intermodal and mode-wise system efficiencies need to be established.



3.4 Integrating Intelligent Transport System

Need for ITS

The importance of transportation as a lifeline for a nation's development and progress cannot be overemphasised. Good transport infrastructure with efficient physical connectivity adds speed and efficiency to a country's progress.

In the modern transportation scenario, ITS is required because:
1) Road development is not as per the growth in the number of vehicles.

2) At higher incoordination rates among moving vehicles, especially at higher speed, there are more chances of accidents. Properly implemented ITS helps in reducing the probabilities of such accidents.

3) With better information, communication, and control technologies, transportation becomes safer, reliable, and efficient.

4) Reduces environmental impact, such as vehicular pollution due to efficient usage of fuel.

5) Improves industrial and passenger productivity due to decongestion and reduction in travel time.

6) Capacity management.

7) Incident management.

How Does ITS Work

At the core of an ITS are hardware and software technologies that provide a framework for transportation efficiency.

- Hardware technologies include: sensors, networking devices, servers, mobile devices, central procession systems, control towers etc.
- Software technologies include: data transmission, data processing, data analytics, data management, predictive analytics etc.
- The adaption of these technologies to transportation requires further integration of civil infrastructure, electrical and mechanical implementations etc.

Salient Features of ITS

Data acquisition and information enablement are at the core of development for ITS.

- Traffic data is acquired through ultrasonic traffic sensors
- VID (video image detector), CCTV (closed circuit television) (for visual images) provide live images to help the traffic centre operator monitor complicated traffic situations and make suitable decisions. Information collected at the data management centre is required to be processed, verified, and consolidated into a format that is useful for the operators. This can be done using the data fusion process
- AID (automatic incident detection) may be used for data processing
- GPS (global positioning system) can be used on vehicle side to process data

Data communication: Several ways can be used to convey messages, for example, wireline or wireless, fibre optics, ETC (electronic toll collection), CVO (commercial vehicle operations), parking management, signal pre-emption, in-vehicle signing, in-vehicle traveller information, and beacon-based route guidance systems. Some of these data communication technologies are used by the data management centre, while others are used from the vehicle side.

Data distribution: Traffic and other related information can be distributed in various ways in order to improve transportation efficiency, safety, and environmental quality, for example, telephones, radio, television, desktop computers, fax machines, and VMS (variable message signs), car radios, cellular telephones, laptops and hand-held digital devices.

Information utilisation: This involves ramp metering to control the flow of vehicles merging onto an expressway, and coordination of traffic control within large urban areas, which takes place at the traffic management centre. In addition to a dynamic route guidance that permits the user to make strategic decisions on a minute-by-minute basis, adaptive cruise control allows the driver to automatically reduce vehicle speed in order to keep a safe headway from the vehicle in front.

System architecture: System architecture includes a framework for planning, defining, and integrating ITS. It leads to reducing time and resources required to integrate technologies to local needs, and helps identify agencies and jurisdictions, and seeks their participation.

ITS can be categorised as:

