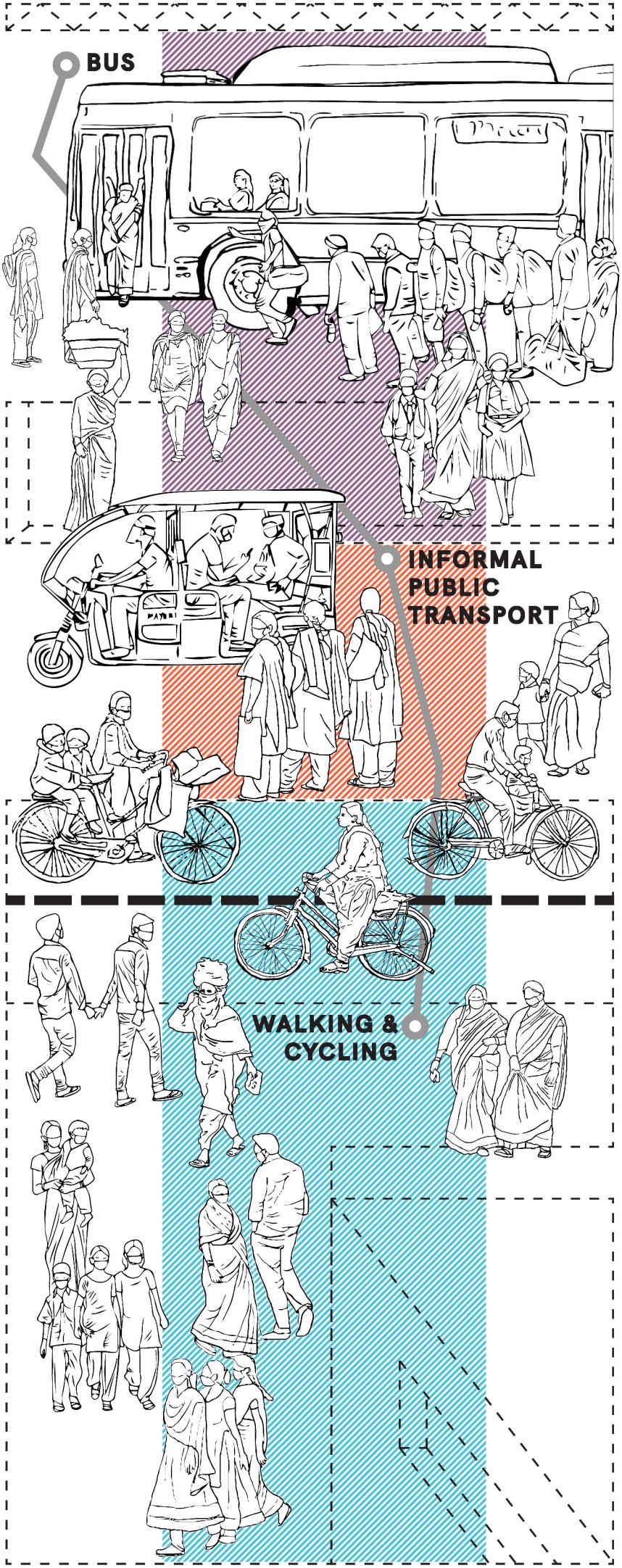
MOVING AHEAD : URBAN MOBILITY REFORMS FOR POST-COVID RESILIENCE IN INDIA



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HIGH VOLUME TRANSPORT
APPLIED RESEARCH

National Institute of Urban Affairs

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Executive Summary

A transport system is the city's lifeline as it makes the city accessible for all. The Covid-19 pandemic has impacted the urban transport system in an unprecedented way. Public transport and Informal public transport are struggling to find commuters or, in some cases, continue to run with the safety protocols. There is a renewed interest in cycling as reflected in its use and purchase. However, this initial excitement still needs to be converted into permanent infrastructure and institutional arrangements. Future cities will need to build robust systems to deliver efficient public transport, integrated informal public transport, and streets that prioritise walking and cycling.

This pandemic has been a life-altering event for many, and it compels us to go back and re-think urban priorities. Some cities have managed their urban transport crisis with more resilience, and there is a lot to learn from them. Some cities have converted the challenges to building their systems better. Some cities have been making the right choices for the last two decades, and with resilient systems, they have been able to bounce back quickly. Based on the case studies of many such cities, this strategic guidance document provides ways of moving ahead with the urban mobility reforms to build more resilient systems in the future. The document is organised around three modes – walking and cycling, bus-based public transport, and informal public transport. For the modes, the document details how to 'get it right' – developing and investing in a system, resolving institutional issues, and building the right kind of infrastructure.

Walking and cycling – Walking and cycling are the most fundamental, sustainable modes that need to find dignified space and permanent infrastructure in our cities. This would require someone in the ULB to champion the cause – a cycling commissioner supported by a dedicated team and an adequate budget per year. This team is further supported by a city-level NMT committee coordinating with other agencies and providing organisational support to all the activities. A critical job of this team is to understand and expand the demand for walking and cycling. Demand/interest generation events and some bold pilot projects can showcase the city's commitment to these sustainable modes. Finally, capacity-building programs for the municipal, traffic police, and other government staff would go a long way in building a resilient system that delivers quality walking and cycling infrastructure.

Bus-based Public Transport – Bus-based public transport in any city is an essential component of the urban transport system. Buses are genuinely a 'mass transit' given how easily they can cover the entire city, with greater flexibility of operations/routing based on the demand. During and after the pandemic, more buses are required to maintain the physical distance between the commuters and continue to provide a safe mode of transport with greater frequency. Indian cities require systematic investment plans in bus-based public transport to modernise the existing fleet and maintain and upgrade them with a long-term vision. For the effective and continued investment in the bus-based public transport, a robust institution of public transport authority is required which can plan, coordinate, implement and invest in this system. Finally, a robust bus-based public transport authority makes all its policy around the motto of 'commuters come first'. It is observed in this research that the cities which have systematically invested in buses, learned from their past failures, created strong institutions for efficient bus operations are the ones that have better resilience.

Informal public transport – Informal public transport is a shared mode of transport, and thus, it is imperative to treat them as a sustainable mode rather than seeing them as a nuisance. IPT is also a crucial mode to provide last-mile connectivity for the high-capacity mass transit systems. Indian cities need institutional and regulatory reforms to integrate IPT with their existing public transport system. As strategic guidance, a mobility department within the urban local body is envisioned coordinating all urban transport service providers in the city. They can regulate the IPT services, understand the demand and make strategic interventions for better coordination. Here, modernisation of the IPT fleet or electrification scheme can nudge the institutional reforms in the right direction. If IPT is treated as legitimate transport service providers integrated with a larger urban system, it will lead to the IPT services being safe, hygienic, and beneficial to the city.

Finally, a city's transport needs to be viewed and designed as "one" integrated system – a system that is planned for future travel demand, with supply coming from various modes like public transport, IPT, walking, and cycling. This would mean designing a system to enable people to reach where they need to go; the result is an accessible city. A city that invests in a robust transport system is not only accessible for all, but it is also a prosperous city, a livable city.

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01
Introduction

1.1 BACKGROUND

Livelihoods and commutes intrinsically linked in a city. A garment factory worker Bengaluru, A plumber in Thane, A construction worker in Gaziabad, A street vendor in Kolkata, A delivery person in Kochi – they all need to access their work places in order to make their lives better in a city. A city promises better lives for millions of such workers who can not necessarily work from home. The city works because many of these workers are working relentlessly and facilitating the work from home for others. A transport system is the city's lifeline as it makes the city accessible for all. A city which invest in a strong public transport system is not only accessible for all, but it is also a prosperous city, a livable city.

The COVID-19 pandemic has presented a challenge for urban systems in an unprecedented way across all cities—more so in low-income countries (LICs) in South Asia, Africa and South America. Not only the public and private health systems are under a lot of stress, but the public transport systems are struggling to survive. With the changing situation, public transit (and as its extension, informal public transit) operations and road infrastructure will need to adapt and find solutions to provide safe and hygienic commuting options.

It is crucial that the boom in the purchase, use and dependence of private automobiles in the COVID era remains short-lived, and that non-motorised, public or shared transport options be prioritised in the urban mobility policies of cities in LICs. The ministry of Housing and Urban Affairs, Government of India has already come up with 'transport4all', 'cycle4change', 'streets4people' challenges for Indian cities to address post-Covid urban mobility issues. The Indian cities are already taking up these challenges and trying to reform the urban transport systems in many cities. At this juncture, it is crucial that public transit and informal public transit retain and expand the patronage of vulnerable groups in particular. Poor and low-income groups use their mobility options wisely to access jobs and make a livelihood; in the absence of reliable and affordable transit options, their capability to do so can be severely constrained. Similarly, a renewed interest in cycling should be backed up with infrastructure investments and long-term plans.

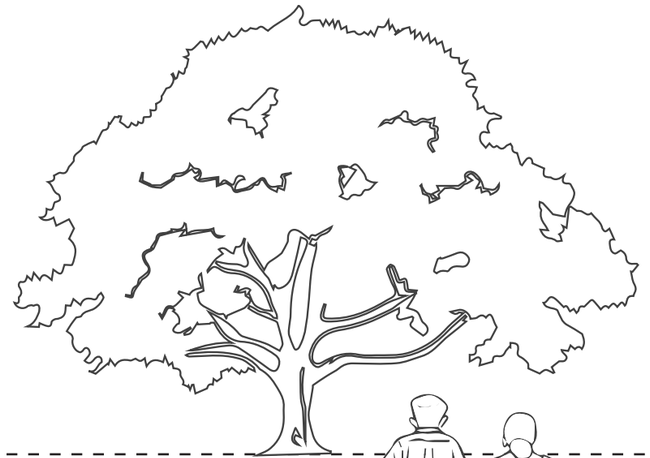
The challenges faced across cities in low-income countries are unprecedented, and the impacts have been differential. It is observed that many cities with better coping mechanisms and resilience have been putting in place efficient transport systems for a long time, despite their own share of ups and downs. The journey of these cities before and during the pandemic can become a source of guidance for many cities in LICs, as they attempt to 'build back better' or put in place an efficient, affordable, and integrated transport system for the future. These learnings are identified as Key Levers in sustainable transportation. The substantial components of 'Sustainable Transport' includes walking and cycling, different operational models of bus-based public transport and Informal Public Transport (IPT).

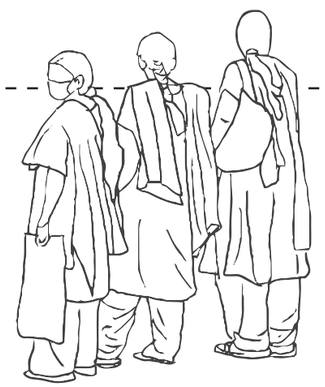
Examining these learnings, our research conducted between 2020-2021 has culminated in the production of this guidance document. We present the key levers for reforming urban transport system with supporting case studies. This document will highlight why some cities could better respond to post-COVID mobility challenges and how innovations in (i) NMT (ii) public transport and (iii) IPT operations can be rapidly adopted.

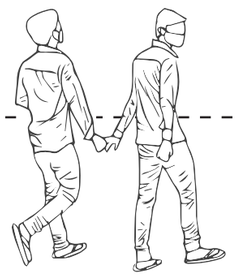
1.2 IDEA OF KEY LEVERS

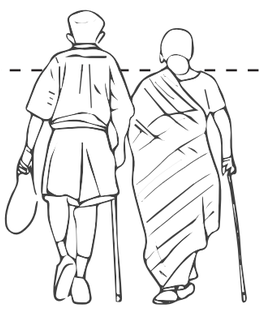
Rather than producing a generic listing of "best practice" case studies from the developed world, o**ur research has identified the Key Levers that have driven reforms, innovative and sustainable transport solutions across cities** of varying income classifications. These levers have helped cities move forward with better resilience – they had built stronger system to cope up with a crisis. The key levers could be manifested in the form of organizational set-ups or capacities, institutional resilience, specific reforms or initiatives, financing mechanism or planning methods and tools and the ecosystem that allowed for such initiatives to be taken.

As mentioned before, the idea of Key Levers suggests that we go beyond the "best practices catalogues" from High Income Countries (HICs). Instead, it involves diving deep into the public systems approach of working through constant adjustments, outcome-oriented planning and actions by multiple actors such as the policy makers, transport service providers, local community organisations, commuters and citizens. This conceptual approach uses filters of pragmatism and contextual relevance to bring forward policy responses from elsewhere while building on responses from cities in LICs, particularly India.





