

REGULATORY FRAMEWORKS FOR INTEGRATED SHARED MOBILITY GOVERNANCE IN INDIA

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About Stakeholders:



Shakti Sustainable Energy Foundation works to strengthen the energy security of India by aiding the design and implementation of policies that support renewable energy, energy efficiency and sustainable transport solutions.

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1 INTRODUCTION

Development of good quality public transport system is a necessary precondition to improve quality of life of citizens in Indian cities, as it will lead to alleviating congestion, reducing air pollution and improving traffic safety. The National Urban Transport Policy (2006) of the Government of India recognised this need and recommended provision of multimodal public transport systems in cities while discouraging private vehicle ownership and usage. However, the NUTP has not been followed up by necessary regulatory and financial mechanisms to realise the stated vision. The current report addresses this gap by proposing alternative regulatory and financial arrangements to govern shared modes of mobility. Indian cities have a wide variety of shared transport services. We analyse them in three categories:

- i) Formal public transport systems i.e. bus and rail based public transport systems sanctioned by the city Governments, offer fixed route and schedule based shared services
- ii) Paratransit or Intermediate Public Transport (IPT) systems i.e. informally owned and operated shared services like three-wheeled auto-rickshaws, vans, tempos and min-buses that provide shuttle services between various key origin and destination points in a city, without a fixed operational plan
- iii) New Mobility solutions i.e. a mobile or web application based shared service which uses applications (apps) to provide on-demand taxi, three-wheeler or bus services by aggregating various commercial vehicles providing these services

Each of these modes are currently governed by separate legislations and in many cases, separate institutional mechanisms. The lack of an integrated regulatory framework has led these modes developing in isolation and therefore, competing with each other for ridership. Further, the existing regulatory framework for each of these modes is restricting them from realising their growth potential towards serving users' shared mobility needs. Together this has led to a situation where, many cities have multiple shared modes serving a few high demand areas of the city, while many other areas remain underserved. This leads to increased dependence on private vehicles among users.

We envision an alternative ecosystem of shared mobility where various shared modes complement with each other such that together, they offer a service to users that is comparable to the convenience of using their private mode of transport. Such a system will require a high quality public transport and mass transit offering assured and affordable services across the city at its core. The paratransit and 'New Mobility' services need to complement public transport by providing demand responsive services closer to users' origins and destinations. We recognise that the forms of various modes will change according to the type of city and its travel demand patterns. For example, Metropolitan cities like Delhi and Bangalore have rail based mass transit systems and city bus services as their core public transport system. These are complemented by three-wheelers acting as paratransit while minibuses and taxis provide app-based on demand mobility. Smaller cities like Jaipur have minibuses as their core public transport system, three-wheeler based shared services as paratransit while on-demand mobility is provided by taxis and three-wheelers.

The National and International approaches towards achieving such a governance framework have been reviewed to identify the recommendations for Indian cities. The recommendations from the report can inform Urban Development and Transport Departments across states to analyse gaps in the existing regulatory framework for their own states and move towards a holistic outlook towards an integrated model where all shared modes of transport complement each other.

They will also provide the roadmap for National level institutions like the Ministry of Road Transport and Highways (MoRTH), Ministry of Housing and Urban Poverty Alleviation (MoHUA) and the National Institution for Transformation of India (NITI) Aayog, to drive state and city level action to promote shared mobility

1.1 Overview of the urban mobility context in India

Indian cities are faced with increasing vehicle ownership and usage, leading to increasing congestion, poor air-quality and their associated costs to the society. The role of public transport in mitigating the dis-benefits associated with private vehicles like Cars and Two wheelers has already been well-established globally (UITP PT Trends 2017). Traditionally, public transport systems in cities were provided by bus based systems like city buses, bus rapid transit (BRT) systems and or rail based systems Metro rail, suburban rail and tram systems. Developing countries like India and other countries in Asia, Africa and Latin America also have a strong presence of privately operated shared mobility in the form of paratransit or Intermediate Public Transport (IPT) systems. These systems provide shared transport services between important origins and destinations in cities with unmet public transport demand. More recently, the emergence of 'New Mobility' solutions in the form of technology based taxi aggregators have revolutionised the shared transport market. Their rapid increase in ridership and the subsequent disruption caused to the taxi and public transport markets has led Cities, globally to rethink their outlook towards shared mobility.

The formal public transport modes in India haven't been able to provide adequate level of service to cater to the increasing travel and comfort needs of users. The total operational metro network in India is approx. 350 km, more than 230 km of which is in Delhi. Only 66 of the 450 cities with more than 100,000 inhabitants have access to a formal city bus service. A closer look at the top 8 city bus systems reveals that their ridership has been declining over the past few years. The paratransit services and more recently aggregators like Ola and Uber have been providing for the shared mobility needs of users. While these services optimise their own operations, they are not co-ordinated with the remaining shared mobility services in cities. As a result, various shared mobility services compete with each other for ridership. This further leads to their operations concentrated in a few areas, while many areas of the city remain underserved.

Cities should reimagine their mobility systems in such a way that the available shared mobility modes are planned and operated in co-ordination to decrease individual's preference for personal modes of transport. Such a co-ordinated system would put a high-quality bus based public transport system at its core. Some Indian cities may need a high capacity suburban rail or metro systems in addition to their bus network. The bus and rail based systems together form provide assured services to users along a fixed route network and schedule through the day. Additionally, paratransit and aggregator services provide an additional on-demand service across the city, to meet the shared mobility needs of users not met by the public transport system.

1.2 Existing regulatory framework of shared mobility in India

The responsibilities for framing and implementation of regulations across various sectors are specified in the seventh schedule of the Constitution of India. Responsibilities are classified into Union (central government), State and concurrent lists, with items in the concurrent list being jointly administered by the central and state governments. Within the transport sector, Railways are classified under the union list while the responsibilities in the road transport sector are distributed between the union and state governments. The rules like type approval of vehicles and licensing of drivers are

common across the country, while for the other topics like issuance of vehicle permits, taxation and fares the centre issues guidelines and the states are free to make necessary revisions according to their needs. Any cases of differences between Centre and States are referred to the 'Transport Development Council' chaired by the Union transport minister, with membership from all the state transport ministers.

1.1.1 Governance of rail based public transport systems

The Metro rail systems in India are governed by the 'The Metro Railways (Construction of Works) Act' while the suburban rail systems are governed by the Indian Railways, both of which are under the Union list of responsibilities. The 'Metro Rail Policy 2017', approved by the Government of India in August, 2017 establishes a clearly defined framework for planning, development, financing and standardisation of Metro and other rail based systems in India.

1.1.2 Governance of road based systems

The Motor Vehicles Act (MVA) 1988 and the Central Motor Vehicle Rules (CMVR) 1989 are the two key legislations governing the road transport modes in India. The specific topics of interest for shared mobility include rules regarding safety, licencing and issuance of permits for various vehicle types. The latest amendment of this Act i.e. the Motor Vehicles (Amendment) Act (2017) is currently pending approval in the Parliament. It includes provisions for emerging solutions like Ola and Uber which provide technology based aggregation of trips and vehicles.

Bus based public transport systems in India are provided by State Transport Undertakings (STUs) formed under the Road Transport Corporations (RTC) Act 1950. More recently, many cities have set up Special Purpose Vehicles (SPVs) to provide city bus services under Public Private Partnerships (PPP). The Ministry of Road Transport and Highways (MoRTH) has also issued separate 'Taxi policy guidelines to promote urban mobility'.

1.3 Need for an integrated framework

The Metro Act, MV Act, RTC Act and Taxi policy guidelines cater to various modes of shared mobility modes i.e. city buses, paratransit or Intermediate Public Transport (IPT) systems like three wheeled auto-rickshaws and minibuses, technology based aggregators separately. There's no regulatory framework that integrates the governance of all these modes. Even the individual acts governing each of these systems need updating to govern the rapidly changing transport landscape due to various technology induced developments.

Due to the lack of an overarching framework, the planning and governance of shared modes is carried out by a multitude of agencies. This further leads to a lack of co-ordination between the services offered by these modes. An alternative scenario where the planning and regulation of these modes is integrated is likely to improve the overall user convenience of using shared mobility, thereby providing the best chance of reducing the usage of private modes like Cars and Two-wheelers.

Towards the objective of integrated regulation of all shared modes, we present the need of a Public Transport Authority that governs all of them. Further, we segregates shared modes into three categories i.e. formal public transport, paratransit and new mobility modes and propose a way forward for improving their governance structure.

1.4 Structure of the report

In the following sections, we present the review of international examples of 'Reorganisation of the public transportation' market that provide learnings for an overarching framework for shared mobility regulations in India, followed by the current practices in three Indian case examples. State level initiatives in Haryana and city level initiatives in Delhi and Kochi are presented to highlight the recent developments in shared mobility regulations in India and the steps needed to improve their regulatory framework further. Subsequently, we make the case for establishing a 'Public Transport Authority' that is in charge of integrated planning and regulation of shared transport modes.

A summary of the existing regulatory framework in India is explained in Chapter 2, using the three case examples while a few learnings from International examples are summarised in Chapter 3. Chapter 4 provides a framework for setting up Public Transport Authorities in India and recommendations to improve the existing regulations governing each category of shared mobility separately.