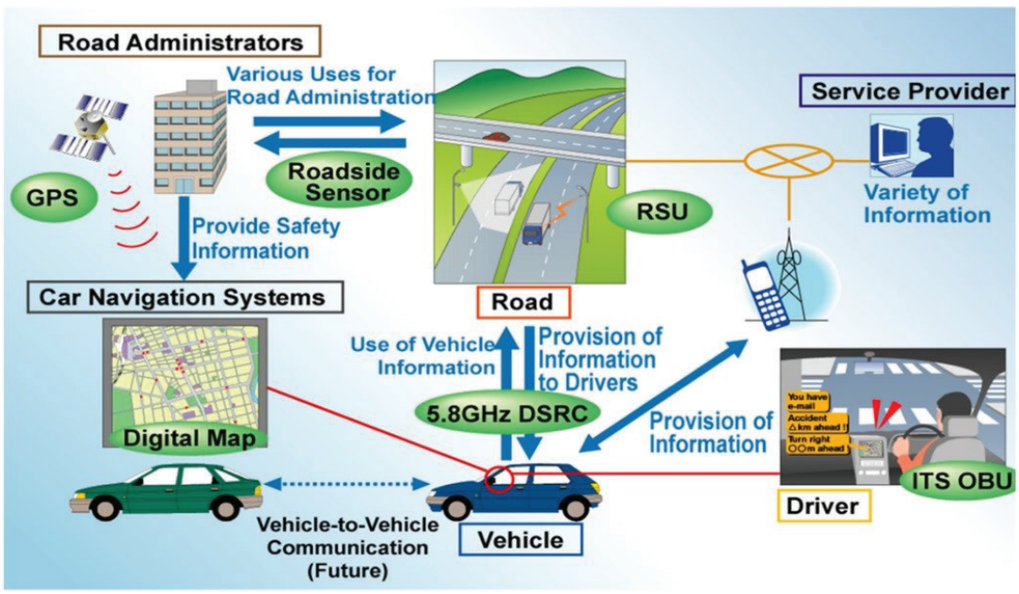
- **Traveller information:** Pre-trip information, on-trip driver information, on-trip public transport information, personal information services, and route guidance and navigation
- **Traffic management:** Transportation planning support, traffic control, incident management, demand management, traffic regulations, infrastructure maintenance management.
- **Vehicle systems:** Vision enhancement, automated vehicle operation, longitudinal collision avoidance, lateral collision avoidance, safety readiness, pre-crash restraint deployment.
- **Emergency management:** Emergency notification and personal security, emergency vehicle management, hazardous materials and incident notification.
- **Electronic payment (EP) Safety:** Electronic financial transactions, public travel security, safety improvement for vulnerable road users, intelligent junctions.

In commercial vehicles, ITS can be used for vehicle pre-clearance, vehicle administrative processes, automated roadside safety inspection, on board safety monitoring, and fleet management.

In public transport, ITS can be used for management, demand responsive transport management, and shared transport management.

ITS for Decongestion - ITS includes a wide range of applications that process and share information to help ease congestion, improve traffic management, minimise environmental impact, and increase the benefits of transportation to commercial users and the public in general.

Crossroads of Change: Smartway Concept in Japan



Source: https://www.sciencedirect.com/science/article/pii/S0386111218300293

[8] IIT Madras report on ITS

Current Status in India[8]

While India has already made the foray into ITS for organising traffic, more extensive and urgent integration of advanced technology and concepts in mainstream traffic management is imperative.

ITS is still in its infancy in India, with decision-makers, key planners and agencies in the process of understanding its potential. A number of prototype ITS projects have been introduced in various cities in India, which have focused on isolated deployments of parking information, area-wide signal control and advanced toll collection. Most of these are single city-based pilot studies. At present, there are only a few fully-developed ITS applications with traffic management centres in India.

Challenges

The developments in ITS are strongly driven by socio-economic needs and environmental demands. The main social and institutional issues facing the development of ITS in India are: an underdeveloped road network, severe budget restrictions, explosive urbanisation and growth, lack of resources for maintenance and operation, less demand for automation, lack of interest among policy decision-makers, and lack of user awareness. Further, the diverse range of vehicular velocities (pedestrian, bicycles, LMVs—light motor vehicles, HMVs—heavy motor vehicles, animal driver carts), wide variety of vehicles (including pedestrian traffic), and poor lane discipline (partially resulting from the first two factors and partially due to cultural reasons), and a very high population density, makes adoption of western ITS standards and architecture difficult.

Lack of publicly-available data related to the transport sector is also a major problem. In most developed countries, the government creates infrastructures to collect, analyse, and disseminate important business-related information. An independent agency is needed to collect this information on a regular basis, such as:

- Origin Destination Survey.
- National and regional freight volume and person movement data (Billion Tonne Kilometres).
- Emerging routes.
- Business benchmarks like fuel cost per tonne kilometre/1000 person-kilometre etc.
- Carbon footprint of various operators, etc.

CHAPTER 4

ROUTES TO CHANGE

A small step is sometimes enough to usher in a big change.

An array of proposed solutions can make a difference to the system and modal efficiencies:

4.1 Modal Efficiencies

Paradigm Shift from Moving Vehicles to Moving People: Majority of people in India do not own a vehicle. Such people prefer a system that will take them from one place to the other on pay per use/sharing per seat basis. This means there has to be a paradigm shift in the way we develop transportation infrastructure in India. We need to shift from building infrastructure to move vehicles to building infrastructure to move people.

4.2 Developing Smart Mobility Options, and Improving Transport System Efficiencies

Institutional reforms:

In India, there is an urgent need for a unified transport ministry for the integration of planning, development, and services.