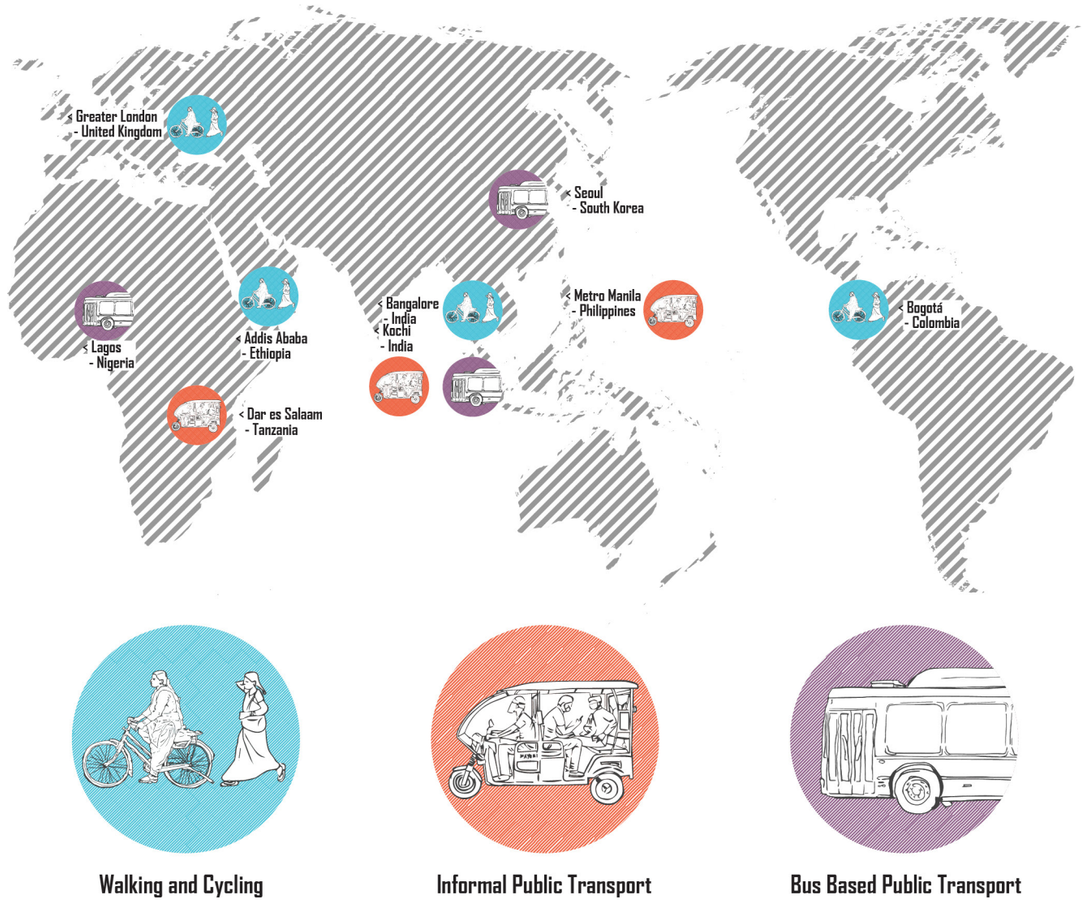




1.3 METHODOLOGY AND CASE STUDIES/ CITIES

In our research, we adopted a three-pronged approach, studying Bus-Based Public Transport (BBPT), IPT and Walking-cycling initiatives (rather than looking for perfect examples where all three were addressed well in one city). This was done by reviewing in depth all available material (scholarly articles, news media, podcasts, web portals and blogs), and organising webinars and interactions with experts; structured interviews were conducted with policy makers and civil society groups. In all, 52 urban mobility experts from across the world were interviewed. The guiding principle behind identifying the case studies and corresponding actions from the cities chosen was the rapid deployment of NMT infrastructure and the renewal of bus and IPT services.

As part of this project, we have covered various cities across different income classifications and cultural contexts. For details see Figure 1.



> *Figure 1: Case Cities*

1.4 TARGET AUDIENCES

This document is primarily meant for policy-makers, law-makers, mission directors and other officials in urban local bodies. Nonetheless, the language is aimed at eliminating jargon to improve its readability and accessibility for all those interested.

1.5 SCOPE AND LIMITATIONS

This guidance document gives strategic guidance on what is necessary to ensure that public transport and NMT systems are built and sustained. It does not position itself as a comprehensive planning manual or operationalising handbook. It is a guide for developing an integrated urban transport system, with lessons from cities that have managed to adapt to a crisis like the Covid-19 pandemic.

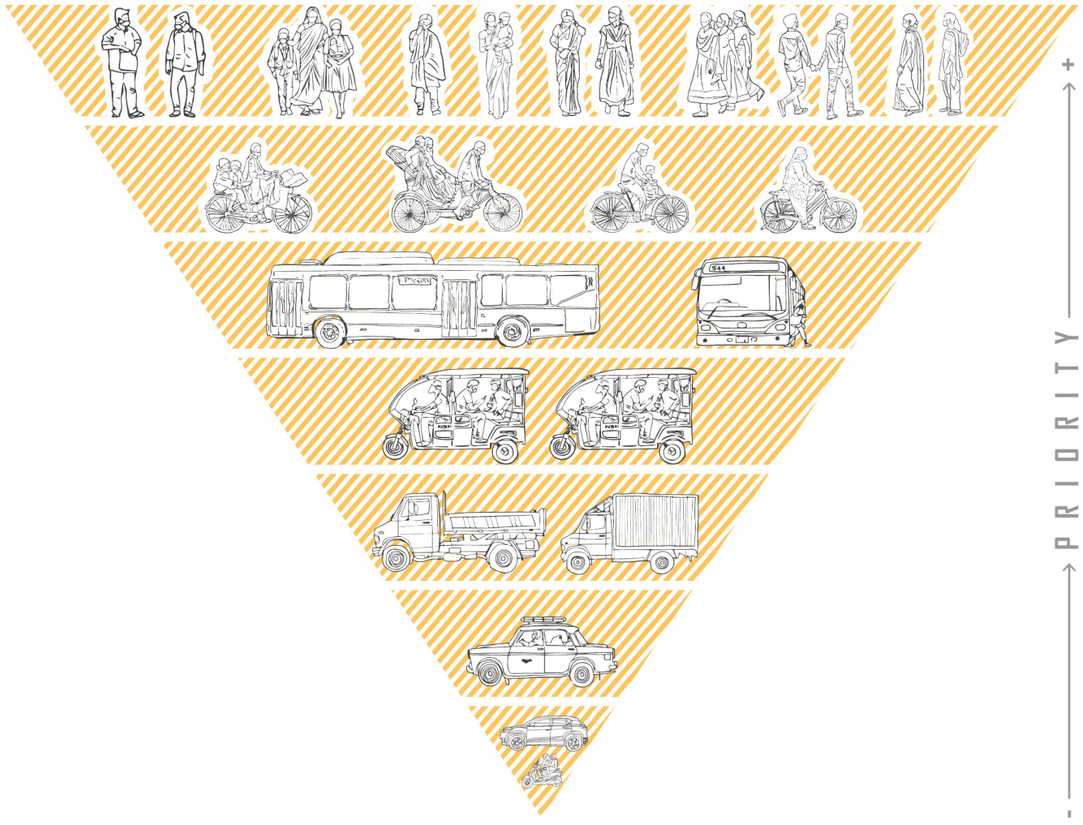
1.6 RELEVANCE FOR INDIAN CITIES

As mentioned earlier, COVID-19 has posed unprecedented challenges to cities and their residents, yet the impacts have been differential depending on the systems in place or the degree of disenfranchisement/vulnerability of a particular group or individual. Mobility is a crucial aspect of livelihood, and in urban India, nearly 60 per cent depend either on public transport (BBPT + IPT) and NMT systems. In such a context, a disruption in the functioning of mobility infrastructure could have a drastic impact on users' economic, social and cultural life. Shorter commutes using active modes are essential for resilient cities, and the pandemic has made it clear that if public transport (BBPT + IPT) are to allow for safe commutes, there is a need to expand on existing infrastructure work towards building reliability and resilience. This guidance document aims to highlight the same and help cities move towards sustainable mobility pathways.

02
Integrated Urban Transport System

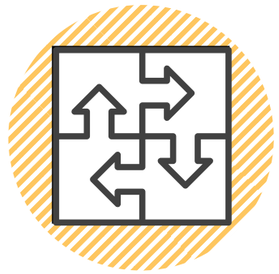
2.1 WHAT IS AN INTEGRATED URBAN TRANSPORT SYSTEM ?

An Integrated Urban Transport System is one that ensures that a resident can travel between any two parts of her/his city in a safe, accessible, affordable, comfortable, convenient, and sustainable manner. This would mean designing a system to enable people to reach where they need to go; the result is an accessible city.



> *Figure 2: Integrated Urban Transport - Mobility pyramid*

Source: The Urban Catalysts, Victoria Transport Policy Institute, Bicycle Network



INTEGRATION: WHAT NEEDS TO BE INTEGRATED?

A city's transport system is viewed and designed as "one" unit—for future travel demand, with supply coming from various modes like public transport, IPT, walking and cycling. There is a need to try to achieve integration in the following ways:

a) Institutions and policies: Institutions plan together and coordinate regularly.

b) Plan: One comprehensive mobility plan needs to be created, with dedicated (shared) budget and strategic investment in the city's mobility infrastructure.

c) Budget: Various agencies share a budget for the city's strategic mobility infrastructure and the budget is linked with the plan and vice versa.

d) Space integration: There is a need for boarding/alighting platforms, interconnections between two public/shared modes, and walking and cycling infrastructure linked with transit.

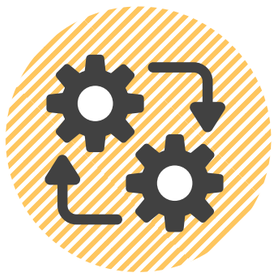
e) Ticketing: One mobility card or fare integration should be provided for use between public and shared modes.

f) Outreach and social marketing: A shared marketing strategy and outreach plan must be drafted to attract more citizens to sustainable and public/shared modes.

g) Last mile connectivity: Attempts should be made to connect the unconnected and strengthen the network.

URBAN: WHAT IS 'URBAN' FOR TRANSPORT SYSTEMS?

People who rely on a city and its economy often live beyond the city's official limits. Many commuters may live in peri-urban areas beyond municipal limits. Urban transport systems are planned based on an estimated future travel demand, which considers potential future commuters. Therefore, urban transport systems should strategically make investments in good geographic coverage beyond municipal or city jurisdictions and consider a metropolitan area. Urban transport systems especially should go everywhere commuters live.



SYSTEM: WHY IS URBAN TRANSPORT A SYSTEM?

Any urban transport system has four components—nodes that form a network, demand that flows between nodes in a network, infrastructure that facilitates the flows, and governance that make everything happen. It works as a system as all four components are working well in a coordinated manner.

a) Network of nodes connecting the city's specific locations is more important for urban transport, rather than individual corridors.

b) The flow between nodes represent the demand for the system and the node should be chosen based on the realistic future demand.

c) Good transport infrastructure requires a good operation. Good operation requires regular investment in terms of capital expenditure in the system for operation and maintenance.

d) Good transport governance means having a "commuters come first" policy. The city's transport system should revolve around commuters' needs and aspirations; whatever is good for the commuters is good for the city!

2.2 OBJECTIVES OF AN INTEGRATED URBAN TRANSPORT SYSTEM

a) A safe system reduces the probability of road accidents and subsequent morbidities and fatalities through a clear physical separation of slower road users from faster ones and by prioritising the movement of slower and shared road users.

b) A safe system also ensures the physical security of vulnerable groups such as women, children and the elderly.

c) An accessible system ensures that all residents—especially vulnerable groups such as persons with disabilities, the elderly, children and caregivers—can move quickly and freely between different modes of transport without encountering physical or systemic barriers. It ensures that whether the user's destination be within the same neighbourhood or at the other end of the city, it can be reached with minimal change of modes.

d) An affordable system ensures that every resident can access their travel requirements (work, education, healthcare, etc.) without spending more than five per cent of the city's average monthly household income.

e) A comfortable system ensures that users have a pleasant trip; it provides resilience against adverse weather (through shading, lighting and seating on footpaths or bus stops) and ensures optimal functioning to reduce overcrowding.

f) A convenient system ensures that users can quickly plan how to reach their destination and to access various modes quickly; it focuses on compatibility—physical, operational and financial, informational and institutional—between various modes of travel.

g) A sustainable system ensures that the environmental cost (in terms of carbon emissions and air pollution) made by one trip in the system is lesser than the same trip made by a private motorised car. A sustainable system also ensures that road space is allocated equitably and is not geared towards private motor vehicles.