2 REVIEW OF INDIAN SHARED MOBILITY REGULATIONS

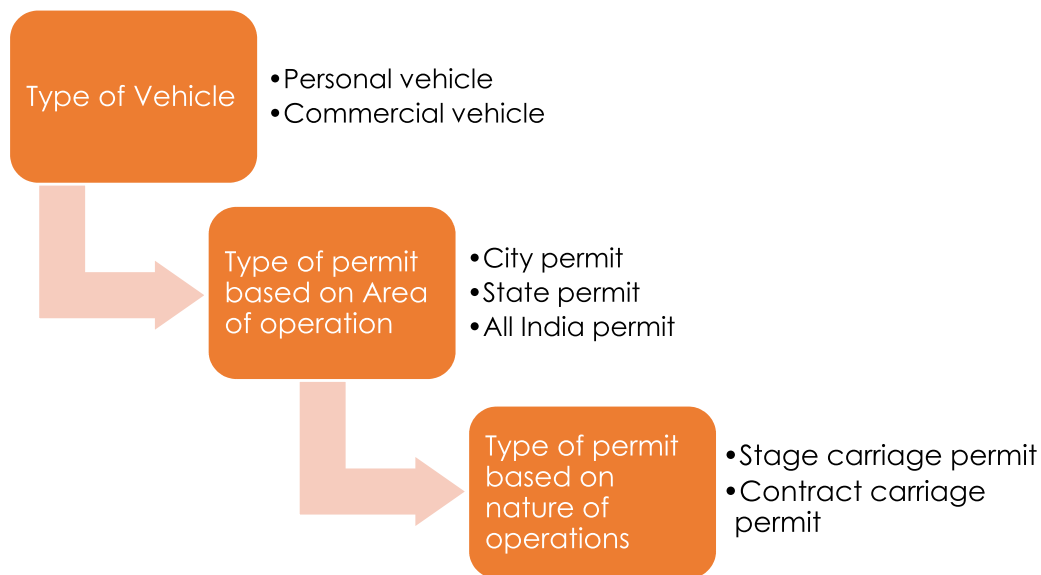
This chapter presents the existing regulations governing formal public transport and other forms of shared mobility in India. The statutes governing various shared modes of mobility are presented in section 2.1, followed by recent National level developments in the sector in section 2.2. Section 2.3 presents the State and city specific regulations in three case examples i.e. Delhi, Kochi and Haryana to offer learnings to other cities and states.

1.1 Current regulatory practices for the shared mobility ecosystem in India

1.1.1 Regulations governing public bus sector

The existing Indian regulations on road based shared mobility are rooted in 'Section 66' of the 'Motor Vehicles Act' that provides the specifications regarding the 'permits' issued to commercial vehicles. Commercial vehicles can either be registered under the 'City permit', 'State permit' or 'All India Tourist Permit (AITP)' based on their intended region of operation. Further, vehicles are required to register either as a 'Contract carriage' providing end to end services between fixed origins and destinations; or as a 'Stage Carriage' to operate as a shared vehicle on pre-defined routes with multiple stoppages to pick-up and drop passengers. Figure 1 summarises the classification of these permits.

Figure 1 : Classification of passenger commercial vehicle permits in India



2.1.1 Lack of efficient enforcement capacity of stage and contract carriage permits

Many states monopolise the 'Stage Carriage' permit, thereby not allowing any vehicles except the 'State Transport Undertaking (STU)' backed bus services to offer public transport services along fixed routes. As a result, privately owned shared transport services, if not leased by the STU, are required to operate as 'Contract Carriage' services, offering end to end services. However, the public transport supply offered by STUs over the years hasn't increased in proportion to the increasing travel demands of users.

Given the high unmet public transport demand, many private bus service providers obtain 'contract carriage' permit and operate as 'stage carriage' vehicles, which often compete with the STUs for ridership along high demand routes. Even in states that issue stage carriage permits to private operators, some operators opt for contract carriage permits to avoid the higher permit fee required for stage carriage operations. The State Road Transport Authorities which are mandated to governing the permit system, don't have adequate capacity either enforce the existing regulation or to plan for a better system that integrates the public and private modes, thereby leading to a soft enforcement regime for the permits.

2.2 Merits and Demerits of existing restrictions on Stage Carriage permits

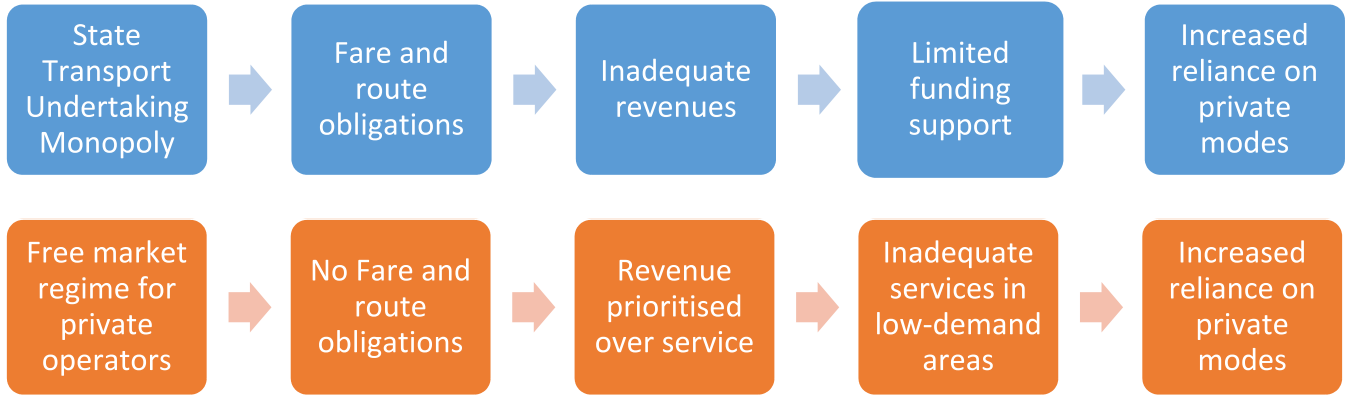
The restriction on stage carriage permits to private operators is practiced in many states to protect the interest of the local State Transport Undertakings (STUs). STUs are set up under the Road Transport Corporations (RTC) Act 1950, with the objective of providing safe and affordable access to public transport to the citizens. Given the service coverage objective of the STUs, they serve rural areas and suburbs with low-demand and revenue potential. Additionally, STUs provide subsidised fares to various classes of users like senior citizens, students etc. based on the State Government's discretion. Even though the State Government offers the subsidised fares to users, only part of it is reimbursed to the STUs while the remaining gap in revenue is subsumed into their general finances, leading further losses in operation.

Most State Governments in India do not provide any financial support to the STUs in the form of budgetary allocations. In fact, they are burdened more with extra taxes compared to private vehicles. Further, the fare setting of the STUs is not carried out as an independent business decision, but based on equity objectives like providing access to services even for the poor. Therefore, the STUs depend on the revenue from their high demand routes to subsidise the losses made in the low demand routes and subsidised fares. In order to protect the STUs revenue from these routes, States have allowed STUs to operate as a monopoly. This is the case with various states having a strong STU, including Karnataka, Andhra Pradesh, Tamil Nadu, Maharashtra, Uttar Pradesh and Gujarat. On the other hand, states like Madhya Pradesh and Jharkhand don't have a functional STU and the provision of bus services is totally left to the private sector.

A review of the performance of various STUs reveals that the total fleet, passengers carried and level service of various STUs operating as monopolies haven't improved over the years. At the same time, in states without any STUs, it is observed that the private sector operated buses ply only on high-demand and profitable routes, thereby leaving many areas under-served. Therefore, it is concluded that both the existing models in India i.e. a state monopoly on public transport and total free market regime where the private sector is free to operate have been unable to bring in the required public transport services to the citizens.

The following figure summarises the two models, both of which have led to increased usage of private modes of transport.

Figure 2 : Comparison of existing models of bus based public transport in India



2.3 Lock of regulations for Intermediate Public Transport (IPT) or paratransit systems

In regions where the formal systems are absent or have inadequate capacity, informal privately operated shared modes operate as a paratransit system providing high frequency shuttle services on a few high demand corridors. shows the mode share of Indian cities of varying population. The role of public transport in the larger cities is served by formal systems like bus, metro and sub-urban rail. However, in the small and medium sized cities i.e. cities with population less than 10 million, the mode shares of bus systems decrease while the mode shares of paratransit modes like auto-rickshaw is equivalent to or more than the formal bus systems. As the city size reduces it is also observed that the proportion of two-wheeler trips increase. This shows the inadequacy of the overall public transport services provided by the formal and informal systems combined.

Table 1 : Mode Shares of Indian cities

Population	Bus	Auto-Rickshaw	Rail/ Metro	Car	2-Wheeler	Cycle	Walk	Total
>10 million	20	3	14	6	9	5	43	100
1-10 million	13	11	2	3	23	13	37	100
<1 million	4	13	0	2	27	6	49	100

Source: Compiled from Comprehensive Mobility Plans of 27 cities

Depending on the size and transport characteristics of a city, paratransit modes operate in two broad categories: (a) taxi (contract carriage) services, which are flexible demand-based services in which the passenger determines the destination, and (b) informal public transport (bus-like) services characterized by shared fixed-route services with intermediate stops for boarding and alighting. Even though the license to carry out their operations is given by the Road Transport Authority , each vehicle is given an annual license to operate as a 'contract carriage' i.e. as a taxi service for end to end trips. However, a soft enforcement regime allows them to operate as a 'stage carrier' i.e. as a shared mode of transport operating as a shuttle service along fixed routes. . As a result, their day to day operations are not monitored by any Government agency.