Though there are a plethora of ministries, there is a complete lack of coordination among various ministries such as MoRTH, Ministry of Railways, Ministry of Housing and Urban Affairs, Ministry of Shipping and Ministry of Civil Aviation. In addition, there is no regulatory institution that is responsible for ensuring the development of passenger mobility in the country. All major sectors have regulatory bodies, which not only regulate but also facilitate the growth of that sector. A unitary transport ministry along with an independent regulatory institution with a clear mandate to regulate a multimodal transport system is a vital step towards facilitating coordinated planning and implementation of transport programmes and managing ITS.

Changes in Development Control (DC) Rules:

Urbanisation in India is growing. By 2030, it is estimated that more than 50% of the Indians will stay in urban areas because of which, urban sprawl is becoming larger and distances from home to office or home to school and markets are becoming longer. This is creating a major challenge for people to commute from one place to another. The result is that city roads are getting congested and polluted, while also creating safety and health issues, and also environmental challenges. The Ministry of Housing and Urban Affairs, GoI defined a substantive policy in 2006, but has not yet ensured that the issues addressed in policy are resolved even after 14 years of its coming into existence. It is high time these are changes in the DC rules to facilitate the changes as defined in the policy, so that the movement of people gets priority over the movement of vehicles. It is important that the movement of personal vehicles is restricted and simultaneously the quality of public transport services is improved. This will motivate people to use public transport. In the absence of a quality public transport system, restricting movement of personal vehicles will only add to people's inconvenience. One of the other major challenges for public transport is the availability of land for the development of required infrastructure and shortage of funds - this needs to be addressed on priority. By making changes in development rules, private lands can be made available for use by public transport. For example, an underground bus station or an interchange below a shopping mall or commercial buildings having built-up facility beyond certain sq.ft area. can be an innovative approach.

- **Changes in the MVA, 1988:** Amendments to the MVA, 1988 bill have been passed and it is hoped that it will prove to be the beginning of a new era for the passenger transport industry.

- **Infrastructure:** Availability of required quality infrastructure is a major impediment in the development of better passenger mobility systems. Physical infrastructure, such as terminals or IT infrastructure that will provide a single platform for information, planning of journey to money transactions for all types of transport is completely missing. Unless the integration of multiple services happens, the last-mile connectivity is going to remain a challenge and will remain the biggest barrier in getting more people on public transport. In the absence of any nodal agency, such development would not take place.

- **Skill Development and Safety:** The transport sector has a huge potential to create jobs. However, there is a tremendous shortage of skilled manpower in this sector.

One bus gives direct jobs to 5 people and indirect jobs to 15 people. India needs 3 million more buses to reach near the global standard. If changes as defined above are made, this sector has the potential to create jobs for at least 0.5 to 0.6 billion people.

Every year, around 0.15 million people die on Indian roads. One of the major reasons is that vehicles are driven by unskilled drivers. To improve safety on roads, it is also important that drivers are trained. Similarly, there is a dearth of mechanics, electricians, cleaners, traffic planners, traffic managers, supervisors, etc. Therefore, driver training institutes should be established at a district-level, particularly, in areas where unemployment is more, such as backward or Adivasi areas. Motor mechanic courses should be included in educational institutes, and also transport management at all major universities.

Private participation should be encouraged in developing better public transport facilities, development of infrastructures, such as bus and multimodal terminals on the lines of PPP models for developing airports in India, which can be used successfully, and define a pragmatic concession agreement to ensure the sustainability of the partnership.

- **Goods Transport:** More proposed solutions can lay a strong foundation for change. These include forming policies to encourage investments in the development of cold chain infrastructure in India, bringing policy reforms to encourage investments and building capacity for the movement of cargo through inland waterways. There is also a pressing need to provide a simple, transparent and efficient regulatory environment, along with standardising a single multimodal transport document. This will go a long way in reducing the burden of documentation and enabling faster movement of cargo.

Decongesting traffic through inter-related steps

Sustainable solutions to traffic problems can be secured by combining public policy and private sector innovation.

For one, congested roads are not only a strain on the environment, but have a negative impact on the economy and the overall quality of life. Some possible solutions are:

Improving public transport and discouraging private vehicles from using parking pricing & management, MMI & IPT (intermediate public transport); enhancing walkability & use of NMT (non-motorised transport; developing transport hubs (multimodal and bus terminus); make reforms in the issuance of permits and encouraging private operators' participation.