2.3 PRE-COVID 19 SITUATIONS IN INDIAN CITIES

Patterns of urban mobility in India have seen a major change since 1991; while walking, cycling and public transport accounted for the majority of people's trips previously, the number of private motor vehicles has seen a marked increase since. This has led to more road fatalities, more air pollution and more traffic congestion. As cities expanded and motorisation increased, the immediate reaction was to keep on constructing more and more road space to prioritise the speed of vehicles over livability. Such reactions were trying to extinguish fire with fuel rather than building robust, resilient transport systems.

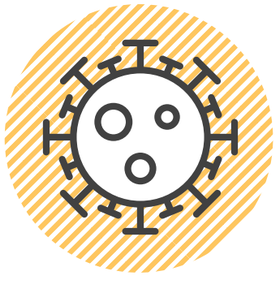
Bus based Public Transport was gradually losing ground as road transport/municipal undertakings found it difficult to augment their fleet and operations amidst falling ridership. In small and medium-sized cities, which lacked bus based public transport, shared autorickshaws and other IPT modes rose to fill in the demand gap. Unfortunately, the boom in road construction and expanding the road space did not extend to infrastructure for walking and cycling until recently.

At the institutional level, urban transport was split amongst various government departments. Road transport undertakings, mainly at the state level, oversaw BBPT, while road ownership, construction and maintenance were divided amongst urban local bodies, development agencies and state-level public works and highways departments. IPT was only looked at in terms of issuance of permits for operating. To sum up, an integrated approach was thoroughly missing in terms of planning and implementation for urban transport; this situation was exacerbated by the lack of adequate capacities and funding options for cities.

2.4 COVID-19 CHALLENGES AND BUILDING BACK BETTER

The pandemic has been a significant addition to the various stressors that have been plaguing the urban transport sector in Indian cities. BBPT has been especially badly affected due to the widespread fear of infection, seeing a precipitous decline in ridership and therefore fare revenues, as the examples from Mumbai, Chennai, Hyderabad, Pune shows. IPT operators have also suffered greatly, losing their incomes due to the extended lockdowns and with more reliance on private vehicles. Walking and cycling have seen an increase in popularity, at least as recreational activities, during this time. Recent initiatives by MoHUA, such as the "Cycles4Change", "transport4all" and "Streets4People" challenges, have also brought in increased attention from city governments to this long-neglected sector.

It is undeniable that cities will have to reimagine their urban transport systems in the wake of the pandemic to integrate public health concerns. This disruption caused by the pandemic and the ongoing climate crisis, therefore, presents cities with a unique opportunity to **build back better and to move forward better**. Hence the focus of cities, at least henceforth, should be on building resilient, reliable and integrated urban transport systems. A resilient system should be able to adapt to shocks and stressors and continue in its intended ways of functioning; for (formal and informal) public transport systems and NMT, this would entail the creation of an enabling institutional and financial structure. For public transport systems, this restructuring should be attempted through technological upgradation, which is urgently needed. To achieve these ends, governments also have to simultaneously focus on enabling behavioural change amongst urban dwellers through dedicated communications plans and detailed monitoring and evaluation strategies.



03
Walking and Cycling

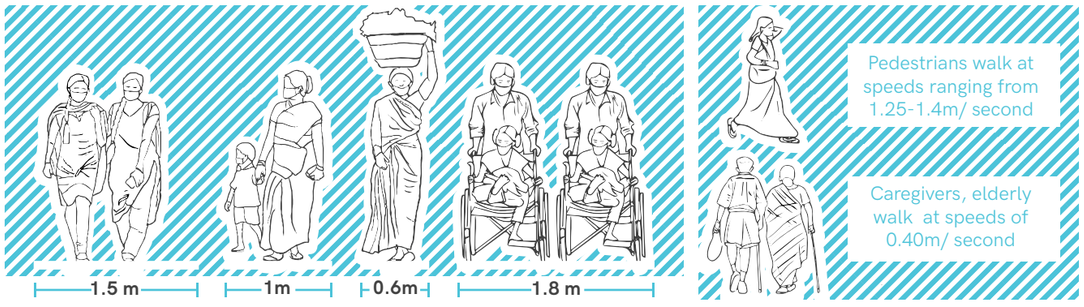
3.1 MYTH BUSTING

MYTH 1 A SMART CITY IS ONLY ABOUT TECHNOLOGY UPGRADATION

A smart city enables the movement of people by efficiently using road space, promoting universal access, road safety and security and encouraging behaviour change towards low-carbon transport modes. Technology is a medium to achieve the goals mentioned above. An un-smart city prioritises the speed of personal motor vehicles and their parking instead of improving access for a majority of people dependent on non-motorised and public transport.

MYTH 2 ABLE-BODIED MEN CONSTITUTE MOST PEDESTRIANS AND CYCLISTS

The needs of different user groups must be considered when designing streets for people. The 2011 Census reports that 30 per cent and 17 per cent of all urban work trips involve walking and cycling (Figure 3). However, sex-disaggregated analysis reveals that 45 per cent of women's trips involve walking, as compared to 27 per cent of men. While able-bodied individuals can walk at a speed of 1.25-1.4 meters per second, pregnant women, caregivers, and the elderly walk at a speed of 0.40 meters per second.

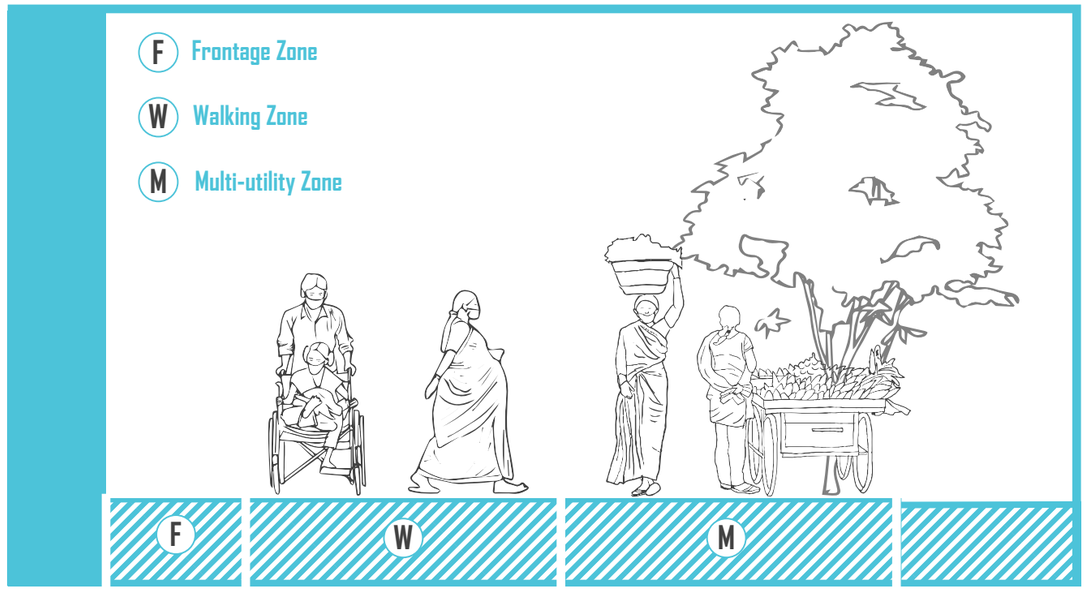


> *Figure 3: Space requirements and speeds of different user groups*
Source - The Urban Catalysts

MYTH 3 1.2M WIDE FOOTPATHS ARE SUFFICIENT FOR WALKING

Footpaths of 1.2-1.8m are insufficient to cater to different users. Road stretches should accommodate three zones (Figure4) and adjust according to the adjoining building-use (Figure 5).

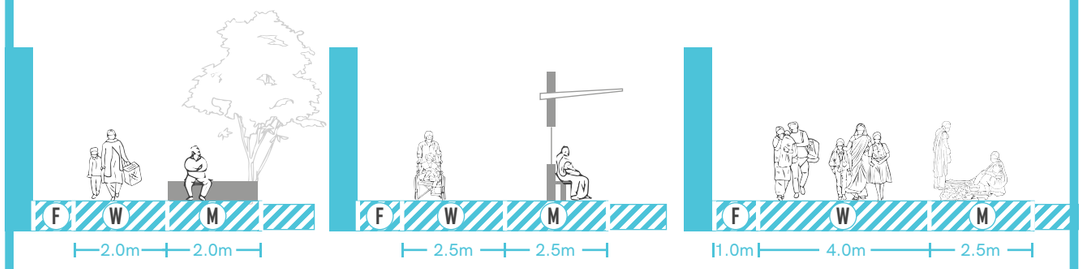
- Frontage zone provides a buffer between the property boundary and the walking zone
- Walking zone provides an unobstructed and continuous space for walking.
- Multi-utility zone provides space for essentials such as vendors, trees, street lighting, street furniture, bus stops, auto/ taxi stops, utility boxes, fire hydrants, landscaping, and avoids obstruction to the walking zone.



> *Figure 4 Zones of a footpath*
Source - The Urban Catalysts

Land-use context	Minimum width (in metres)			
	Total footpath	Frontage	Walking zone	Multi-utility zone
Low-intensity area	3.0	Combined width of 3.0 m		
Pre-dominantly residential	4.0	0.2	1.8	2.0
Pre-dominantly commercial	5.5	0.5	2.5	2.5
High-intensity areas	7.5	1.0	4.0	2.5

PLOS B as per IRC 103-2012 Guidelines for Pedestrian Facilities, Minimum footpath widths are provided in this table

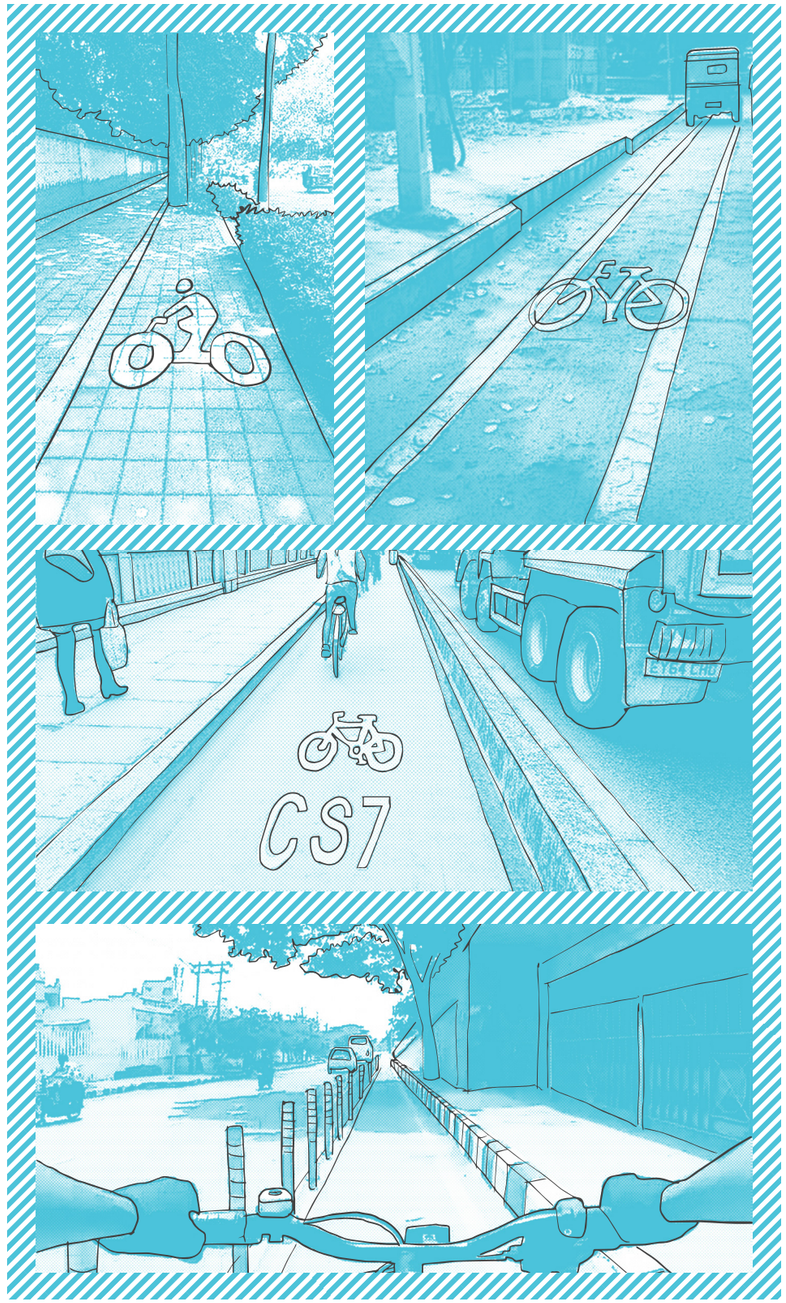


> *Figure 5 Minimum footpath widths by type of land use, Source - The Urban Catalysts*

MYTH 4

IT IS SUFFICIENT TO BUILD CYCLE LANES TO PROTECT CYCLISTS FROM MOTOR VEHICLES

Cycle lanes segregate cycles from motor vehicles using coloured paint or signage. They are inadequate to protect cyclists from motor vehicles as cycle lanes are often encroached upon by motor vehicles, putting cyclists at the risk of crashes and injury (Figure 6 and 7). Cycle tracks (Figure 8), on the other hand, are vertically or horizontally segregated from motor vehicles. This segregation can be created through a level difference, or separation by curbs. When pilot testing, temporary, protected cycle lanes can be created using bollards, rope, cones (Figure 9) and later upgraded to cycle tracks.