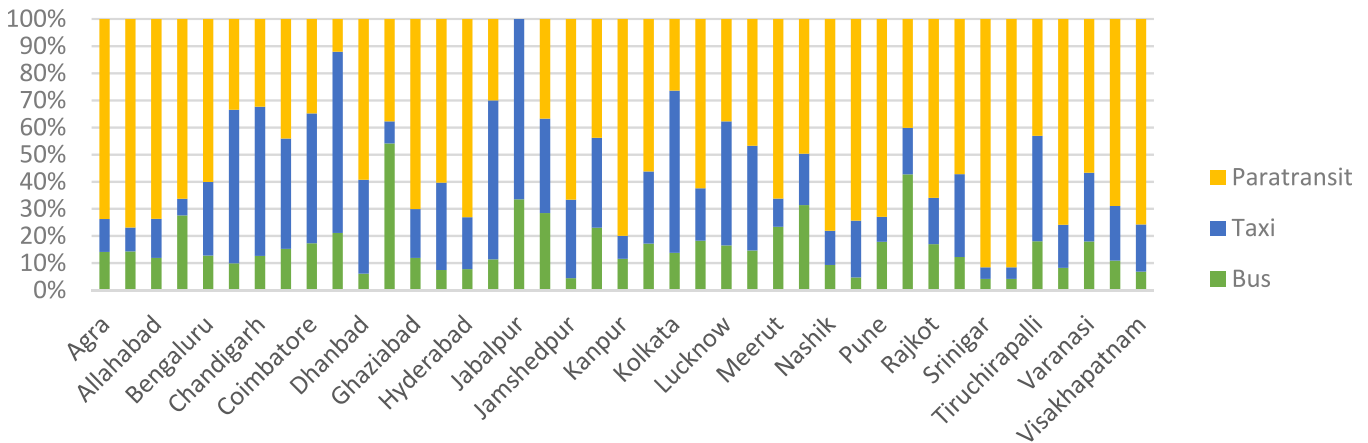
Paratransit modes are mostly individually owned and operated and are much more demand responsive than the formal bus systems. 3 shows the proportion of per-capita bus, paratransit and taxi numbers in various Indian cities. It is observed that the per-capita paratransit numbers are much higher than both city bus and taxi numbers. This is further proof of the

significant user dependence on the paratransit systems in meeting their mobility needs. However, being privately managed and informal in nature has traditionally excluded them from the formal transit planning and regulation. This has led to the formal and informal systems operating in silos and competing with each other, rather than synergising to meet the larger societal objective of maximising transit services in the city.

Furthermore, the paratransit systems in India also face a perception problem. This is because their operations are currently unorganised and leading to on-street competition with each other to attract ridership. Therefore the regulators look to constrain their numbers to bring in more orderly operations. However, Gwilliam and Scurfield (1996) note this is a form of 'prisoner's dilemma', where it is to the advantage of any individual to behave "irresponsibly" if others behave responsibly. Similarly, even the responsible paratransit operators change to irresponsible behaviour once a significant number of others behave that way. In other words, the lack of effective operational planning is leading to the irregular paratransit operations, which is not being addressed by the simplistic approach of regulating their number of licenses or permits.

An integrated public transport system in a city would require the bus and paratransit systems in a city to plan their operations such that they complement each other and deliver a wider network of services. Therefore, cities need to define the role of paratransit services in their policy and regulatory framework for shared mobility and integrate them into the public transport planning process.

Figure 3 : Proportion of Bus, Taxi and Paratransit numbers in Indian cities (2015)



Source: MoRTH year book, 2017

2.4 Regulations for new mobility modes

'New mobility' refers to a wide range of technology enabled transport solutions including ride hailing services, data driven decision making, product innovation like Electric Vehicles (EVs) and Autonomous Vehicles (AVs) and consumer experience improvement through trip planning applications and Mobility as a Service (MaaS). The scope of the current project is restricted to regulations concerning 'New Mobility' solutions providing shared mobility services including technology based taxi, three wheeler and bus aggregators providing ridesharing services.

The past six-seven years have seen the rapid growth of private ride-sharing services using technology based aggregation of modes like taxi, three-wheeler, bus, two-wheelers, bicycles and even private cars (car-pooling services). Ola and Uber have

been the most prominent 'New Mobility' solution providers in India, with operations in more than 100 cities and an estimated combined daily ridership of approximately 3 million (30 lakh) trips. Their rapid growth points to a significant latent demand for shared mobility in India that has been untapped by the existing public transport and paratransit systems.

However, they do not conform to the existing regulatory framework that classifies commercial transport from the limited scope of City, State or All-India permit for a 'stage carriage' or a 'contract carriage' operation. Given the existing restriction on the number of city taxi permits in many cities, taxi and bus aggregators have been using vehicles with State and All-India permits even for their city operations. As a result there's a significant amount of friction between these service providers and regulators in these cities. Subsequently, states like Maharashtra, Karnataka and West Bengal have formulated their own regulations to govern such technology based on-demand service providers. These developments are discussed in detail in the following section.

2.5 Review of recent National and State level regulatory interventions

There have been various State and National level initiatives towards improving the regulations for shared mobility modes in India i.e. public transport, paratransit and new mobility. Government of India (GoI) has taken up initiatives like amending the 'Motor Vehicles Act' and issuing 'Guidelines for Taxi Policy' to states. Various states have also evolved their own context-specific solutions towards improving shared mobility governance and regulation. The examples of Delhi, Kochi and Haryana have been highlighted below. A summary of the learnings from these evolving regulations are presented in the following sections.

2.5.1 Initiatives by the Government of India

As highlighted in the previous sections, the Motor Vehicles (MV) Act formulates the regulations for the governance of road transport sector in India. The Government of India (GoI) is in the process of amending the act towards incorporating the contemporary challenges faced by the transport sector. The amended act proposed various regulations that will have far reaching consequences for the shared mobility sector. The Ministry of Road Transport and Highways (MoRTH) has also issued 'Guidelines for developing taxi policy' to states. The implications of these developments on shared transport regulations are summarised below:

I) Motor Vehicles (MV) (Amendment) Bill, 2017

The MV (Amendment) Bill, 2017 proposes many recommendations on safety, penalties, licensing etc. that will lead to a significant change in transport Governance in India. The following are the key recommendations that are likely to impact the shared mobility ecosystem.

- **Development of a National Transportation Policy:** The bill proposes a first of its kind 'National Transportation Policy' to be developed by GoI in consultation with States. The Policy will:
 - o Establish a multi-modal planning framework for the road transport sector
 - o Develop a framework for grant of permits and schemes
 - o Identify and specify priorities for the road transport system

- **Preparation of State-level Transportation Schemes:** The bill also directs States to make context specific transport schemes addressing issues like
 - o Last mile connectivity
 - o Reducing traffic congestion
 - o Safety of road users
 - o Non-Motorised transport, which is included in the bill for the first time
- **Roadmap for governing 'Aggregators':** The bill provides a formal recognition for technology based 'aggregators' and defines them as a 'digital intermediary or market place' whose services may be used by a passenger to connect with a driver for transportation purposes. It also directs the Central Government to formulate specific guidelines for licensing and operation of taxi aggregators which will later be applicable across all States. This will mark a departure from the current practice of each state framing their own rules
- **Permit system:** The bill continues the 'stage carriage' and 'contract carriage' classification of commercial vehicle permits and empowers states to decide on the rationale for issuing them to various public and private agencies
- Apart from the **aggregator guidelines**, the bill doesn't change the States' powers on licensing and fares of other shared modes like formal public transport and paratransit systems

ii) **MoRTH Taxi Policy Guidelines, 2016**

The Ministry of Road Transport and Highways (MoRTH) has issued guidelines for taxi policy that individual states can use as an overarching framework while defining their own taxi policies. The objectives of the guidelines were to develop a suitable regulatory framework to liberalise the taxi permit systems towards creating a reliable alternative to private car ownership.

The guidelines were prepared by a committee under the Chairmanship of Secretary, MoRTH with six additional members i.e. Joint Secretary (JS) (Transport), MoRTH, Transport Commissioners of Delhi, Madhya Pradesh, Maharashtra, Telangana and Deputy Secretary (Transport), MoRTH. It has also incorporated feedback received from various State Transport Ministers and the National Institution for Transformation of India (NITI) Aayog.

Key recommendations

The guidelines cover a wide range of regulations affecting the taxi industry including rationale for permits, ride-sharing, fares, safety features and technology specifications. The following are the key recommendations relevant to the current report:

- a) **Licensing aggregators under 'Section 93' of Motor Vehicles (MV) Act:** The guidelines direct aggregators, radio taxi operators and agents to be licensed under the 'Section 93' of the MV Act, which defines the rules of operation of transport companies. This will imply that the aggregators will have to operate as a transport company along with their current registration as an Information Technology (IT) company. Such a measure is likely to enable greater coordination between aggregators and other shared modes. It will also have far-reaching implication for the

aggregators as they will now have to comply with transport regulations like motor transport workers act and minimum wages act, that specify regulations for drivers and employees in the transport sector

- b) Deregulating permit system:** The guidelines urge States not to impose restrictions on the following permits, in order to promote shared mobility:
 - o The number of city taxi and All India Tourist Permits (AITP)
 - o Street hailing taxis plying on aggregator platforms
 - o AITP vehicles plying in cities, subject to compliance with local fuel norms
 - o Seat sharing in aggregator based taxis
- c) Deregulating fare mechanisms:** The guidelines recommend taxis to be segregated into economy (less than 4m long) and deluxe (more than 4m) categories, with no restriction on the split of permits to be issued in these categories. However, their fares are recommended to be regulated using the following guidelines
 - o Dynamic pricing of taxis to be allowed, within a minimum and maximum range, as dynamic pricing is likely to ensure availability of taxis even during peak hours
 - o The maximum tariff may be three times the minimum tariff
 - o During night time i.e. between 12 PM and 5AM, the maximum may be four times the minimum tariff, to increase the availability of vehicles
 - o The fares for deluxe segment should not be regulated and be allowed to be determined by market dynamics
- d) Integration with other shared modes:** The guideline acknowledges the need for a National level policy intervention to promote shared mobility over private modes. It also calls for promotion of e-rickshaws and bike-sharing for improved last mile connectivity
- e) Data sharing:** The guidelines direct the aggregators, taxi operators and agents to preserve and provide data regarding taxi trips and customers when requested by the State Transport, Police or other enforcement authorities as per law

Drawbacks of the guidelines:

While the guidelines are a crucial starting point for improved shared mobility regulations, we identified the following missing links:

- I) Restrictive definition of shared mobility and Integration with other shared modes:** While the guidelines cover topics pertaining to the taxi sector in a great detail, it uses 'taxis' and 'shared mobility' interchangeably, thereby restricting the definition of shared mobility to taxis. It doesn't adequately acknowledge the formal public transport systems and informal paratransit systems, which continue to be the mainstream of shared mobility across Indian cities.