Road safety and traffic management:

- Optimise road networks
- Improve junction and roadway design
- Strengthen traffic management measures
- Segregate traffic
- Build ring roads and logistics parks around cities

For a large country like India, a point-to-point route network (for cargo as well as passengers) i.e., attempting to connect each node to every other node, results in a large number of routes in the network. This makes it practically complex to operate and results in considerable underutilisation of assets, empty return trips, localised imperfect freight market, as well as reduced consumer welfare. To overcome these limitations, a different transit network design approach is required. A combination of traditional destination-oriented routes along with direction-oriented routes, called 'Hub and Spoke' network could be better for operating trucks and buses' transit in a large network. This is similar to the way that an airline network operates.

Capacity Building

Building capacities of existing authorities/departments and building new agencies at National, State & Local level (Unified Metropolitan Transportation Authority—UMTA) is imperative.

Using Transit Oriented Development and promoting shared mobility

It is also important to make it mandatory for cities to provide mobility solutions to all its citizens and to expand cities by using TOD (transit-oriented development) to reduce passenger trips. Promoting shared mobility and limiting usage of shared vehicles are important next steps as well.

Integrating Intelligent Transport Systems

Specific actions would be required to evolve an integrated and dynamic ITS infrastructure. These include:

- Evolving a national ITS standard for different ITS applications and their components
- Promote use of latest technology in traffic planning & monitoring. Developing and implementing automated traffic data collection methodologies
- Developing a national ITS data archive
- Developing models and algorithms suitable for ITS implementations
- Fostering more interactions between academia, industries and governmental agencies to generate more interest and in turn, projects in the ITS area

CHAPTER 5

DESTINATION MODAL & SYSTEM EFFICIENCIES

Efficiency is born at the intersection of thought and execution.

ACTIONABLE RECOMMENDATIONS

✓ Short-Term Plan (2022)

Institutional Reforms

- To establish a transport regulatory authority like Telecom Regulatory Authority of India (TRAI) that will facilitate the growth of this sector—national transport authority at the national level, state transport authority at the state level and UMTA at the metropolitan region level.
- To establish Surface Port Development Authority of India (as a step-down entity to the National Transport Authority of India) to develop multimodal terminals. Initially, these terminals can be developed in all the smart cities and the 10 biggest cities in India on the lines of airports and should be accessible to all operators.
- To make it obligatory for ULBs to provide safe, smart and sustainable public transport services, for example, providing 50 buses per lakh of population.

MMI

- To provide departure and arrival bus bays at the railway stations, air and seaports having enough parking space, connectivity of feeder buses with metro systems (following an integrated systems approach).

Fiscal Reforms

- Earmark substantial portion of road budget towards the development of public transport infrastructure, such as multimodal terminals, bus stations, highway amenity centres, rest areas, viewpoints, parking lots, multimodal logistics parks, etc.

Revision in Acts
Motor Vehicles Act:

- To liberalise the issuance of permits and to operate regular services by private operators, start with a 50/50 formula, wherein minimum 50% of the permits are given to private operators. For the luxury segment, notify the 'One Nation One Tax One Permit Scheme' to liberalise this segment of passenger road transport and allow such buses to operate regular services. Similar to GST, MV Tax also needs to be standardised to bring in seamless vehicle movement.

- To improve quality of public transport operations, it is important to introduce "Authorised Operator" system, wherein organisations will be authorised to manage public transport services as an operator on the basis of its capability to manage quality services.

- Permits should be clearly defined for the relevant type of services to being in clarity in the type of services it is expected to provide. Permits can be of three types: i) Schedule—Vehicle that operates on a fixed route, Schedule Metered—Vehicles that runs on time and kilometre basis for the general public as per Govt approved rates, and iii) Chartered – Vehicle that is available for hire or reward for the general public

Goods Transport

- Amend Multimodal Transportation of Goods Act, 1993 and Carriage of Goods by by Sea Act, 1925 as per the current needs and environment.