> *Figure 6: Bicycle lane shared with the footpath in Bengaluru (L);*
> *Figure 7: Bicycle lane alongside the carriageway in Bengaluru (R)*
Source: (L); http://anubimb.com/instagram-cycle-lane-at-jayanagar-bangalore/ (R)

> *Figure 8: Cycle track - Section of the Cycling Superhighway 7 in London*
Source: https://ecf.com/news-and-events/news/evolution-cycle-superhighways-london

> *Figure 9: Protected cycle lane on Outer Ring Road, Bengaluru*
Source: https://www.thenewsminute.com/article/part-bengaluru-s-pop-cycle-lane-orr-opens-cyclists-134759.

3.2 GET IT RIGHT!

The following actions are recommended for cities in the immediate-, short-, and medium-term to prioritise walking and cycling.

ACTIONS		TIME - PERIOD			
		0-6 m	6 m- 1 yr	1-3 yrs	>3 yrs
Create an enabling institutional structure					
1	Appoint a Walking and Cycling commissioner	◔			
2	Create a walking and cycling team	◔			
3	Establish a Non-motorised Transport Committee	◔			
Understand and increase demand for walking and cycling					
1	Organise demand generation events on a regular basis	◔	●	●	●
2	Publish annual walking and cycling surveys		◔	◔	◔
3	Increase access to bicycles	◔	◔	●	●
Implement pilot projects for visibility and support with data					
1	Implement bold pilot projects to maximise visibility and demonstrate outcomes	◔			
Understand and increase demand for walking and cycling					
1	Create a walking and cycling strategy and plan for scale-up	◔	◔	●	●
2	Provide funding channels for walking and cycling	◔	◔	●	●
3	Conduct short-term training programmes	◔	●	●	●
4	Introduce courses in academic institutes	◔	◔	●	●

LEGEND : ◔ Preparation ◔ Preparation + Implementation ● Implementation

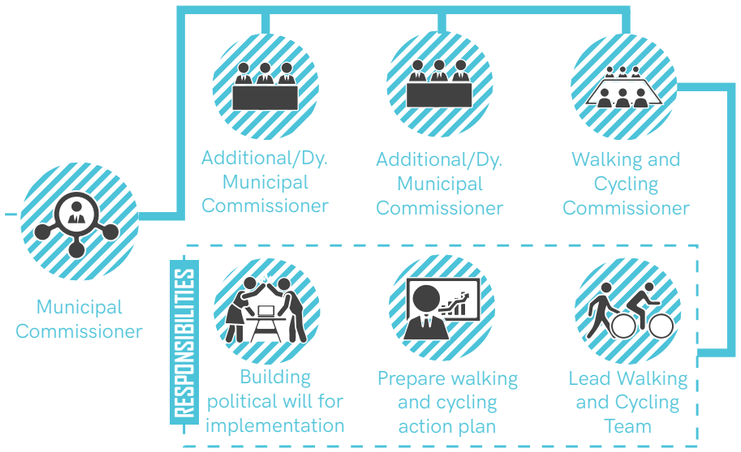
> *Table 1 Actions to be taken over the next 3 years and beyond*

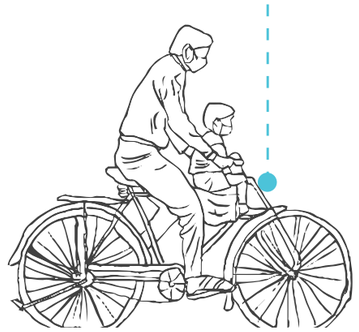
3.2.1 CREATE AN ENABLING INSTITUTIONAL STRUCTURE

An enabling institutional structure focuses on building political will for implementing walking and cycling infrastructure, governance structure for coordination and incorporating civil society participation and developing technical capacity within urban local bodies.

APPOINT A WALKING AND CYCLING COMMISSIONER

Create a dedicated leadership position for walking and cycling (equivalent to the position of an Additional/Deputy Municipal Commissioner in Municipal Corporations), reporting directly to the Municipal Commissioner (Figure 10). The individual will be a champion for walking and cycling in the city, lead a dedicated team for the same, responsible for creating a city-level action plan, and build political will for implementation.





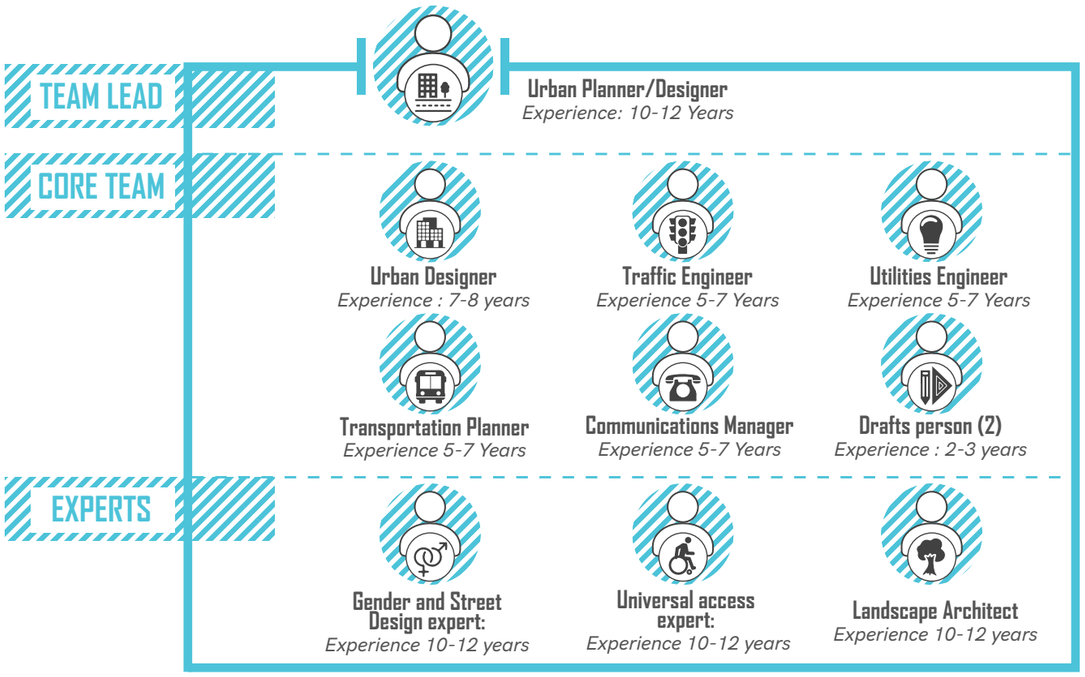
> *Figure 10 Organisational Structure*

Box 1: Walking and Cycling Commissioners in the United Kingdom

Several cities in the United Kingdom, such as London, Manchester and Sheffield, have a Walking and Cycling Commissioner to articulate a unified voice for the requirements of pedestrians and cyclists at a leadership level. The Commissioner is a political appointment, and s/he reports directly to the Mayor of the city while working with the city's transport authority. In London, the Walking and Cycling Commissioner, a Special Appointment who reports directly to the Mayor, is also part of the senior management team in Transport for London and supports the implementation of the Walking and Cycling Action Plans.

CREATE A DEDICATED WALKING AND CYCLING TEAM

All road-owning agencies and smart city special purpose vehicles will create a dedicated team for walking and cycling. The team will be led by an urban designer/planner and include a transport planner and traffic engineer with prior experience in implementing walking and cycling oriented street design projects. The team will have external experts providing inputs and feedback on gender and social equity, universal access and landscaping. Where such a team exists, their capacity will be augmented based on the proposed structure in Figure 11.



> *Figure 11 Composition of the walking and cycling team, Source – The Urban Catalysts*

The team will prepare a walking and cycling action plan, street design guidelines based on complete streets principles and implement pilot projects. It will prepare scope of work, terms of reference[1] and review the designs prepared by consultants for all road projects. It will also publish annual walking and cycling status reports, create and implement the communications and outreach strategy and collaborate with multiple organisations in the city in organising car-free days (Figure 12). Within the urban local body, the team will report to the Walking and Cycling Commissioner.

> *Figure 12 Responsibilities of the walking and cycling team*

1 *It is recommended that contracts be awarded based on prior experience of street design works executed by consultants & quality, cost-based selection.*

ESTABLISH A NON-MOTORISED TRANSPORT COMMITTEE

A Non-Motorised Transport Committee will be constituted at the city level as the nodal authority for walking and cycling initiatives. If there is a Unified Metropolitan Transportation Authority (UMTA) in the city, this committee should be constituted within it. The Committee will meet monthly. It will review, approve and monitor the implementation of the city's Walking and Cycling Action Plan, NMT Fund, and ensure coordination between different agencies for implementation. The Committee will include the following members, based on the city scale and governance (Figure 13).

Composition of the NMT Committee in medium and large cities (Figure 13)

a) Municipal Commissioner, Chairperson[2]

b) Walking and Cycling Commissioner, Member-Secretary

c) Chairperson of the Standing Committee, Member

d) Additional Commissioner of Police (Traffic), Member

e) Chief Engineers (Road-owning agencies), Member

f) Secretary, Town Vending Committee, Member

g) Four experts (Working on public health, walking and cycling, gender and universal accessibility), Member

h) Three persons from civil society organisations (including organisations working on women's safety, universal accessibility and environmental sustainability), Member

Composition of the NMT Committee for cities predominantly governed by the district administration

a) District Collector, Chairperson

b) Municipal Commissioner, Member-Secretary

c) Walking and Cycling Commissioner, Member

d) Chairperson of the Standing Committee, Member

e) Head of the City Traffic Police, Member

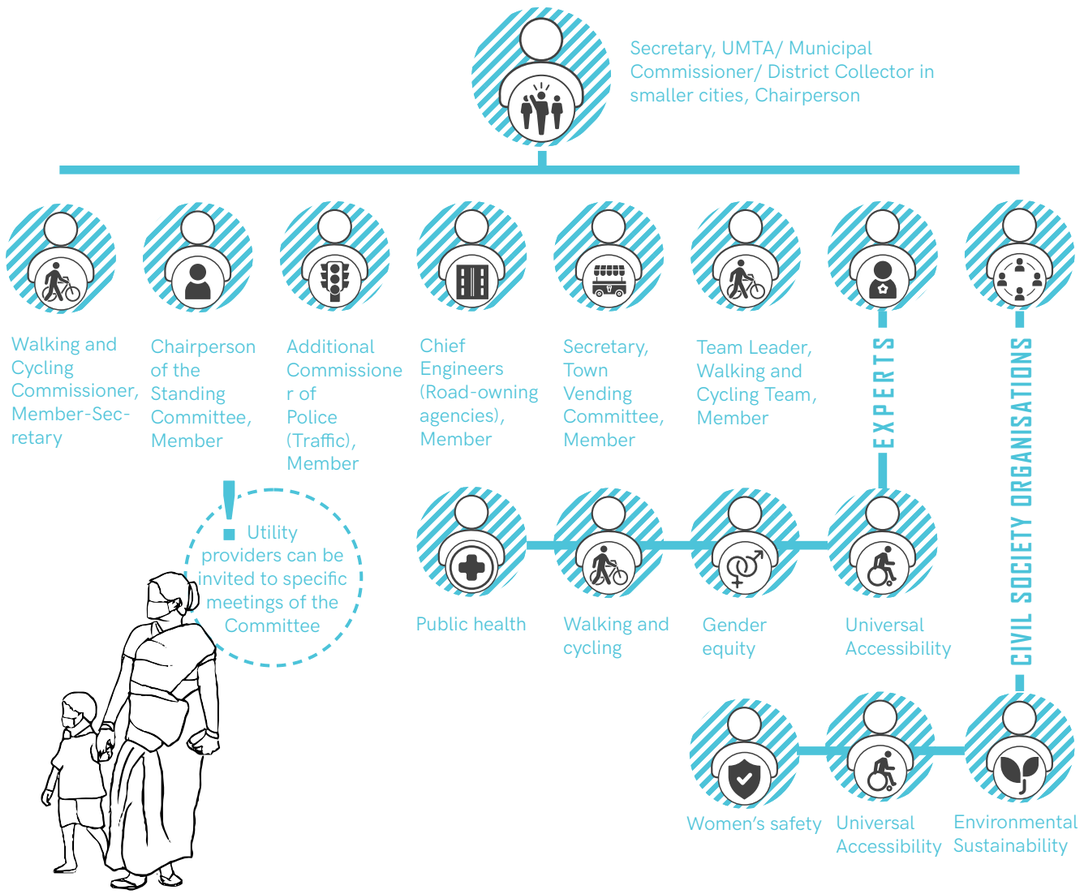
f) Engineering head of road-owning agencies at the district level, Member

g) Secretary, Town Vending Committee, Member

h) Two experts (Working on public health, walking and cycling, gender and universal accessibility), Member

i) Three persons from civil society organisations (including organizations working on women's safety, universal accessibility and environmental sustainability), Member

Utility providers can be invited to specific meetings of the Committee.