This is a serious limitation, since the MV (Amendment) bill 2016 includes a clause 'Section 93b' that mandates states to follow the central guidelines in issuing licenses to aggregators. Therefore, the guidelines should clearly define the parameters pertaining to integration with other modes to realise such integration on ground

- ii) **Integrated fare setting with other modes:** The guidelines recommend the aggregators to define the minimum fares to the state department. This is in contradiction to public transport and auto-rickshaw operators who are bound by the fares set by the state transport departments. All the shared modes should ideally be operating under a single set of conditions i.e. either the operator declaring their minimum fares or the city defining minimum fares across all the modes.
- iii) **Data sharing protocols:** While the guidelines recommend that aggregators share data on demand, it doesn't clearly specify the protocols for such data sharing. States should rather specify a data sharing protocol that includes the periodicity of data sharing and the level of disaggregation for e.g. origin and destination of trip, time of day, travel time and occupancy of vehicle etc.
- iv) **Minimum service obligations of aggregators:** The guidelines call for restricting the number of working hours for drivers and zero tolerance towards refusal of services. However, there exists no minimum obligation for service i.e. ensuring availability of minimum number of vehicles. This can lead to a lack of availability of services during off-peak hours of the day and in low-demand areas.

2.6 Best practice examples from States and cities

The following three case examples from Delhi, Kochi and Haryana provide insights on shared mobility regulations for other regions.

2.6.1 Delhi: Corporatisation of private stage carriage buses

Until 2007, the National Capital Territory (NCT) of Delhi had four types of bus services:

- i) Public bus transport operated by the Delhi Transport Corporation (DTC)
- ii) Private stage carriage buses, popularly known as the blue line services
- iii) Minibuses operated by Delhi Metro Rail Corporation (DMRC) as a feeder to metro
- iv) Private contract carriage buses operating chartered services

Out of these, the Blue-line services were infamous for their poor service level and safety record. These were route-wise stage carriage permits allocated to small scale operators, with more than 75% buses having an ownership of one bus per operator. The total fleet of 3,849 buses were owned by 3,304 operators. Such fragmented ownership led limited co-ordination between operators thereby leading to poor service levels, lack of services in low demand areas and safety performance. Further, these buses were also outside the purview of 'Motor Transport Workers Act' that defines working conditions of drivers employed by owners employing five or more motor transport workers.

Towards reforming this system, the 'Scheme for Corporatisation of Private Stage Carriage Services' was launched in the year 2007. Delhi Integrated Multi-Modal Transit System (DIMTS) Ltd. was set up and entrusted with the responsibility of implementing the scheme to bring in the following changes:

- o **Separation of regulation, planning and operational functions** of a bus system, to ensure public and private service providers operate on an equal footing regardless of ownership
- o **Reducing on-road competition for passengers:** Operators' revenue must be progressively decoupled from the

number of passengers carried in order to avoid the negative effects that result from competition for passengers on the streets. They should be paid according to service quality variables and schedule completion rather than passengers carried

- o **Replacing competition on the road with competition for route concessions**, thereby removing the systemic incentives for unsafe operational behaviour and improving safety considerably
- o **Cluster contracts**: Awarding operations contracts for a cluster of high and low demand routes, rather than route wise contracts, thereby assuring service provision even on routes with lower revenues
- o **Defining service levels** like peak hour operations, safety, punctuality, vehicle maintenance etc.
- o **Monitoring service** compliance through vehicle tracking and Intelligent Transport Systems (ITS)
- o **Ensuring high standards** for vehicle technology and maintenance choices
- o **Increasing network benefits** by introducing ticketing systems that allow passengers to use their tickets across the bus network
- o **Preventing cartelisation of operators** by selecting them through competitive bidding while ensuring adequate competition of operators, who can be replaced if not met with the service conditions
 - o Performance metrics and financial penalties for failure to meet these metrics
 - o Financial support from the State Government to cover for the losses made due to inadequate recovery of operational costs

Review of the system

The 'Cluster system' of bus operations is now functional for nearly ten years now. The following are a few key observations regarding its performance:

- o Initiated technology based contract management practices in India which continue to be the most successful model in India, being replicated in many other cities
- o The scheme decided against a co-operative society structure and opted for a corporatisation strategy due to following reasons:
 - A co-operative will have one vote for every member, thereby leading the system back to the 'Blueline services' framework with fragmented ownership and decision making
 - Everyday affairs of the society to be managed elected Committee within the members of the society, thereby limiting ability to hire professionals in executive management
 - A co-operative will need to reserve atleast one fourth of the net profits has to be carried to a reserve funded with the rest distributed among members. Such a clause will not be amenable for a merit based bus operation envisioned for the city
 - The dispute resolution mechanisms of a co-operative society are onerous with every dispute mandated to be referred to the Registrar, who has the primacy to decide on further actions, thereby giving limited capacity for internal dispute resolution

Drawbacks in implementation

- o The scheme was envisioned to replace all 'Blueline' routes with a better managed cluster service. However,

nearly ten years after inception DIMTS still operates only 1400 buses which is a sharp reduction from the 3,800 buses operated earlier. Therefore, the scheme failed to achieve its core objective of improving bus services in Delhi

- o The scheme envisioned both Delhi Transport Corporation (DTC) and the private operators' contracted through DIMTS to be providing integrated operations by operating on a 'Unified Timetable' that penalises both DTC and private operators for not adhering to schedule. However, DTC's operations continue to be independent of DIMTS's services, creating a situation of two bus services often operating competing services

2.6.2 Kochi: Regularising private buses and paratransit through co-operatives

The city of Kochi has launched a 13.4 km metro rail system in June, 2017. The city currently has a mix of urban bus service providers. While Kerala State Road Transport Corporation (KSRTC) operates 600 buses and another 1000 buses operated by seven private operators. Until recently, each of these operators provided independent services, with no integration in routes, schedule of operations and fares. Simultaneously, the city also has nearly 15,000 three wheeled auto-rickshaws providing paratransit services. The paratransit services were neither co-ordinated with each other nor with the bus services in the city.

The city of Kochi has taken various institutional and regulatory measures towards integrating the metro, bus and paratransit services:

- I) **Formation of a Unified Metropolitan Transportation Authority (UMTA):** The city of Kochi is in the process of constituting an UMTA to integrate various modes of transport in the city. In the interim, Kochi Metro Rail Ltd. (KMRL), the agency in charge of developing the metro system is designated as the UMTA for the city. It also has membership from the remaining transport service providers.
- ii) **Kochi Metropolitan Transport Co-operative (KMTC) for bus operators**
 - o KMTC, a co-operative society with the public and private bus operators in the city has been launched to bring all the operators into a unified bus system.
 - o While each of these operators are registered as a company or a society or a Limited Liability Partnership (LLP), they come together as equal members of the society
 - o KMTC will plan for an integrated route network and a timetable to maximise the overall bus services in the city
 - o These services will have an integrated ticketing system wherein, the common mobility card for the city will be accepted across all the services along with the metro system
- iii) **Cooperative society for paratransit operators**
 - o The State Government of Kerala issued orders to sanction 'stage carriage' operations for paratransit operators thereby providing legal sanction for their shared operations
 - o A co-operative society with membership for paratransit operators was established, with backing from the KMRL, to organise the individual nature of their operations under one umbrella
 - o Paratransit drivers/ operators will be incentivised to join the society by the various benefits on offer, including

- o Training selected drivers on routes of operation and road safety
- o Society will hire autos and allot them to registered drivers
- o Drivers to work for 8 hours a day and few days of paid leave per month
- o Discounted fuel to members from society
- o KMRL's banking partners to provide loans to drivers' wives for catering, tailoring, tuition centres etc.

Through these measures, the city of Kochi will be well placed to achieve an integrated shared mobility system. The institutional and regulatory measures taken up by the city set a benchmark for the rest of India to follow.

2.6.3 Haryana: Deregulating the inter-city stage carriage permits

Haryana has recently passed a Government Order (GO) (No. 106-2017/Ext.) allowing any individual person or firm to obtain stage carriage permits across various identified routes in the state. The government intends to open up the public transport market to the private sector, towards increasing the overall bus services across the state. However, the enforcement mechanism for ensuring operations along these routes isn't clarified in the GO. There is likelihood that the low demand routes may not be opted by any private operator, thereby strengthening services only along the high demand routes. Therefore, many areas will continue to be underserved, thereby negating the original intent of increasing the overall service in the state.