Infrastructure

- To plan and develop bus, truck and multimodal terminals, parking lots for public vehicles across the country
- To reserve lands for the development of depots for bus depots
- To facilitate the addition of a minimum of 0.3 million buses on road till 2022
- To develop electric charging Infrastructure throughout India for all type of vehicles
- Warehousing zones/logistics parks to be present on ring roads
- Design of toll plazas should be barrier-free, without any manual intervention and have gantries. Toll plazas should be located at all entry and exit points of highways and collection systems should be based on Kilometres travelled and should be collected at the time of exit on the basis of kilometres travelled

✓ Mid-term (2030)

Revision in Acts

- **Development Control Rules:** By making appropriate changes in laws, make it mandatory for ULBs to provide People Mobility solutions (Public Transport Services) to all its citizens.
- **Motor Vehicles Act:** Open up road transport segment completely for private buses. In public transports promote the PPP models for ordinary services and allow private operators to operate freely in long distance luxury services.

Institutional Reforms

- A permanent institution (in line with advanced countries, such as the Korea Transport Institute) shall be established that will not only help in operating and coordinating the National Logistics Network but also become an epicentre for research, analysis and knowledge for the entire Integrated National Logistics System. It will provide recommendations and alternatives for the nation's transport policy and create the optimal transport system through specialised research and technical innovations

Fiscal

- To either keep minimal or do away with taxes on buses
- To spend 50% of the road budget on development of bus-based quality public transport system

ITS

- Setting up a national ITS clearing house that documents all ITS projects with details on the design, implementation, lessons learned/best practices, and cost-benefit analysis.
- Setting up fully-functional Traffic Management Centres for coordinating the urban and regional ITS activities.
- Create a National Single Window for all logistics modes, which enables a seamless data flow between the various stakeholders through a common interface, and enables them to determine the combination of modes and routes that make the most cost-effective and efficient transportation path for their goods.

MMI

- To promote greater use of our coastline and inland waterways for passenger & freight movement, there is a need to address the concerns of all the stakeholders, including ship and barge owners, without whom there can be no growth, no matter how much we develop the infrastructure or amend policies

PPP

- To encourage private partnership through the PPP mode in multimodal logistics to harness the power of cutting-edge technologies, such as automation, IoT (Internet of things), Blockchain, Big Data, etc., for making overall network highly-efficient and seamless.

Infrastructure

- To create a national grid of common battery charging infrastructure.
- To develop bus and multimodal terminals across India on the lines of airports.
- To build multimodal logistics parks around major manufacturing and production centres with seamless rail and road connectivity to nearby ports, inland waterways terminals and distribution centres

The transport sector in India accounts for 6.4% share of India's GDP (gross domestic product). With an enhanced system and modal efficiencies, transportation can truly come alive in its role as the foundation of economic infrastructure, facilitating the movement of people and goods, and even helping in removing regional inequalities.

ANNEXURE

I. Section 66 under Motor Vehicles Act: Necessity for Permits

No owner of a motor vehicle shall use or permit the use of the vehicle as a transport vehicle in any public place whether or not such vehicle is actually carrying any passengers or goods save in accordance with the conditions of a permit granted or countersigned by a Regional or State Transport Authority or any prescribed authority authorising him the use of the vehicle in that place in the manner in which the vehicle is being used: Provided that a stage carriage permit shall, subject to any conditions that may be specified in the permit, authorise the use of the vehicle as a contract carriage: Provided further that a stage carriage permit may, subject to any conditions that may be specified in the permit, authorise the use of the vehicle as a goods carriage either when carrying passengers or not: Provided also that a goods carriage permit shall, subject to any conditions that may be specified in the permit, authorise the holder to use the vehicle for the carriage of goods for or in connection with a trade or business carried on by him

II. Section 67 under Motor Vehicles Act: Power of the State Government to control Road Transport

67. Power to State Government to control road transport.

(1) A State Government, having regard to:

(a) the advantages offered to the public, trade and industry by the development of motor transport,

(b) the desirability of co-ordinating road and rail transport,

(c) the desirability of preventing the deterioration of the road system, and

(d) the desirability of preventing uneconomic competition among holders of permits. may, from time to time, by notification in the Official Gazette, issue directions both to the State Transport Authority and Regional Transport Authority:

(i) regarding the fixing of fares and freights (including the maximum and minimum in respect thereof) for stage carriages, contract carriages and goods carriages;

(ii) regarding the prohibition or restriction, subject to such conditions as may be specified in the directions, of the conveying of long-distance goods traffic generally, or of specified classes of goods by goods carriages;

(iii) regarding any other matter which may appear to the State Government necessary or expedient for giving effect to any agreement entered into with the Central Government or any other State Government or the Government of any other country relating to the regulation of motor transport generally, and in particular to its coordination with other means of transport and the conveying of long-distance goods traffic: Provided that no such notification in respect of the matters referred to in clause (ii) or clause (iii) shall be issued unless a draft of the proposed directions is published in the Official Gazette specifying therein a date being not less than one month after such publication, on or after which the draft will be taken into consideration and any objection or suggestion which may be received has, in consultation with the State Transport Authority, been considered after giving the representatives of the interests affected an opportunity of being heard.