> *Figure 13 Constitution of the NMT committee in medium and large cities*

2 *In cities with a functioning UMTA, the secretary of the UMTA will be the chairperson of the Committee, while the Municipal Commissioner will take on the role of Member-Secretary and the Walking and Cycling Commissioner will be a Member.*

3.2.2 UNDERSTAND, INCREASE, AND PROJECT DEMAND FOR WALKING AND CYCLING

ORGANISE DEMAND GENERATION EVENTS ON A REGULAR BASIS

Regular open streets[3] and car-free day events enable positive behavioural changes in residents, create a common civic culture and find new uses for public spaces. The following steps may be taken to plan them:

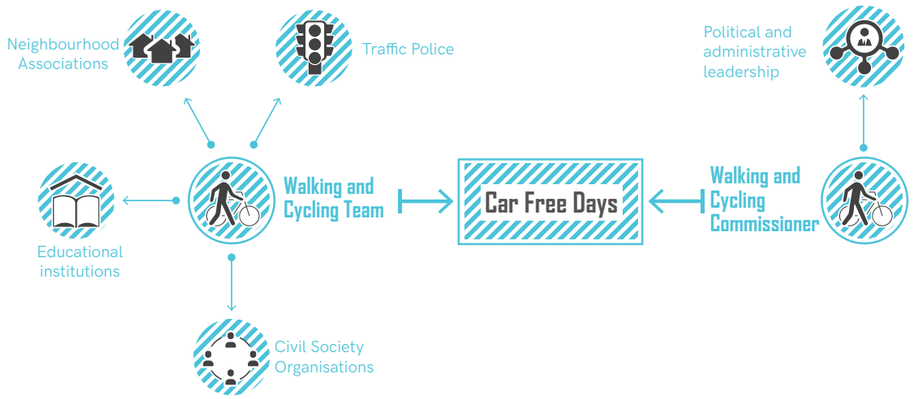
a) Appoint a dedicated person from the Walking and Cycling team to organise car-free days and open streets. The staff will coordinate with the traffic police, collaborate with civil society organisations and educational institutions to organise volunteers (Figure 14).

b) Organise car-free days regularly to generate demand for walking and cycling and build support for the implementation of pilot projects. These events can be initiated at the neighbourhood scale with the aim of extending them to the entire city eventually.

c) Showcase the impact of walking and cycling regularly on health (Figure 15).

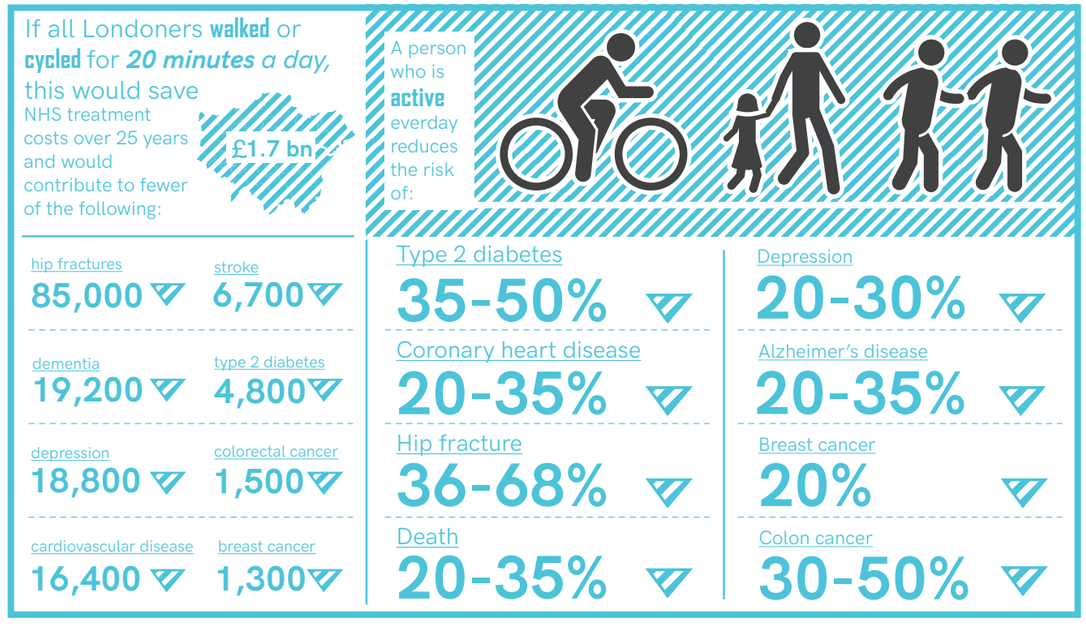
d) Focus on increasing participation by women and girls by providing cycles and teaching them how to repair and ride cycles.

e) The Walking and Cycling Commissioner will encourage participation by political and administrative leadership. Additionally, government employees should be encouraged to walk, cycle or use public transport to travel to work at least once a week.



> *Figure 14 Organizing car-free days*

3 *Open streets are either a permanent bike path or the closing of certain streets to automobiles for cyclists and pedestrians.*



> *Figure 15 Linking active travel to individual and public health*
Source: Transport for London

Box 3.1: Bogota: City-led Ciclovía[4]

The Ciclovía in Bogota draws more than a million residents on a weekly basis. By the end of 1990s, it expanded from 33 km to 120 km after the sports and recreation department (IDRD) became responsible for organising the event. IDRD leveraged private sector funding through advertisement revenues, contributing to around 25 per cent of the event's two-million-dollar annual budget. Additionally, IDRD has a large, dedicated staff and student volunteer base to ensure that the cycling routes are clearly defined and adhered to by participants and motorists.

Box 3.2: Bengaluru: Decentralized Cycle Day events

The Directorate of Urban Land Transport (DULT) has organized and supported Cycle Day events in Bengaluru since 2013.[5] Unlike Bogota, DULT supported neighbourhood organisations in organising local cycle day events, and coordinated and obtained permission from the traffic police. Over 500 events have been held in more than 50 neighbourhoods since 2013.

4 *Ciclovía is a Spanish term that means "cycleway"; it is another name for an open street.*

5 *For details see: http://urbantransport.kar.gov.in/out.html.*

CONDUCT ANNUAL WALKING AND CYCLING SURVEYS

Walking and cycling trips are often underrepresented in mobility surveys and comprehensive mobility plans due to the focus on motorised trips and work and education trips. This significantly undercounts travel by women, who undertake household work and care-related trips primarily on foot. The surveys aim to provide an understanding of the existing and latent pedestrian and cyclist demand (Figure 16).

a) Conduct annual walking and cycling surveys to understand:

   a. User profile (by sex, age and income) and non-users

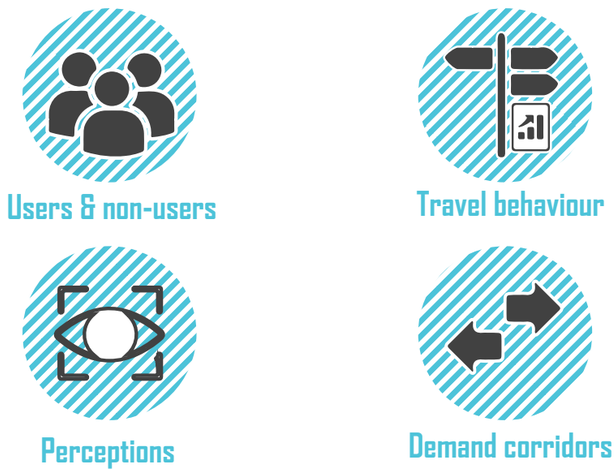
   b. Travel behaviour (trip purpose, time of travel, distance, time taken and cost)

   c. Perceptions of users and non-users (of safety, security, comfort, and convenience)

   d. Major demand corridors for cycling

b) Leverage the extensive network of CCTV cameras to count pedestrians and cyclists, and reduce the time taken for manual counts.

c) Publish annual status reports to serve as an effective monitoring and evaluation tool.

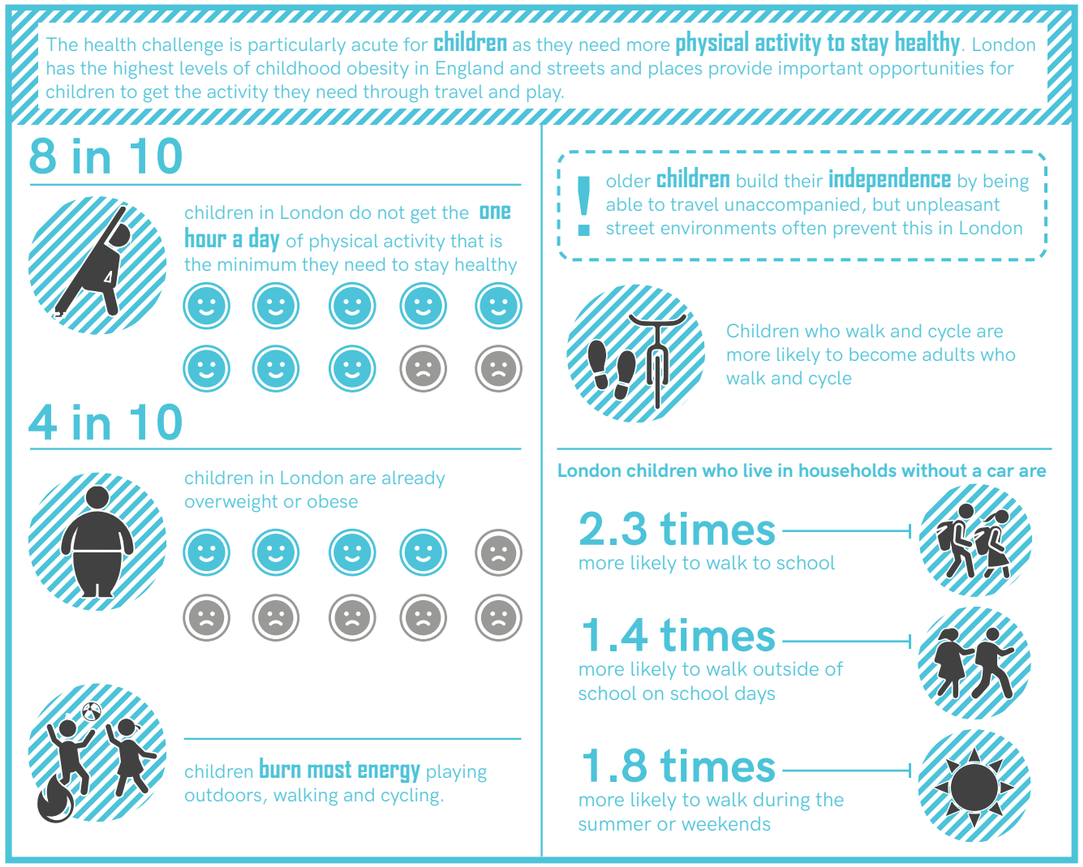


> *Figure 16 Walking and cycling surveys*

Box 4: Travel surveys by Transport for London

Transport for London (TfL) publishes annual reports titled Travel in London[6], describing key aspects of travel behaviour in London. It provides an estimation of the mode share in the city, including the number of walking and cycling trips. For cycling, it also provides detailed data, including patterns of usage across locations, purposes, and income groups.