2.7 Summary of findings from review of existing Indian regulations

The following are the key takeaways from the various National, State and City level regulatory interventions towards shared mobility explained in this chapter:

1) Focus of recent regulations across shared modes

- o **New mobility regulations:** Majority of the recent regulatory activity at the National and State level focussed on developing the framework for 'New mobility' service providers like taxi and three-wheeler aggregators. However, there appears to be a mismatch between the outlook of various stakeholders on the role of aggregators in the urban mobility context
- o **Public Transport regulations:** The regulations concerning formal public transport hasn't evolved significantly over the years with the exception of Delhi corporatising its privately operated bus services
- o **Paratransit** services continue to be neglected within the regulatory frameworks at all levels of Government. Cities and States ought to put in more efforts towards addressing their concerns better

2) Divergent outlook towards emergence of New Mobility:

- o Aggregators pitch themselves as an alternative to private vehicle ownership, due to their demand responsive services
- o Regulators view these modes with scepticism since they do not operate as a 'Transport' company but as a 'Information Technology (IT)' company, thereby not conforming to various laws like the Motor Vehicles Act,

Motor Transport Workers Act etc.

- o Traditional shared mobility service providers understandably view them as a threat to their operations

In summary, it is necessary for all the key shared mobility stakeholders to work together towards a common roadmap to combat increasing private vehicle ownership and usage in cities.

3) Limited technical capacity of regulatory agencies

Governing the entire ecosystem of shared transport requires a clear outlook for the future mobility systems of our cities. However, recent regulatory developments indicate a lack of adequate technical capacity within regulatory agencies to carry out these functions. The following are a few indicators towards this

- o There's no rationale declared for the cap on the number of licenses and permits issued for various shared mobility modes, while there exists no cap on private vehicles
- o While the formal public transport companies are bound by various labour laws, there seems to be a lack of regulation and enforcement of various obligations of private operators
- o Many cities witness bus and paratransit operators often exceed their 'stage carriage' and 'route carriage' permit regulations and switch between routes and modes of operation

4) Lack of institutional mechanism for multimodal integration among shared mobility

- o Government of India (GoI) has been encouraging cities to set up a Unified Metropolitan Authority (UMTA) towards achieving institutional integration between various agencies governing urban mobility infrastructure and services
- o However, creating a new authority in cities which are already governed by agencies hasn't taken off in most cities
- o Even amongst the existing UMTA's the focus has been on longer term decisions concerning infrastructure projects in cities
- o The focus on shared mobility modes, which needs a more dynamic outlook, has been limited

3 LEARNINGS FROM INTERNATIONAL CASE EXAMPLES

This chapter presents international examples that can guide Indian cities in addressing the regulatory gaps identified in the previous chapter. The learnings have been segregated into four broad categories:

- i) Establishing an integrated Public Transport (PT) authority for multimodal transit governance
- ii) Improving formal public transport through service level obligations and contracts
- iii) Developing models for improved regulation of paratransit services
- iv) Adopting flexible regulations for the evolving 'New Mobility' solutions

3.1 Integrated Public Transport (PT) authority to manage all shared modes

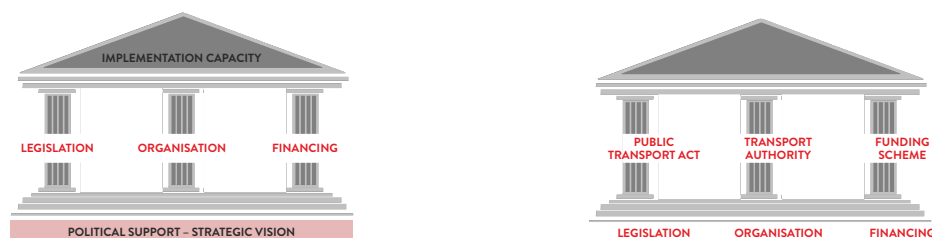
The emergence of New Mobility services like car-sharing, bike sharing, ride sharing and on demand shuttle bus services have disrupted the transport sector globally. The need to evolve the governance of the sector in response to these developments was recognised globally. Many cities, including London, Singapore, Dubai, Moscow, Kuala Lumpur and Cape Town have adopted context specific- integrated organisational structures to manage their cities' transport systems effectively. While we acknowledge that each country and city have a different set of challenges, this section attempts to put together the common building blocks of most successful models of shared mobility governance.

There is a growing understanding that the creation of a high quality, integrated and efficient public transport systems can be only achieved when a strong organising authority is put in place. National and local governments have a strong role to play to organise public transport as it cannot be left to market (operators), given the service obligations to operate in low demand areas and off-peak hours. Public transport need to be regulated and foremost planned, organised and supervised. Several models can be applied but it all starts with setting the right conditions. It is observed that cities, regions and countries that have excellent public transport systems in place share a number of common principles:

- Strong political support, leadership and vision
- Sound and supportive legal framework
- An entity or Organising Authority in place that regulates and organises public transport
- Robust funding schemes for public transport
- Capacity: sufficient professional human resources, knowledge and skills

In fact these are the foundation, pillars and the roof of the “house of public transport”. If only one of these building blocks is missing, it will become very difficult to create a world- class public transport system.

**Figure 4 : The “House of Public Transport”:
building blocks for delivery of an excellent public transport system**



If we analyse cities with an excellent public transport system, we will recognise that these cities have the house of public transport well built. If we look deeper into the secret behind world class public transport systems we can identify 10 critical conditions that are fulfilled. These are listed in the table below.

Figure 5 : Ten essential conditions for a world-class transport system

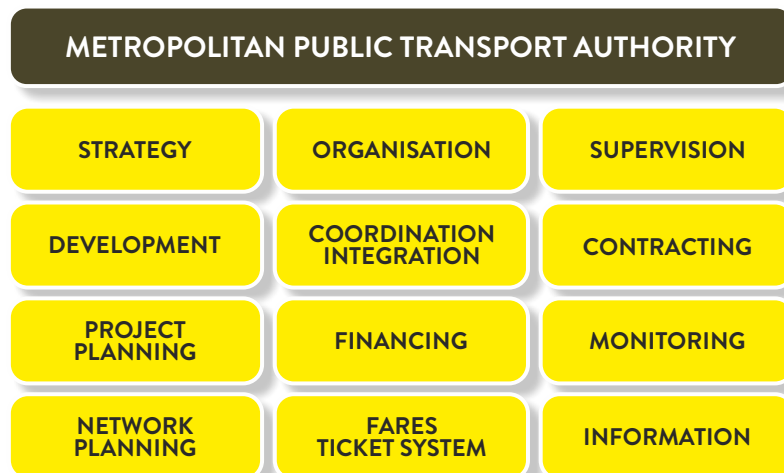
Cities with excellent public transport **What is their secret of success?**

1. Well organised at city or metropolitan level	Organisation
2. Regulated + supported by appropriate legislation	Legislation
3. Well defined financing schemes in place	Financing
4. Robust contracts with transport operators	Contracting
5. Integrated PT network, ticketing, information	Integration
6. Vision and holistic approach towards urban mobility	Vision
7. Leadership and political support	Support
8. Strict implementation of policies and plans	Implementation
9. Human resources , knowledge and skills	Professional
10. Focus on the passenger (customer oriented)	Customer focused

Source: Guido Bruggeman, 2016

The scope of work of an Organising Authority can be various but ideally it would cover the tasks as presented in Figure 3.

Figure 6 : Main tasks of a Public Transport Authority



Source: Guido Bruggeman, 2016

The Organising Authority for public transport can be an independent entity but also part of an overall Transport Authority. Such Transport Authority would cover all road infrastructure, traffic management, parking, cycling, taxi's, shared mobility and pedestrian facilities. It is obvious that such integrated approach towards the mobility market as a whole has great advantages

Unfortunately most Indian cities and metropolitan areas still lack a single entity responsible for the overall organisation of the overall transport system or even the public transport system, including private shared mobility operators. This often results in a poor quality public transport system that lacks any form of integration, as explained in the previous chapters. The establishment of Organising Authorities backed by a sound legal framework and funding is a key condition to improve public transport in these countries facing rapid urbanisation and motorisation. Only when an authority is in place, regulation of the sector can be developed, financing arranged, service contracts promoted and knowledge and management capacity build up.

3.1.1 Barriers towards setting up a Public Transport Authority

The establishment of a Transport Authority can be considered as an obvious and logical step to create the right conditions for delivering a high quality integrated public transport system. Unfortunately in a real world it has proved to be complicated and time-consuming exercise. The main hurdles observed are the following:

- (Re)Organising the institutional setting of public transport often implies the transfer of power, responsibilities and budget from a variety of existing government entities; executives of departments or ministries simply do not like to be stripped from their power;
- In order to give a Transport Authority the legal power to act, it is in principle required to amend existing legislation or develop new legislation. This can become a lengthy process. Not only due to legislative matters and capacity to be dealt with but also because in some cases, the approval of the national parliament is required;
- Transport Authorities make particular sense in large metropolitan areas but this may also mean that numerous municipalities as well as districts or even the state and/or national government may become involved in its establishment. They all have their own say and interest and in case of different political signature the process easily become politicised;
- In case certain government entities are receiving revenues from issuing permits to operators or making bus stands available to operators, there could be a resistance of these entities to losing their income. This is in particular the case when public transport is provided by minibuses as found in Africa and Asia. Occasionally, the issue of permits is subject to an element of corruption.

A combination of the issues listed above is still hampering the highly needed establishment of public transport authorities in cities that rapidly will transform into a megacities or a metropolis.

3.1.2 Guiding principles for setting up PT Authorities in India

The following guiding principles are recommended for setting up PT Authorities in India

- Urban transport should be organised at urban or metropolitan level and not at state or national level;
- The organising authority in urban areas should cover a sufficient large geographical area to ensure that all public transport in the metropolitan area is covered; this means the authority has the mandate to act on behalf of a number of municipalities;
- Regional and intercity transport as well as public transport in small size cities, can be managed at provincial or federal state level;
- In case municipalities have no or limited power over the organisation of public transport because it is assigned to a higher level, it can be observed that public transport is often of a lower quality;
- Dedicated public transport authorities as independent entities are in general more effective than transport departments;
- The integration of metro, rail and bus services is often lacking in case no organising entity is in place and these services are provided by different operators;
- The establishment of integrated ticketing systems in large cities is widely regarded as an excellent tool to make public transport more attractive but in principle this can be only achieved in case an organising entity is in place.