(2) Any direction under sub-section (1) regarding the fixing of fares and freights for stage carriages, contract carriages and goods carriages may provide that such fares or freights shall be inclusive of the tax payable by the passengers or the consignors of the goods, as the case may be, to the operators of the stage carriages, contract carriages or goods carriages under any law for the time being in force relating to tax on passengers and goods.

Exemption made for Alternate Fuel Vehicles:

41. Proviso omitted by Act 39 of 2001, S. 2. Prior to its omission, the Proviso read as under: “Provided that the fares and freights in respect of such stage carriages, contract carriages and goods carriages operated by battery, compressed natural gas or solar energy shall be fixed by the owner or operator”,

III. Section 72 under Motor Vehicles Act: Stage Carriage Permit

(Section 70; Section 71a)

1. Subject to the provisions of section 71a Regional Transport Authority may, on an application made to it under Section 70 grant a stage carriage permit in accordance with the application or with such modifications as it deems fit or refuse to grant such a permit:

> Provided that no such permit shall be granted in respect of any route or area not specified in the application.

2. Regional Transport Authority, if it decides to grant a stage carriage permit, may grant the permit for a stage carriage of a specified description and may, subject to any rules that may be made under this Act, attach to the permit any one or more of the following conditions, namely:

i. that the vehicles shall be used only in a specified area, or on a specified route or routes;

ii. that the operation of the stage carriage shall be commenced with effect from a specified date;

iii. he minimum and maximum number of daily trips to be provided in relation to any route or area generally or on specified days and occasions;

iv. that copies of the time-table of the stage carriage approved by the Regional Transport Authority shall be exhibited on the vehicles and at specified stands and halts on the route or within the area;

v. that the stage carriage shall be operated within such margins of deviation from the approved time-table as the Regional Transport Authority may from time to time specify;

vi. that within municipal limits and such other areas and places as may be prescribed, passengers or goods shall not be taken up or set down except at specified points;

vii. the maximum number of passengers and the maximum weight of luggage that may be carried on the stage carriage, either generally or on specified occasions or at specified times and seasons;

viii. the weight and nature of passengers' luggage that shall be carried free of charge, the total weight of luggage that may be carried in relation to each passenger, and the arrangements that shall be made for the carriage of luggage without causing inconvenience to passengers;

ix. the rate of charge that may be levied for passengers' luggage in excess of the free allowance;

x. that vehicles of a specified type fitted with body conforming to approved specifications shall be used:

Provided that the attachment of this condition to a permit shall not prevent the continued use, for a period of two years from the date of publication of the approved specifications, of any vehicle operating on that date;

xi. that specified standards of comfort and cleanliness shall be maintained in the vehicles;

xii. the conditions subject to which goods may be carried in the stage carriage in addition to or to the exclusion of passengers;

xiii. that fares shall be charged in accordance with the approved fare table;

xiv. that a copy of, or extract from, the fare table approved by the Regional Transport Authority and particulars of any special fares or rates of fares so approved for particular occasions shall be exhibited on the stage carriage and at specified stands and halts;

xv. that tickets bearing specified particulars shall be issued to passengers and shall show the fares actually charged and that records of tickets issued shall be kept in a specified manner;

xvi. that mails shall be carried on the vehicle subject to such conditions (including conditions as to the time in which mails are to be carried and the charges which may be levied) as may be specified;

xvii. the vehicles to be kept as reserved by the holder of the permit to maintain the operation and to provide for special occasions;

xviii. the conditions subject to which vehicle may be used as a contract carriage;

xix. that specified arrangements shall be made for the housing, maintenance and repair of the vehicle;

xx. that any specified bus station or shelter maintained by Government or a local authority shall be used and that any specified rent or fee shall be paid for such use;

xxi. that the conditions of the permit shall not be departed from, save with the approval of the Regional Transport Authority;

xxii. that the Regional Transport Authority may, after giving notice of not less than one month:

a. Vary the conditions of the permit;

b. Attach to the permit further conditions:

Provided that the conditions specified in pursuance of clause (i) shall not be varied so as to alter the distance covered by the original route by more than 24 kilometres, and any variation within such limits shall be made only after the Regional Transport Authority is satisfied that such variation will serve the convenience of the public and that it is not expedient to grant a separate permit in respect of the original route as so varied or any part thereof;

xxiii. that the holder of a permit shall furnish to the Regional Transport Authority such periodical returns, statistics and other information as the State Government may from time to time prescribe;

xxiv. any other conditions which may be prescribed.

Section 58 under Motor Vehicles Ordinance: Application for Stage Carriage Permit

58. An application for a permit in respect of service of stage carriages or to use a particular motor vehicle as a stage carriage (in this Ordinance referred to as a stage carriage permit) shall, as far as may be, contain the following particulars, namely:-

(a) the routes or the areas to which the application relates;

(b) the number of vehicles it is proposed to operate on a route or areas, different routes or areas and the type and seating capacity of each such vehicle and also the number of vehicles intended to be kept in reserve to maintain the service and to provide for special occasions;

(c) the minimum and maximum number of daily trips proposed to be provided in relation to each route or area and the time table of the normal trips;

(d) the fare table, if any, for the different classes of passengers for different stages in relation to each route or area, or if there is no such fare table, propose a rate of fare per mile, per passenger, for different classes which it is proposed to be charged;

(e) the weight or luggage per passenger of the different classes which it is proposed to carry free of charge, and the charge that will be made for the carriage of excess luggage

(f) the arrangement intended to be made for the housing and repair of vehicles, for the comfort and convenience of passengers and for the storage and safe custody of luggage; and

(g) such other matters as may be prescribed.

Explanation: For the purpose of this section, sections 60 and 69, “trip” means a single journey from one point to another and every journey shall be deemed to be a separate trip.

Omni Bus-Contract Carriage Permit

1. **Who can apply for Omni Bus Permit?**
   Owner of the vehicle

2. **What are the documents to be given?**

   1. *Application in Form-CCPA*
   2. *PROOF OF ADDRESS (any one of the following to be produced)*
      1. *Ration Card*
      2. *Electoral Roll*
      3. *LIC Policy*
      4. *Passport*
      5. *Pay slip issued - Govt. Office (or) a Local Body*
      6. *School Certificate*
      7. *Birth Certificate*
      8. *Affidavit Sworn by the applicant before an Executive (or) a First Class Judicial Magistrate (or) Notary Public*
   3. *Registration Certificate*
   4. *Insurance Certificate*
   5. *Passport size photo-2*
   6. *Pollution under control certificate*
   7. *Valid tax*

3. **What is the amount of Fees payable?**
   Rs.1, 500/- + Service Charge Rs.100/-

4. **To whom should one apply?**
   Regional Transport Officer or Motor Vehicle Inspector Grade-I/II

5. **Time limit for getting Permit?**
   5 Days

Image Source: Tamil Nadu State: Contract Carriage Permit for Private Buses

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The formation of working groups was preceded by a brainstorming session of experts in May 2018, thereafter the working groups after being formed met numerous times in the 20 months that followed. A joint workshop of the working groups took place in May 2019 to assess the development of the theme reports and Roadmap halfway through the project. Thereafter, extensive deliberations of the working groups were held alongside stakeholder consultations until the culmination of the final eight theme reports and the India Roadmap. The 8 Leads of the working groups met numerous times through the project period. The joint meetings of the working groups and frequent meetings of the Leads ensured there was no silo in the deliberations or formulation of the eight components of the Roadmap. We are thankful to all of them for devoting their time and energy in this manner.

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WORKING GROUP

Working Group on "Improve Intermodal and Mode-wise System Efficiencies"



Working Group Lead:
Mr Prasanna Patwardhan, Chairman & Managing Director at Purple Mobility Solutions Pvt Ltd and President at Bus & Car Operators Confederation Of India (BOCI).