Due to the city's focus on Healthy Streets as the cornerstone of mobility planning, active travel has received a major boost over the past two iterations of the study. Apart from regular travel diary surveys, TfL has initiated active pedestrian and cyclist counts and conducted qualitative research with participating residents to understand the health and travel implications of active mobility; the results of these counts and studies have been published and is being communicated to a wider audience through reports (Figure 17).



> *Figure 17 Understanding the linkage between active travel and children's health in London*

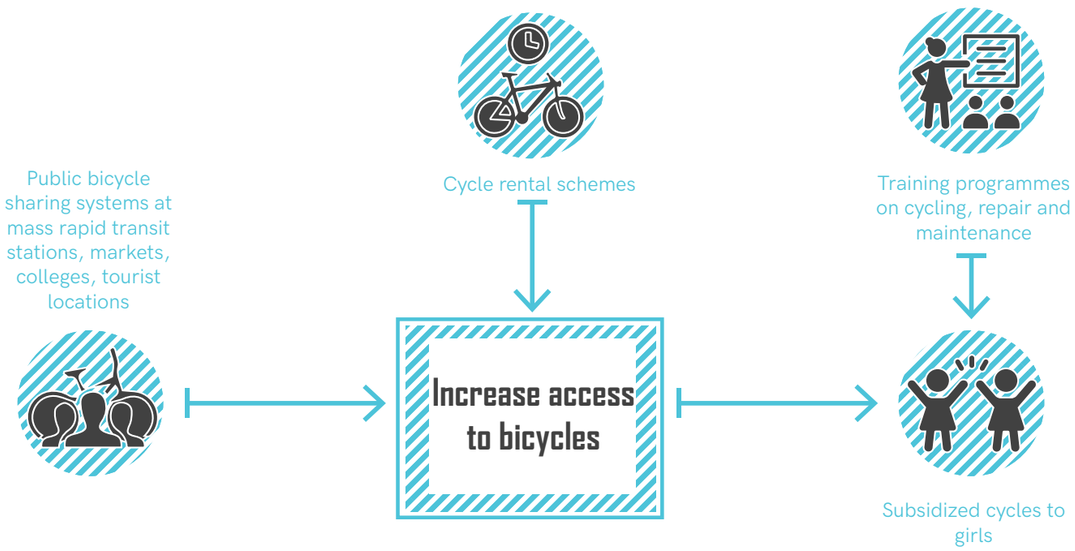
6 *For details see: https://tfl.gov.uk/corporate/publications-and-reports/travel-in-london-reports.*

INCREASE ACCESS TO BICYCLES

The 2011 Census reports that only two out of every five (42 per cent) urban households in India owns a bicycle. Further, only four per cent of women commute to their place of work by cycle as compared to nearly 20 per cent of men. Cities need increased access to cycles for residents, especially women and girls (Figure 18).

a) Provide cycles to girls enrolled in schools (in the ninth grade) in cities. Supplement the access to cycles with training programmes on cycling, repair and maintenance to ensure continued usage.

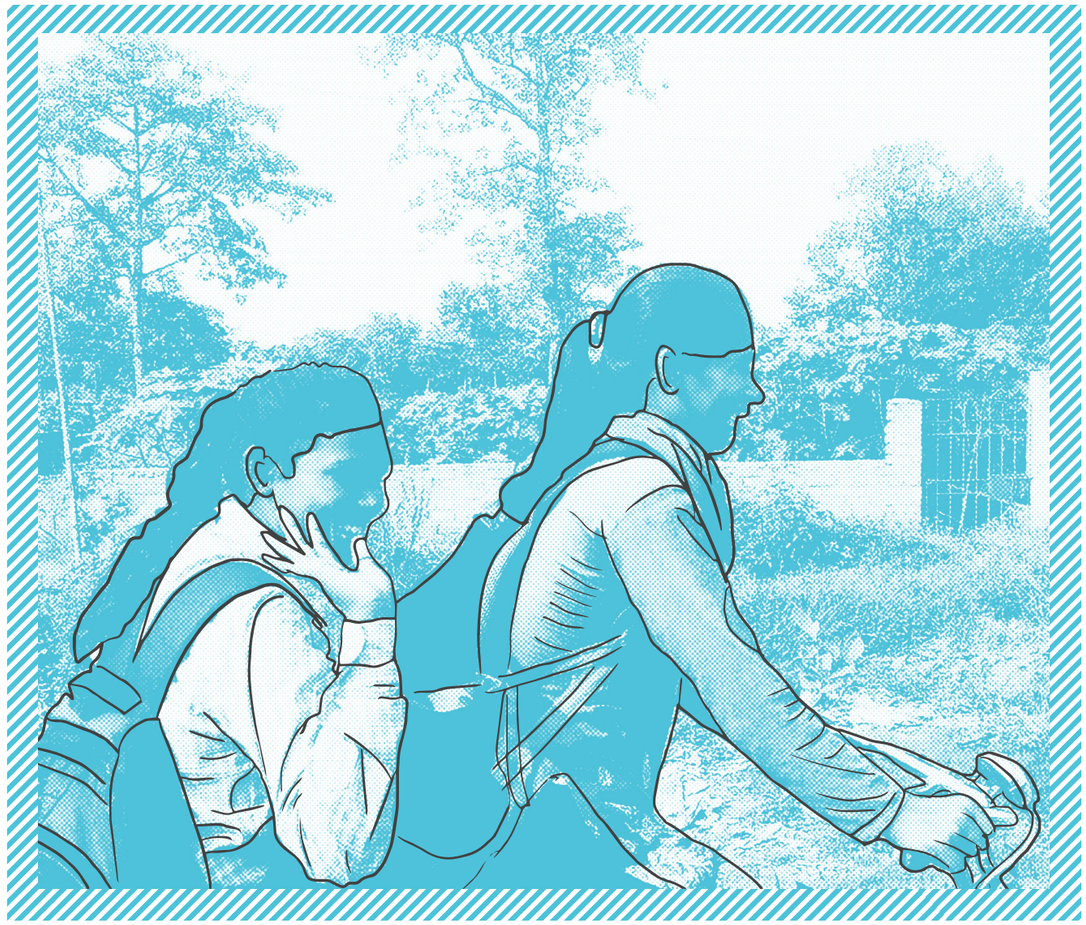
b) Create cycle rental schemes, plan and deploy Public Bicycle Sharing (PBS) systems at scale. PBS systems must cover demand-generating locations such as neighbourhood markets and colleges, apart from office districts and tourist locations. Both cycle rental schemes and PBS systems should have nominal registration fees and use a mix of technologies for registration and usage; dependence on smartphone apps alone drastically reduces access for women and other resource-poor sections of society.



> *Figure 18 Strategies to increase access to bicycles*

Box 5: Increasing access to cycles for girl students in Bihar

The Chief Minister's Girl-Child Cycle Scheme (the Mukhyamantri Balika Cycle Yojana) was introduced in 2006 in Bihar. Under the scheme, every girl child in the ninth grade was given cash to buy a cycle to commute to school. The rationale was that cycling would help reduce the school dropout rates of girls, especially due to lack of accessibility or safety. In three years, more than 8,00,000 girls were reported to have benefitted from the scheme, reducing dropout rates from 2.5 million to 1 million.[7] In the longer term, this scheme has helped to increase girls' enrolment rates in senior secondary school and college.[8]



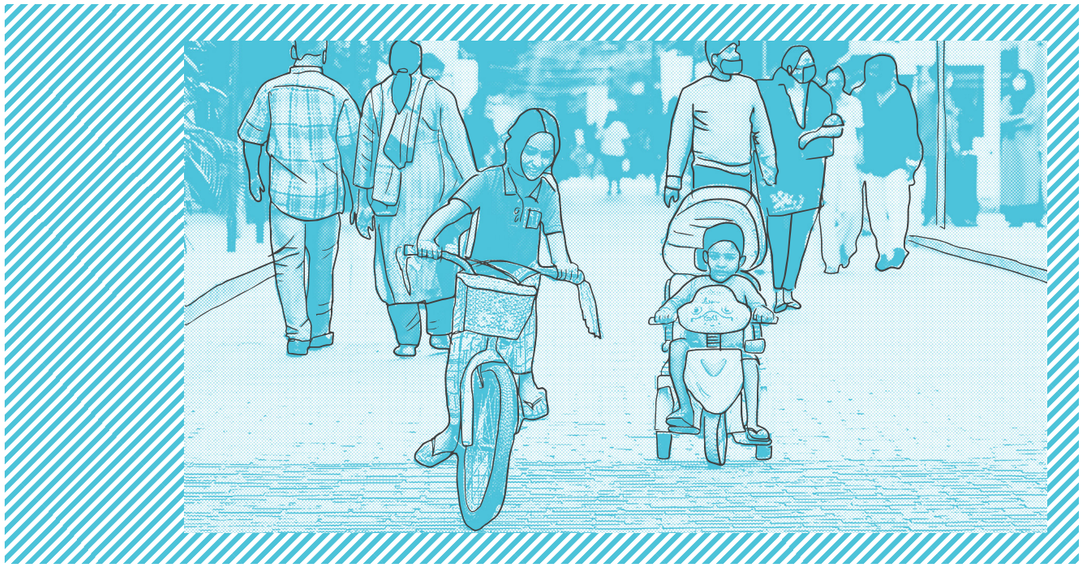
> *Figure 19 Girls cycling in Gaya, Bihar, Source: The Urban Catalysts*

7 *As reported in the Chief Minister's blog on April 4, 2010: http://nitishspeaks.blogspot.com/2010/04/mukhyamantri-balika-cycle-yojna.html.*

8 *For details, please see: https://www.ideasforindia.in/topics/social-identity/wheels-of-power-long-term-effects-of-the-bihar-*

3.2.3 IMPLEMENT BOLD PILOT PROJECTS TO MAXIMISE VISIBILITY AND DEMONSTRATE OUTCOMES

Pilot projects are useful for testing innovative concepts and ideas, addressing planning or design flaws and gauging effectiveness and adaptation to the local context. When combined with sustained events (See Section 3.2.2 : Understand and increase demand), they can build support for walking and cycling infrastructure. It is critical that such projects be implemented in locations with high visibility with a clear plan for scaling up. They must not be limited to small stretches of roads or one-off trials.



Box 6: Piloting as a strategy in Bengaluru

Bengaluru is a case example where footpaths were improved along 7 roads (10 km) in the central business district of the city. While conceived as a pilot project in 2010, the footpaths were improved along a street network and in the city centre to gain visibility. This approach is now being scaled-up to 50 roads in the city.

During the COVID-19 pandemic, a pilot project was implemented by the Directorate of Urban Land Transport (DULT) and the Indian Institute of Science (IISc) to pedestrianise a commercial street in the central business district, under the Clean Air Street Initiative.

> *Figure 20 Clean air street initiative along Church street, Bengaluru*
Source: http://churchstreetfirst.com/

The reduced volume of vehicles, people and business sales during the COVID-19 pandemic were used as levers by the Directorate of Urban Land Transport (DULT) and the Indian Institute of Science (IISc) to encourage the pedestrianisation of Church Street; the promise of business recovery in the well-connected business district was used to convince stakeholders to accept the idea. The pilot was inaugurated with the backing of the state political leadership; it was implemented on weekends from 7 November 2020 to 28th February 2021, with consistent outreach (Figure 20 and Figure 21). Quantitative data was collected to understand air quality, boarding and alighting at the adjacent metro-station and bus stops and pedestrian level of service. Qualitative data included sentiment analysis, perceptions of visitors, shop owners, working persons and their level of satisfaction. The intervention has led the political leadership to announce that seven other major commercial streets in the city will follow suit soon.

> *Figure 21 Clean air street initiative Church street, Bengaluru*
Source: http://churchstreetfirst.com/

3.2.4 CREATE A NATIONAL WALKING AND CYCLING STRATEGY

At the national level, create a time-bound, action-oriented 10-year strategy to support cities in prioritising walking and cycling. This can serve as a framework for cities to scale-up the initiatives undertaken in the Cycles4Change, Streets for People and Nurturing Neighbourhoods competitions, smart city proposals, climate action plans and become a part of the city's comprehensive mobility plan. The national strategy should provide performance-based grants to cities based on the following actions:

- Appoint a Walking and Cycling Commissioner, create dedicated walking and cycling teams and create a NMT Committee to enable coordination between different agencies (3.2.1).
- Create city-level walking and cycling action plans, with the goal of increasing mode shares of walking and cycling (especially amongst women and girls), improve road safety, and air quality. Cities should create a walking and cycling network, city-specific NMT-oriented street design guidelines to ensure consistent technical standards, publish annual walking and cycling surveys and develop a communication strategy to drive behaviour change (Figure 22) (3.2.2).
- Establish NMT Funds and encourage budget allocation of at least 33% from the municipal transport budget (3.2.5).