3.1.3 International examples of efficient Public Transport Authorities

Transport for London (TfL)

TfL is considered as one of the leading examples globally, where the entire transport system with the Metropolitan area of London is governed by a single agency. With respect to shared mobility, TfL governs the development of the London Metro system, the bus service planning and contracting, and issuing licenses for operation of taxis. The fares of all the shared modes are determined by TfL thereby, using pricing mechanisms to incentivise higher use of public transport followed by congestion and emission intensive modes like taxis.

Land Transport Authority (LTA) and Public Transport Council (PTC) of Singapore

The LTA Singapore is another prime example of a public transport authority that plans for the entire shared transport system of Singapore including traditional public transport, taxis and even bikesharing systems. However, the fares across various public transport services and taxis are determined by an independent agency, known as the Public Transport Council (PTC).

3.2 Improved public transport through service obligations and service contracts

As explained in Chapter 1, formal public transport agencies in Indian cities are unable to scale up their operations in response to the increasing travel demands in cities. This is primarily due to the restrictive regulatory and financing regime where they are mandated to provide services across both low and high demand areas, without adequate financial or regulatory support. The European Union (EU)'s recent regulations provide learnings to improve the performance of Indian operators as well:

- EU (through regulation EC No. 1370/2007) has a Public Service Obligation (PSO) which prescribes a minimum level of service to be provided.
- The local Transit Authority in charge of public transport planning for the city determines the modal mix between various public transport services i.e. metro, tram, bus etc. towards providing these services.
- Each of these routes are given out as individual Public Service Contracts (PSC) to various operators
- PSC can be awarded to both Public and Private Operators based on their capability towards providing the service. For eg. The authority may prefer to give the entire PSCs to a public agency, but the agency may not have the capacity. In such cases private operators may be invited to bid. There are also examples of private operators being given the first priority as well
- It was observed that even when public agencies are awarded PSCs, there's improvement in efficiency due to greater transparency and accountability
- Additionally, the PSC mechanism pays the operators based on level of service parameters. Therefore, the PT Authority pays for any gap in recovery of revenues. Therefore, such a system absolves the public bus operators from financial obligations, improving their capabilities to expand

The following figure summarises the key learnings from EU's PSOs.

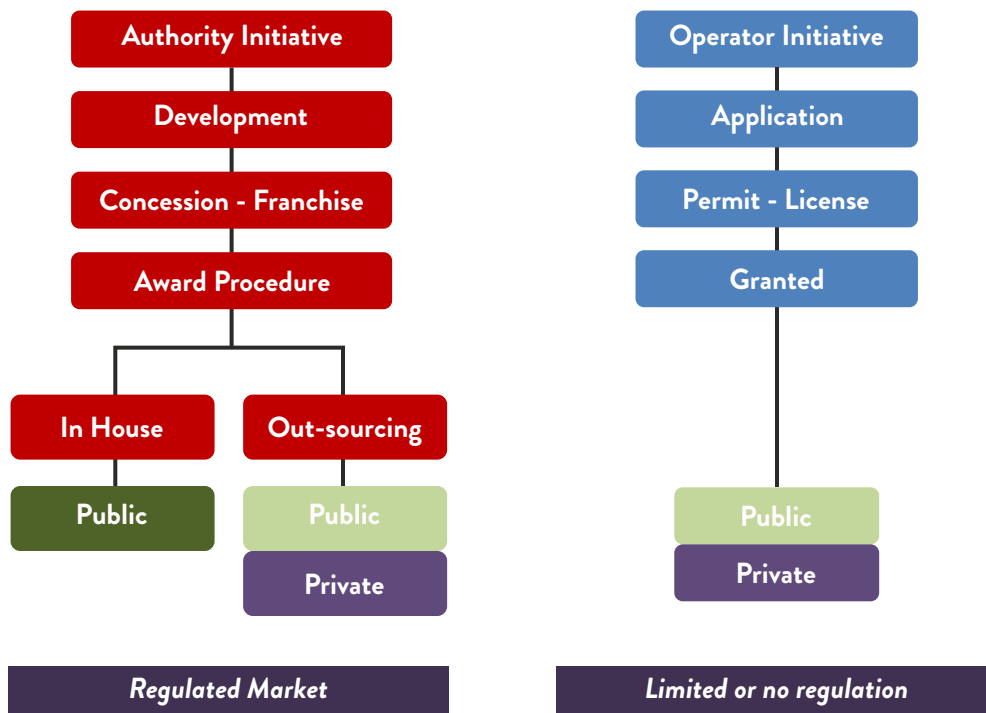
Figure 7 : Summary of EU regulation on Public Service Obligation



3.3 Improved regulation of paratransit services

The current paratransit regulations in India are driven by the initiative of the operator, where the operator applies for a stage or a contract carriage permit and the authority decides on issuing them. However, such a regulatory regime has led to operators opting only for high demand routes, while many areas in the city remain underserved. Therefore, an alternative model where the Government takes a greater initiative in planning for these services and ensures adequate level of service for passenger demand is proposed. The following figure summarises the two alternative models that can be explored to regulate paratransit.

Figure 8 : Alternative models for regulating paratransit



Source: Guido Bruggeman, 2016

These two models are explained in the following sections:

3.3.1 Regulated market with Authority Initiative

In the first model, the government is taking the lead (initiative) in regulating and organising the public transport service provision for a predefined geographical area. In general this task is assigned to a (Public) Transport Authority which is empowered by a legal framework and appropriate mandate. The Transport Authority has the overall responsibility for design, planning, organisation, contracting, supervision and financing of an integrated public transport system. It should be noted that a so-called Transport Authority is most frequently used as organising entity but this can be also the Department of Transport at the municipal, district or state level.

3.3.2 Deregulated market with Operator/ Market initiative

In the second model, the government has a much more passive role. It awaits initiatives from operators in the form of an

application to operate certain public transport services. The government entity in charge of reviewing the applications will either grant a permit or license to the operator for the proposed services or respond negative on the application. The task of granting such permits can be assigned to Transport Authority, a Regulator, a Transport Department or a Ministry. Although a sometimes also called a Transport Authority, the Authority has a much more limited role or even no role in organising the market.

3.3.3 Comparison of alternative regulatory arrangements

There appear to be large differences across countries in the grade of regulation and the methodology for granting permits to paratransit services. In general these are linked to the local transport policy, if exists, as well as the management capacity of the authority in place. In a deregulated market, nearly all operators will be rewarded with an operating permit (free market). As a result the service provision is often fragmented and chaotic and may result in inefficiencies in case of oversupply and wasteful competition. Services that are not considered profitable by operators are just not provided and leading to a situation that some areas lack public transport or are not served at certain times of the day.

Other authorities (or similar entities) apply a more strict policy in granting operating permits in order to avoid inefficient competition and establish a certain degree of coordination. In some cases even pre-defined routes are designed by the Authority for which individuals and companies can apply for through vehicle permits to operate on these routes. This is nowadays often the case in countries of the former Soviet-Union for routes operated by minibuses (the so-called “marshrutkas”) and also the three-wheeled “auto-rickshaws” operated in many Indian cities.

The criteria for granting (or rejecting) of operating permits are often not transparent. There is also a variety in conditions attached to the permit. Some permits contains an obligation to operate on a certain route, others just only provide the right to operate. As in general a fee or levy has to be paid for permits or licences, some authorities tend to issue an overflow of permits in order to generate (more) income.

3.4 Guiding principles for regulations on New Mobility

The regulation of ‘New Mobility’ service providers is an evolving subject across the global and no city has zeroed in on the exact path forward. However, there are various individual efforts which are compiled together as best practice case example for Indian cities. If implemented, these regulations can have far-reaching implications even for the Indian New mobility sector:

3.4.1 Europe: Declaring Uber as a transport service

The European Court of Justice, the highest court in the European Union, has ruled Uber as a taxi company and not an Information Technology (IT) company. This is a significant position because Uber and other ridesharing companies present themselves as a digital platform for connecting people, rather than as a taxi service, thereby not having to conform to the transport regulations described in Chapter 2. It is to be noted that the proposed amendments to the MV Act direct aggregators to be licensed under ‘Section 93’ of the act meant for transport companies, but the act also suggests that aggregators work under the ‘Information Technology Act’ of India thereby leading to uncertainty on the specificity of the rules applicable for them.

3.4.2 New York: Regulation on Data sharing by all Taxi Companies

The city of New York has a regulation on data sharing where all taxi trips in the city i.e. the traditional yellow taxis and the ridesharing services like Uber and Lyft share the origin and destination of each of their trips. The city council uses this data to determine the amount of surge pricing allowed for the ridesharing companies on a weekly basis. Such weekly revisions in prices incentivise aggregators to share their data.

In India, fare revisions are taken up occasionally, without any specific periodicity for revision. The capacity of the transport departments in synthesising such data is also limited. Therefore, cities should find alternative methods of incentivising or mandating aggregators to share their data.

3.4.3 Chicago: Public Transport Tax on ridesharing trips

In 2015, Chicago city initiated a fee of 52 cents on each ridesharing trip, to be directed to the city's general development fund. It has recently approved a 15-cent increase to the fee that will directly be used to fund public transit.