Members:

1. Delhi Metro Rail Corporation Limited (DMRC)
   S A Verma
   Vikas Singhal

2. Michelin India
   Nandita Khurana

3. GoBOLT
   Sumit Sharma

4. Ashok Leyland
   Sriram Tirunantalwan

5. GIZ
   Shirish Mahendru

6. Maruti Suzuki
   Anoop Bhat
   Vikram Khanna

7. Alstom Transport India Ltd.
   Jaideep Sengupta

8. Indian Ports Association
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ACRONYMS

AID: automatic incident detection
AIP: All India Permit
CAGR: compound annual growth rate
CCTV: closed circuit television
CDM: clean development mechanisms
CVO: commercial vehicle operations
DDA: Delhi Development Authority
DMIC: Delhi Mumbai Industrial Corridor
DMRC: Delhi Metro Rail Corporation
EP: electronic payment
ETC: electronic toll collection
EV: electric vehicles
FICCI: Federation of Indian Chamber of Commerce & Industry
GDP: gross domestic product
GFC: good for construction
GHG: greenhouse gas
GoI: Government of India
GPS: global positioning system
HMVs: heavy motor vehicles
IC: internal combustion
IoT: Internet of things
IPT: intermediate public transport
ITS: intelligent transport system
LG: Lieutenant Governor
LMVs: light motor vehicles
MCD: Municipal Corporation of Delhi
MMI: multimodal integration
MMTPA: million metric tonnes per annum
MoHA: Ministry of Home Affairs
MoRTH: Ministry of Road Transport and Highways
MSME: micro, small & medium enterprises
MVA: Motor Vehicles Act
NMMP: National Mission Mode Project
NMT: non-motorised traffic
PWD: Public Works Department
RTOs: Road Transport Offices
STA: State Transport Authority
STUs: State Transport Undertakings
TCO: total cost of ownership
TOD: transit-oriented development
ULBs: Urban Local Bodies
UMTA: Unified Metropolitan Transportation Authority
UMTC: Urban Mass Transit Company Limited
UNFCC: United Nations Framework Convention on Climate Change
UT: Union Territories
UTTIPEC: United Traffic and Transportation Infrastructure (Planning & Engineering) Centre
VID: video image detector
WG: Working Group

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ABOUT PARTNERS

FICCI

Established in 1927, FICCI is the largest and oldest apex business organisation in India. Its history is closely interwoven with India's struggle for independence, its industrialisation, and its emergence as one of the most rapidly growing global economies.

A non-government, not-for-profit organisation, FICCI is the voice of India's business and industry. From influencing policy to encouraging debate, engaging with policy makers and civil society, FICCI articulates the views and concerns of industry. It serves its members from the Indian Private and public corporate sectors and multinational companies, drawing its strength from diverse regional chambers of commerce and industry across states, reaching out to over 2,50,000 companies.

FICCI provides a platform for networking and consensus building within and across sectors and is the first port of call for Indian industry, policy makers and the international business community.

PPMC

The PPMC is an open and inclusive platform that actively invites all organisations and initiatives that support effective action on transport and climate change to join in the process. The PPMC is created to strengthen the voice of the sustainable transport community in the UNFCCC process, especially with a view to the upcoming Conference of Parties (COP21) in December 2015 in Paris. COP21 is expected to result in a new global agreement on climate change, which will shape climate policy in the years to come at a global, regional and national level. By bringing together different actors and stakeholders in the sustainable transport community it will be possible for the transport sector to have its voice heard and speak with one voice on the important contribution that sustainable mobility can make to the mitigation of, and adaptation to climate change.

The PPMC contributes to realising a Global Agreement on Climate Change that empowers transport sector to take action on climate change. The realisation of this objective requires an active engagement of the PPMC before, during and after COP21. It will be equally important to advocate for an agreement that incentivises the transport sector as well as work with the transport and climate community on the implementation of a new global agreement on climate change at the global, regional, national and local levels.

WWF-India

WWF-India is one of the leading conservation organizations in the country. It is a science-based organization that addresses issues such as the conservation of species and its habitats, climate change, water, and environmental education, among many others. Over the years, its perspective has broadened to reflect a more holistic understanding of the various conservation issues facing the country and seeks to proactively encourage environmental conservation by working with different stakeholders- Governments, NGOs, schools and colleges, corporates, students and other individuals.

Shakti Sustainable Energy Foundation

Shakti Sustainable Energy Foundation (Shakti) seeks to facilitate India's transition to a sustainable energy future by aiding the design and implementation of policies in the following areas: clean power, energy efficiency, sustainable urban transport, climate change mitigation and clean energy finance.

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