Finally, the national strategy should focus on capacity development programmes to build capacity across different levels of urban local bodies and Traffic Police (3.2.6).

> Figure 22 Elements of a walking and cycling action plan

Box 7: The Ethiopian Non-motorised Transport Strategy

In June 2020, Ethiopia published a Federal Non-Motorised Transport Strategy, based on guiding principles – safety, equity, environmental sustainability and public participation – and a vision and goals.

These include the reduction of pedestrian and cyclist fatalities by 80 per cent, increasing women's share to at least 50 per cent of cycling trips, keeping NMT trips at least 60 per cent of all trips and ensuring that air quality guidelines from WHO and Ethiopian NDC targets are met through reduced personal motor vehicle usage.

The strategy provides cities with an overarching set of street design principles and guidelines, in line with considering the local context and the requirements of the city. It sets detailed implementation targets for cities with short- and medium-term goals for constructing high-quality footpaths (429 kms), cycle tracks (306 kms) and pedestrian zones (in 11 cities) among other infrastructural additions. The strategy also states that the federal government will not fund transport projects which promote motorization or do not incorporate sustainable mobility practices.

3.2.5 PROVIDE FUNDING CHANNELS FOR WALKING AND CYCLING

ESTABLISH A NON-MOTORISED TRANSPORT (NMT) FUND

Create a NMT Fund at the city level to provide consistent finances for the implementation and maintenance of walking and cycling infrastructure. At least 33 per cent of the municipal transport budget should be allocated towards the NMT Fund (Figure 23). The NMT fund should be supported by annual budgetary allocations by state governments and performance-based national grants linked to the actions outlined in this guidance document. Simultaneously, any new road project should include financing based on minimum standards for walking and cycling as per the city level street design guideline or IRC103:2012 Guidelines for Pedestrian Facilities and IRC 11: 2015 Design and Layout of Cycle Tracks.

ALLOCATE FUNDING IN MASS RAPID TRANSIT PROJECTS

Cities across India are implementing metro-rail projects, expanding and upgrading railway stations. Dedicated financing for improving walking and cycling infrastructure, cycle parking and PBS systems along the mass rapid transit corridors and within a two-km radius of the stations, must be included within project proposals to encourage non-motorised modes for first and last mile connectivity.

CONSIDER ALTERNATE REVENUE STREAMS

Alternate funding sources for the NMT Fund include:

National level

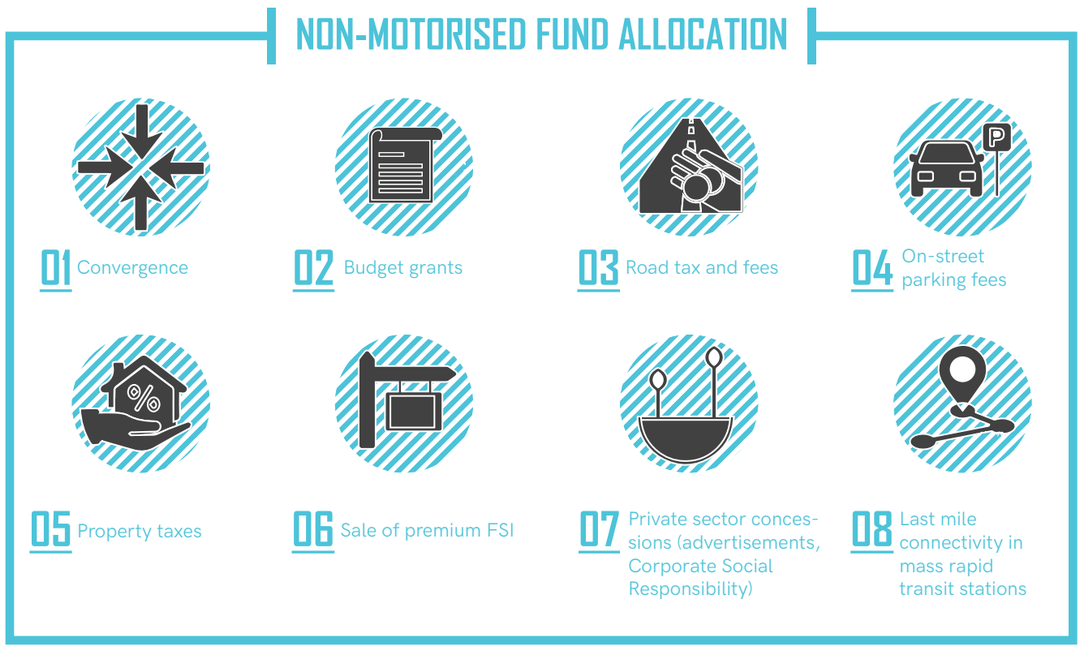
- Convergence from centrally sponsored missions such as Smart Cities Mission, HRIDAY and AMRUT by following consistent technical standards
- Dedicated funding through the national NMT strategy

State level

- Share of road tax and vehicle registration fees
- Dedicated budgetary allocations from the state budget

City level

- Revenues from on-street parking management
- Share of property taxes[9]
- Share of the sale of premium Floor Space Index in transit-oriented zones
- Private sector funding for the installation and maintenance of street furniture, public bicycle sharing systems, advertising when organising car-free days and corporate social responsibility (CSR) funds



Box 8: Financing the Ethiopian Federal Non-Motorised Transport Strategy

In June 2020, the Ethiopian Ministry of Transport released its Federal NMT Strategy. It requires state and city governments to spend at least 33 per cent of total transport spending on NMT and requires cities to create Local Transport Funds (LTFs) for urban transport. These funds will receive monies from the Ethiopian Road Fund collected through local fuel surcharges.

> Figure 23 NMT fund and sources

9 In 2021, Bengaluru included an additional 2 percent land transport cess on property taxes collected, which will be transferred to the Directorate of Urban Land Transport (DULT) for maintaining non-motorised transport infrastructure. Source: https://www.deccanherald.com/city/top-bengaluru-stories/bbmp-to-impose-2-land-transport-cess-from-april-1-936418.html

3.2.6 UNDERTAKE TARGETED CAPACITY DEVELOPMENT PROGRAMMES

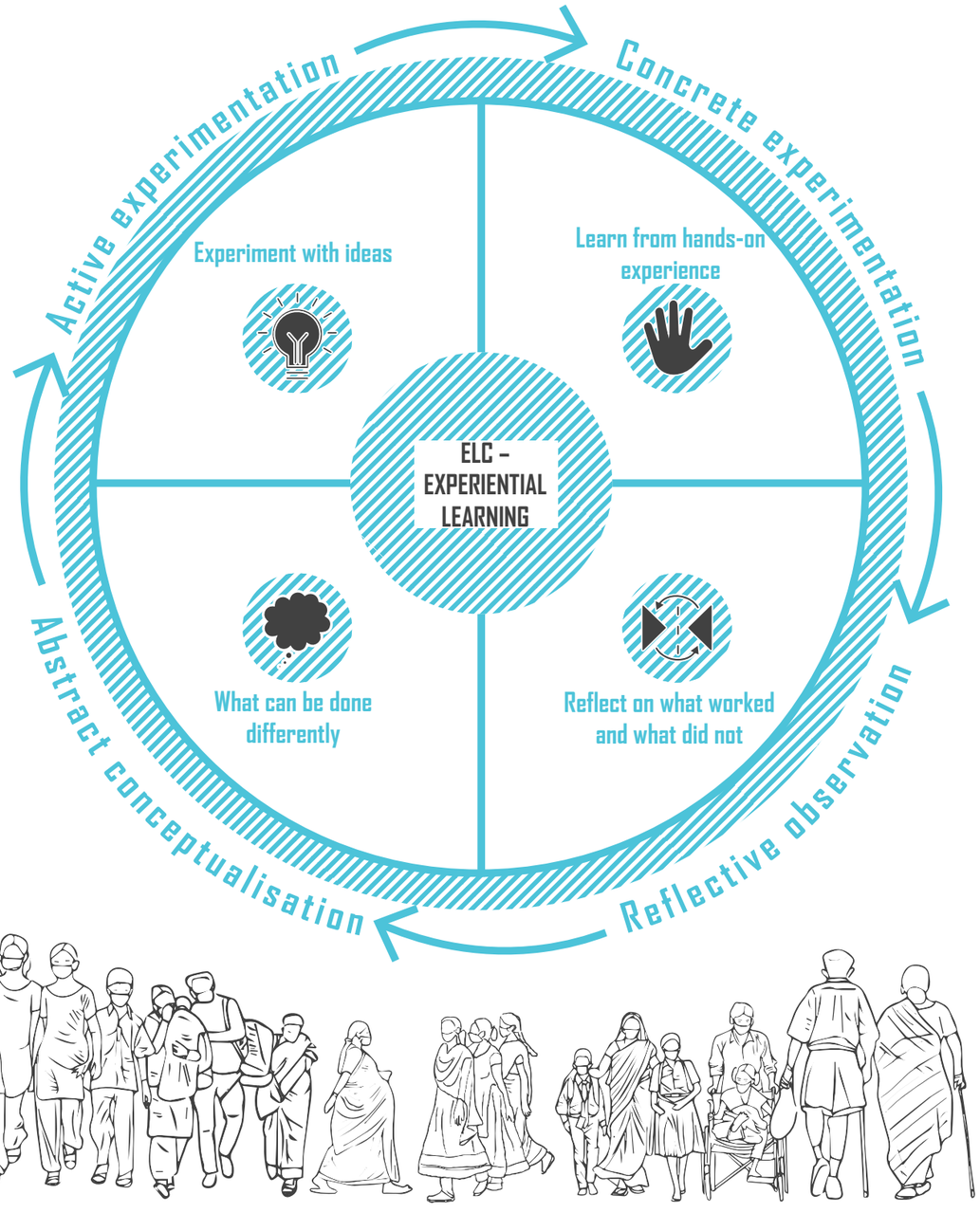
Develop targeted capacity development programmes at the central and state levels focusing on policy, planning, design, execution, and maintenance of pedestrian and cycling infrastructure. David Kolb's cycle[10] of experiential learning (Figure 24) can be used to conduct trainings using the National Urban Learning Platform (NULP), facilitate peer exchange amongst cities and site visits. The four stages are presented below.

a) Concrete Experience: Concrete experience describes the hands-on experiences that participants learn from. This can be used to sensitise all participants on the existing experience of pedestrians and cyclists, persons in wheelchairs or persons with hearing and visual impairments.

b) Reflective Observation: Participants reflect on their experiences, what went right and what could be improved. While engineers can focus on the street design elements, leaders can be nudged to reflect on the role of policies, investments for walking and cycling, need for technical standards, street management and maintenance.

c) Abstract Conceptualisation: Having identified and understood the defining characteristics of an experience, participants decide on what can be done differently. Leaders can be exposed to good practice policies and programmes from low and middle-income countries in Asia, Africa and South America, and contextualise it in their cities, whereas engineers can focus on the technical standards and design process.

d) Active Experimentation: The active experimentation phase of the learning cycle is involving participants experimenting with their ideas. Leaders can identify policy, and strategic priorities in their cities, whereas engineers can be engaged in problem solving.