Such a measure can also be adopted in Indian cities. The concept of a 'Public Transport Fund' is still in its nascent stages in India and hence developing such a fund can generate the much needed revenues to support formal public transport systems.

4 PROPOSED REGULATORY FRAMEWORK FOR INTEGRATED GOVERNANCE OF SHARED MOBILITY IN INDIA

The International best practices presented in the previous sections highlight the need for co-ordinated legislative, organisational and financial measures to develop integrated shared transport system in cities. The best practices in India also highlight how the current initiatives of Indian Cities, States and the National Government only focus on parts of these solutions. For eg. the 'Motor vehicles (Amendment) Act 2017' and the 'Haryana Stage Carriage Act 2017' focus on legislative reforms but are silent on the organisational and financing reforms required for effective integration of modes. Similarly, the Delhi and Kochi examples focus on legislative and organisational reforms, without adequate focus on financial provisions, thereby limiting the scope of scaling up the public transport services.

In spite of the few reforms taken up across cities, the following key issues continue to constrain the growth of shared mobility systems:

- i) Lack of an integrated governance framework that ensures complementarity between various shared modes of transport
- ii) Formal public transport systems being constrained by fare and service obligations without adequate institutional and financial support from State or City transport authorities
- iii) Paratransit operating under a simplistic city level permit system that isn't based on transport planning inputs, thereby not meeting service requirements adequately
- iv) New mobility operating in a regulatory grey space which perceives them as competition to public transport and not as a demand responsive alternative to personal vehicles

Towards addressing these gaps, we propose a framework for regulatory, organisational and financing reforms that address the key gaps in the ongoing efforts. These have been summarised below:

4.1 Empowering Unified Metropolitan Transport Authorities (UMTA) with regulatory functions

Cities should adopt a vision where formal public transport systems form the core of the shared mobility ecosystem, while the paratransit and new mobility services provide a dynamic on-demand service that complements the formal public transport system. Towards this, each city needs to identify a clearly defined pathway for developing their shared mobility ecosystems across all modes in the city, thereby reducing the ownership and usage of private modes of transport. The lack of such a vision is one of the reasons for the current fragmented governance and regulatory practices.

Government of India (GoI) has already recommended cities to constitute a Unified Metropolitan Transport Authority (UMTA) that streamlines decision making across agencies and to ensure that they work towards a common vision. We re-emphasise the need for such a framework to integrate planning and regulation of various shared mobility services. Given that the guidelines issued by GoI on the framework for UMTA focuses more on integrated planning of various modes, we add the regulatory aspects of shared mobility as well and propose the following functions:

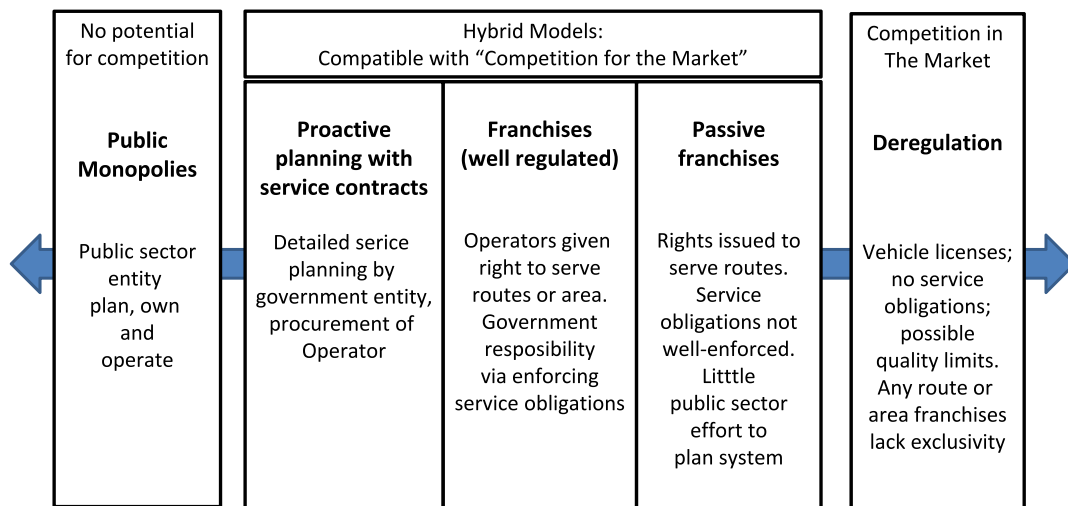
- **Facilitating coordination and eliminating overlapping functions** in planning and execution of urban mobility initiatives across various agencies
- **Integrated transport planning** for the city that identifies the ideal mix of transport modes in the city including Metro, Bus, Taxi, Auto-rickshaw, Walk, Bicycle and private modes like Cars and Two-wheelers

- **Integrated public transport service planning** to provide seamless public transport services for users across bus and metro systems. Similarly development and management of multi-modal interchanges, transit hubs for bus and metro etc. can be carried out through UMTA
- **Integrated fare setting** across modes so that various services are priced according to the affordability of the users and also to incentivise them to shift towards more sustainable modes. Simultaneously, care should be taken to avoid predatory pricing where some services under-price their fares to attract demand from other shared modes. Rather, the focus should be on attracting users from Cars and two-wheelers towards shared transport
- **Facilitating efficiency in regulation of shared mobility and their permit system in city** i.e. the need for various services like metro rail, buses, taxis and auto-rickshaws need to be planned simultaneously and the number of permits to various modes to be issued accordingly. Care should be taken to ensure that such a permit system does not end up restricting some modes. Instead, the focus should be on ensuring that the optimal modal mix of services are made available to meet the users travel needs in a sustainable and efficient manner.

The following figure explains the various regulatory pathways that the UMTA can adopt for a city. The current regulatory environment can be classified into the two extremes presented below i.e. bus and metro systems operating as public monopolies while taxi and three-wheelers operate as deregulated market, with licenses for each vehicle to operate but with no service obligations. Such a framework has led to the current situation of services competing with each other.

Instead, Cities need to adopt a hybrid approach where various services are operating in a market with 'regulated competition' where various services are regulated according to their needs. For example, Public transport can be regulated through service contracts, paratransit and new mobility services through franchise agreements with service obligations etc.

Figure 9 : Regulatory pathways for Shared Mobility



Organisation of Public Transport

Guido Bruggeman

4.2 Introducing Public Transport Service Obligations (PTSO) and Public Transport Service Contracts (PTSC) to improve formal public transport

It was explained in Chapter 2 on how formal bus systems in India haven't scaled up adequately in response to increase in travel demand. This is primarily due to the service obligations they have to meet in serving low-demand and low-revenue areas. Additionally, these companies are also burdened financially through subsidised fares offered to various sections to improve their access to mobility.

In order to meet the sustainable mobility goals of the country, bus systems need to not just continue providing the current services but even improve upon them while meeting the financial obligations. Towards safeguarding the interests of the public transport companies in such a scenario, we propose legislative reforms similar to the Public Transport Service Obligations (PTSO) introduced in EU, as explained in section 3.2. A similar precedent has already been set by the electricity sector in India, as summarised below:

4.2.1 Learnings from India's electricity sector reforms

The Electricity Act, 2003 initiated significant overhaul of the institutional and regulatory practices of India's electricity sector. Before 2003, the electricity sector in India was controlled by the state run public monopolies which were in-charge of generation, transmission and distribution of electricity while the electricity tariffs were strongly influenced by social and political obligations. An analogy can be drawn to the way current public transport companies are in charge of functions like planning and operating their services for universal access, while being constrained by various service and financial obligations. Similar to the current State Transport Undertakings (STUs), even the electricity companies suffered from losses due to their tariff and service obligations. This further led to them being unable to deliver adequate electricity for the growing domestic and commercial needs of the country.

The Electricity Act, 2003 has brought in much needed reforms towards rectifying the situation. As per the act, each state had to split its electricity companies into Generation, Transmission and Distribution companies. Further, a State Electricity Regulatory Commission (SERC), an independent and apolitical institution was set up in each state to determine the electricity tariffs for various applications i.e. domestic, commercial, industrial etc. If the state government wishes to offer any subsidy in electricity to different sections of society, for example, Agricultural usage, it has to reimburse the distribution company for the losses incurred due to the subsidy. Additionally, separating generation, transmission and distribution functions has also led to increased private participation in generation of power. These private power generators have clearly defined Power Purchase Agreements (PPA) with the distribution companies, thereby balancing their risks as well. This led to the distribution companies being the only loss making entity within the electricity sector, thereby helping the Government take up initiatives to address specific problems of this sub-sector.

4.2.2 Applying the learnings from electricity reforms to public transport

Learning from the EU PT regulations and the Electricity reforms of India, we propose the public transport sector to also split its various functions and bring in various legislative reforms required to improve their financial situation. The public transport sector functions can broadly be divided based on into policy,

planning and operations. It is recommended that the policy and multimodal transit planning for the city be taken up by the UMTA. The UMTA will be best positioned to plan for the travel demand in the city and define the Public Transport Service Obligations (PTSO) across modes. PTSOs establish the mix of metro, bus and on-demand paratransit and new mobility services required in various areas and corridors of the city. This shall include the policy frequencies i.e. the minimum service requirements of each mode on various corridors. The fares of these modes can either be defined by the UMTA (e.g. Transport for London (TfL)) or an independent agency (for e.g. Public Transport Council (PTC) of Singapore).

Further, the UMTA contracts out the operation of these services to various agencies as Public Transport Service Contracts (PTSC). The operating agency can be the State Transport Undertaking (STU) or a private operator or both. The PTSC defines the Service Level Agreements (SLA) and the payment terms for the operators. Such a mechanism will insulate the operators from the financial losses incurred due to social and political obligations and help them deliver the services. Any losses incurred while honouring PTSOs at the predefined fares will be borne by the UMTA, which is funded by the City and/ or State Government. Further, the service planning of each of these modes is carried out by their respective operators.

The proposed framework would allow STUs to scale up their operations and will also allow for greater private participation in operations in cases where the STUs are unable to scale up in line with the PTSOs identified by the UMTA.

4.3 Creating a Public Transport Fund

It is to be noted that the success of the framework proposed above hinges on the City and/ or State Government honouring the PTSCs by funding the gap between cost of operations and the recovery from fares. Given that public transport is highly likely to incur losses while meeting the PTSOs, cities should also create an exclusive 'Public Transport Fund' to cover for the gap in revenues.

Given the weak financial situation of Cities across India, the Gol has already identified the need to create an exclusive 'Urban Transport Fund' to take up sustainable transport initiatives in cities. The UTF is primarily targeted at infrastructure measures like street infrastructure, multimodal hubs, terminals etc. Therefore, a separate Public Transport Fund (PTF), either within the UTF or as an exclusive fund, managed by the UMTA is recommended to cover the revenue gaps in honouring PTSCs.

The PTF can be funded either through Government grants and external funding agencies, or through local measures like parking fees, public transport cess on property tax and other innovative financing mechanisms suggested by Gol and other agencies.

4.4 Improved regulation of paratransit to ensure adequate services across the city

Paratransit services currently operate in a permit-licensing regime, which can be classified under the deregulated or passive franchise model explained in . They typically have a license to operate in the entire city or a particular area or route, depending on the local regulations. Most cities have a limited regulation on their service obligations i.e. the minimum service-km to be operated during various hours of the day, minimum number of permits on various routes etc. Even in cases where route level permits are issued, their enforcement has been limited as presented in Chapter 2.

Therefore, we recommend paratransit regulation to be taken up under the 'well-regulated franchise' model presented in the Figure 8 above. In such a model, the regulatory authority i.e. either the Transport department or the UMTA plans for the routes and areas of operation of paratransit services. These permits are issued as franchises either for individual driver operators or operators with a fleet of vehicles. The franchises operate under clear contracts that delineate their routes or areas of operation and minimum service obligations. The regulatory authority will need to develop adequate capacity to enforce these contracts. In such a scenario, the authority may be required to compensate the operators serving low-demand routes on which they incur losses while meeting their service obligations.

4.5 Harnessing the demand responsive services of 'New Mobility' solutions

The public transport and paratransit services are recommended to operate on predefined routes and areas of operation providing at least the minimum service levels identified and contracted by the regulatory authority. They will form the base of the shared mobility ecosystem of a city. In spite of these services, a public transport or a paratransit service may not exactly match the flexibility offered by a personal vehicle i.e. a Car or a Two-wheeler, which can be parked and used as per user's convenience.

The 'New mobility' solutions like technology based aggregators of three-wheelers, taxis and buses offer a flexibility that comes closest to a personal vehicle. Users can hail these services on-demand, thereby being incentivised further to move away from personal vehicles. Once the users are familiar with such on-demand transport modes, they are more likely to use other shared modes like formal public transport and paratransit services. Therefore, cities should harness the on-demand services in their efforts towards reducing personal vehicle based mobility.

The current outlook towards New Mobility solutions is that they are competing with the existing shared modes of transport. As a result there have been examples of cities trying to restrict the number of permits and regulating their minimum fares to reduce competition with other shared modes. Research emerging from the United States of America (USA) has also indicated that the on-demand service are likely induce users away from existing public transport systems. In some cities, they are observed to strengthen metro systems by providing first and last mile connectivity. Additionally, the vehicles operating on on-demand platforms are positioned around the busiest areas of cities to reduce wait time of users, thereby increasing the congestion in busy areas rather than reducing it. If USA, which already has a high car-ownership observes increase in car usage due to on-demand services, it is likely that Indian cities with low vehicle ownership rates have an even higher increase in vehicle usage due to on-demand services. However, there's a lack of adequate research to establish the change in travel behaviour in Indian cities as a result of the aggregators.

Given the lack of adequate understanding of the impact of on-demand services, we recommend an open minded approach, where the New Mobility services are seen as an on-demand service that can reduce personal car dependence, rather than as a competition to public transport. However, it is to be ensured that we don't replace personal cars with commercial cars. Rather, they should be integrated with public transport for optimal efficiency. A three pronged approach is proposed:

- i) **Create optimal number of assets:** The existing regulations need to be eased to enable market oriented licensing of vehicle and drivers of commercial vehicles to create the optimal number of 'assets' in the cities
- ii) **Use technology for efficiency of assets:** The vehicle and driver 'assets' can then be used optimally using technology based solutions to provide shared mobility for users whose needs are not met by the public

transport and paratransit services

- iii) **Incentivise greater adoption of ‘shared mobility’ technology:** The fare and taxation of these systems should be priced such that the vehicles and drivers are incentivised to use these technologies and be efficient to minimise their cost and maximise revenues.

Additionally, the regulations for New Mobility services need to classify their issues under the following categories.

- i) **Safety**
- ii) **Mobility**
- iii) **Rationale for Motor Vehicle Tax, Permit fee and Fare structure**

The lack of such classification has led to an uninformed debate on shared mobility regulations in India as reflected in the ‘Aggregator rules’ framed by various states. While the ‘Taxi Guidelines’ issued by the MoRTH addresses these issues, a clear delineation of safety, mobility and pricing is missing. Such classification can help the regulatory authority address issues in a more scientific manner.

4.6 Conclusions

The report provides an overview of the Indian and International practise on regulating shared mobility i.e. formal bus and rail based public transport systems, paratransit systems and on-demand shared transport provided by ‘New Mobility’ solutions like car, three-wheeler, bus or bicycle aggregators. We identify specific gaps in the City, State and National level regulations governing shared mobility in India.

The recommendations towards addressing the existing gaps have been classified into four categories: organising authorities, public transport, paratransit and ‘New Mobility’. The proposed regulatory reforms in each of these categories have been highlighted, along with the complimentary financial and legislative reforms required for the regulatory reforms to succeed. Given the varying regulatory mechanisms across States and Cities, we refrain from providing specific action plans for implementing the proposed reforms. This document is intended to provide an overarching regulatory framework that cities can adopt and not provide a prescriptive set of solutions.

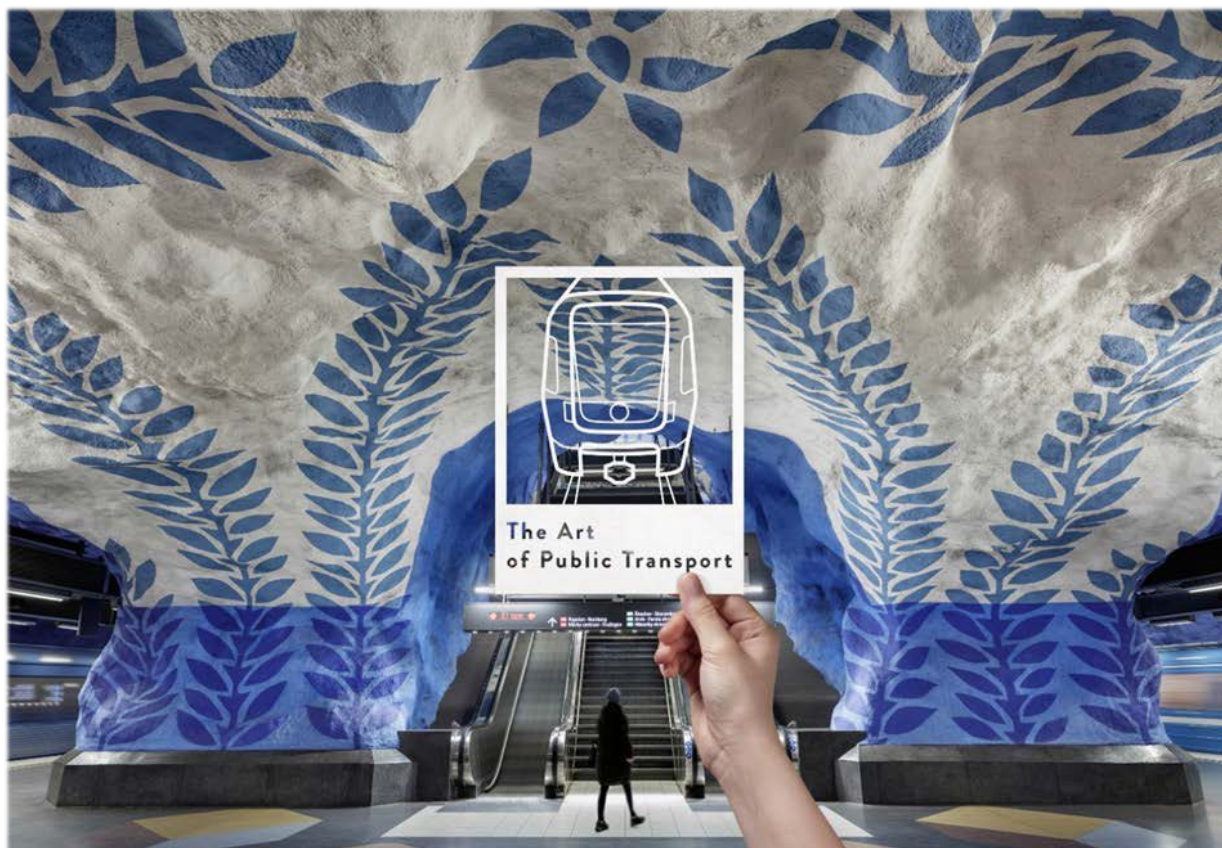


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