> *Figure 24 Capacity development framework*

10 *https://www.academia.edu/download/31202086/Kolb.pdf*

04

Bus Based Public Transport

4.1 MYTH BUSTING

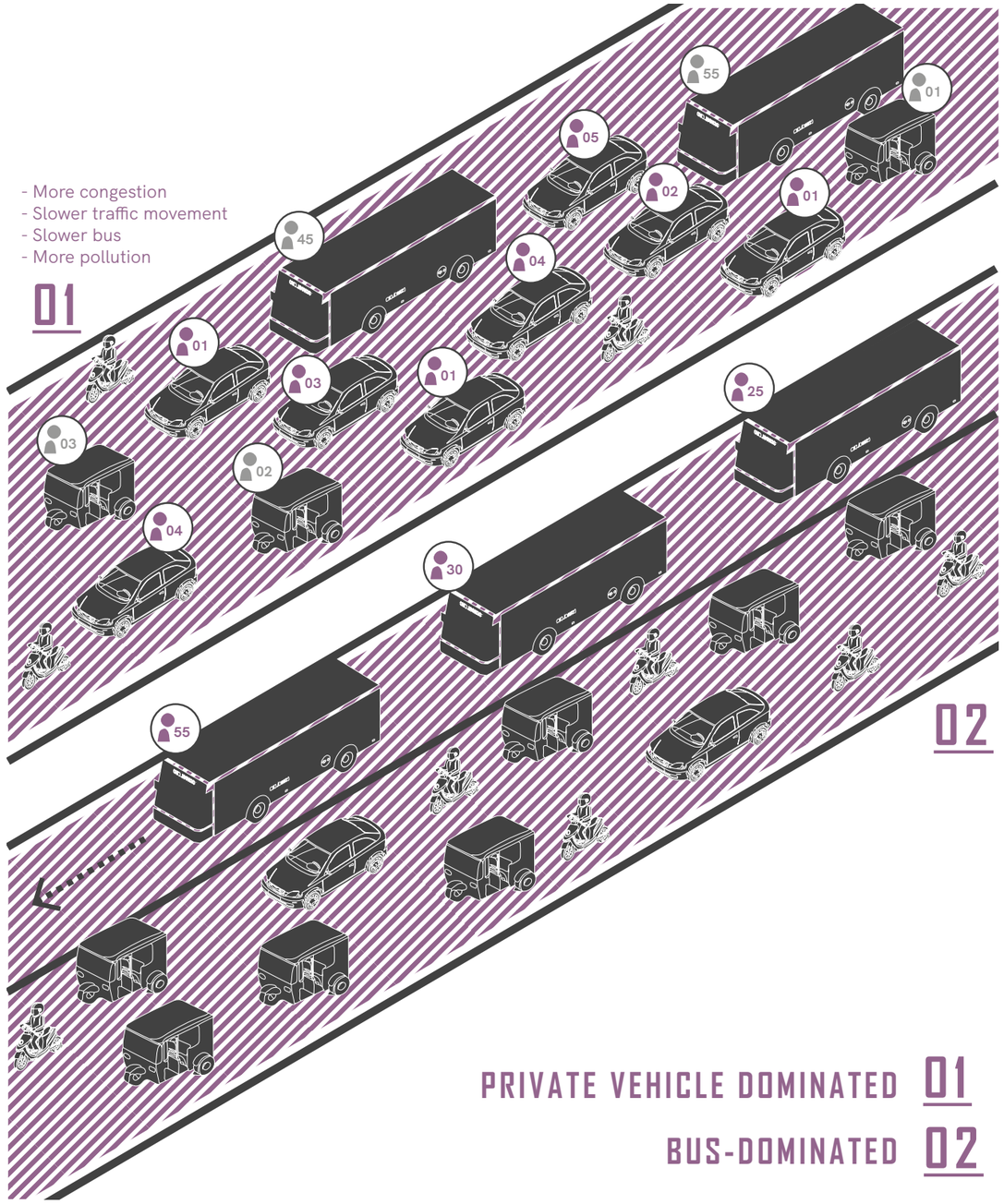
Bus based public transport has been subjected to many myths and biases in the past. COVID-19 has only added to that narrative, this section busts two such myths.

MYTH 1 BBPT COULD LEAD TO MORE INFECTION DURING PANDEMIC

With the onset of the COVID-19 pandemic, there has been a global and drastic decline in public transit ridership due to the fear of infection and government sanctioned capacity restrictions. The risk of infection has more to do with the fact that buses tend to get over-crowded and involve lengthy transit times. As is the case in any other public or shared space, maintaining physical distance and following other safety protocol in public transport can drastically reduce the risk of infection. Hence, to enable social distancing, it is crucial to increase the number and frequency of buses. We need more buses, so that each bus can carry fewer people. A higher frequency of buses would help reduce the number of people travelling in a bus at any given point in time, so commuters will be able to travel even longer distances safely.

MYTH 2 BUSES ARE CONGESTED AND POLLUTING

Buses are often perceived as slow, polluting, and congested. However, on comparing the space occupied and occupancy level of a car to that of a bus, it becomes evident that buses are the more efficient and sustainable mode of transport. For example, on average, a 12.5 SqM car can transport 4-5 passengers, while a 27 SqM bus can transport 50-54 passengers at a time. Hence while the bus will have higher number of passengers per kilometre, it does have lower values of per capita (person) emissions. Therefore, buses opposed to cars, consume road space far more efficiently and also manages to transport higher volumes of passengers, resulting in lower levels of congestion.



> *Figure 25 Bus vs Car - Space economics*

4.2 GET IT RIGHT!

ACTIONS		TIME - PERIOD			
		0-6 m	6 m- 1 yr	1-3 yrs	>3 yrs
What kind of bus service do you need?					
1	Understand commuter demand(City)	▨	●		
Institutional design and arrangement					
1	Financing Institutional arrangement (National)	▨	▨	●	●
2	Setting up a Strong, Smart and Responsive Public Transport Authority (State/City)	▨	▨	●	
3	Setting up the team for PTA (State/City)	▨	▨	●	●
4	Service and Business (PTA - State/City)	▨	◑		
Long term and systematic investments					
1	Making a business plan (PTA - State/City)	◑			
2	Institutionalise business plan (PTA - State/City)	▨	▨	●	●
How do you get started and sustain a good bus service					
1	Communication and outreach plan (part of business plan) (PTA - State/City)	◑			
2	Integration unions and private operators (PTA - State/City)	▨	▨	●	●
3	Institutionalising buys in (PTA - State/City)	▨	▨	●	●
4	Building back better – Learning from failures (PTA - State/City)	▨	▨	●	●
Procuring and embracing technology					
1	Make a bus modernisation plan (PTA - State/City)	▨	◑		
2	Gaining cultural acceptance (National/State/City)	▨	▨	●	●

LEGEND : ▨ Preparation ◑ Preparation + Implementation ● Implementation

> *Table 2 Action points*

This section will offer strategic advice to cities having an existing Bus-Based Public Transport system and to cities that are planning a new one. In many cities public transport systems comprise of both BBPT as well as IPT. Hence these must be understood as complementary modes; integration between them is the key. For more details on the same, please refer to the section on IPT. For more about cities where IPT is more dominant or is the only mode of transport too, please refer to the section on IPT.

The following actions are recommended for cities in the immediate-, short-, and medium-term to prioritise bus based public transport.

4.2.1 INSTITUTIONAL DESIGN AND ARRANGEMENT

▨ WHAT KIND OF PUBLIC TRANSPORT AUTHORITY IS NEEDED?

To effectively manage urban transport, cities require a strong, smart and responsive Public Transport Authority (PTA). This agency will lead the efforts to co-ordinate, plan, monitor and implement the necessary infrastructure required.

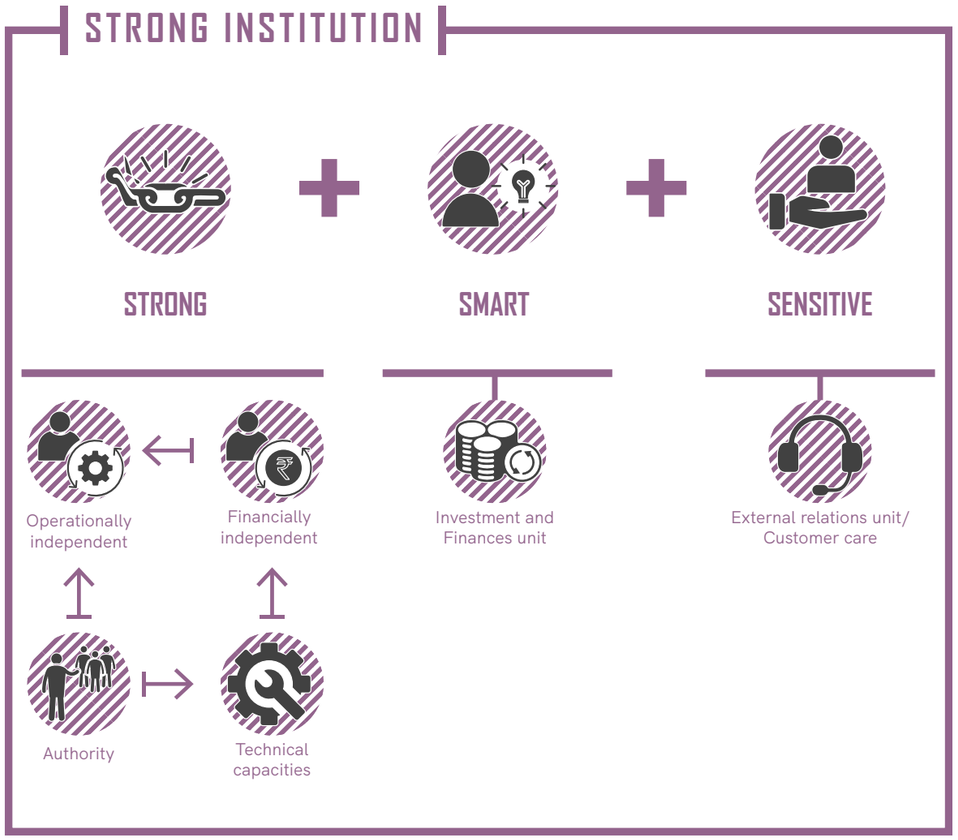
A strong PTA can be defined as a **semi-autonomous authority**[11] responsible for all urban transport modes in a city. The PTA is a new or existing city level department that has the decision-making power for the city-level public transport system (please refer to the next section). This entity should be **operationally independent** and hence should be **financially independent**. This can be achieved by setting up an Urban Transport Fund, which can draw incomes through state and central grants, transport tax on land (proximity tax), road taxes through the Motor Vehicles Act, and franchise fees (based on the model of operation). The PTA also requires active engagement and investment in **building its technical capacities**. This would also require sufficient funding and flexibility in its payment structure for it to be able to lure industry experts by compensating their usually signifi-

11 *A semi-autonomous authority is essentially a body with autonomy of a private sector but with the regulatory oversight of a governing authority. It is envisioned as a technically sound city department that is directly responsible to the highest authority in city government. Hence giving it sufficient power to take decisions but with necessary oversights.*

cantly higher private sector remunerations. To create and manage an efficient public transport system, setting up a dynamic institution with a long-term outlook (and a culture of proficiency) is essential.

A smart PTA allocates specific wings or personnel to draft, plan and create a business plan for its transport services.

Lastly, **a responsive PTA** allocates funds and personnel to an external relations unit, which is primarily focused on capturing, understanding and taking action to address commuter feedback.



> *Figure 26 Features of a Public transport authority*

WHAT KIND OF INSTITUTIONAL ARRANGEMENT DO YOU REQUIRE?

While a Public Transport Authority is key to ensuring efficient bus services, it is important to design a long-term institutional arrangement to ensure its sustenance. This would also require the careful design of functional and collaborative arrangements between agencies. All entities involved in the service of providing transport facilities should be brought on board with a long-term plan and their roles and responsibilities clarified; overlaps should be made redundant, and a functioning hierarchy created and followed.

INDEPENDENT AND REGULATORY BODY

This body will define Service Level Benchmarks (SLBs), fare prices and fare Integration formula. It must be instituted at the state level. The creation of such an entity has also been recommended by the 14th Finance Commission in India.[12]

PLANNING, CO-ORDINATION, MONITORING, AND IMPLEMENTATION BODY

This body will identify all travel routes, draft a city mobility plan, build and maintain physical infrastructure, handle fare collection and enforce rules set by the regulatory body. In cities with multiple modes of transportation, a Unified Metropolitan Authority should play this function. The Kochi Metropolitan Transport Authority established under the KMTA Act 2019 is an example. In the case of smaller cities, a Transport Department within the municipal body could fulfil the above functions.

BUS OPERATING AGENCY (DAY TO DAY SERVICES)

The agency will primarily run the day-to-day activities of the bus service, ensure that the SLBs are adhered to, and draft business plans are followed. It will be responsible for managing the bus operations and their planning. The buses may belong to the state transport undertakings, special purpose vehicles, or even private bus companies. In some cases, the last two bodies (planning and operations) can function within the same authority for better management and coordination.

12 *Please refer (finance Commission, 2014)*

Depending upon the local statutory and political setup, different states/ regional government or cities can adopt the above structure. As a guiding principle, all three functions (regulatory, planning/implementation and operations) need to be fulfilled. Whether these functions are fulfilled by one comprehensive authority or two or three different ones may depend upon the local context.

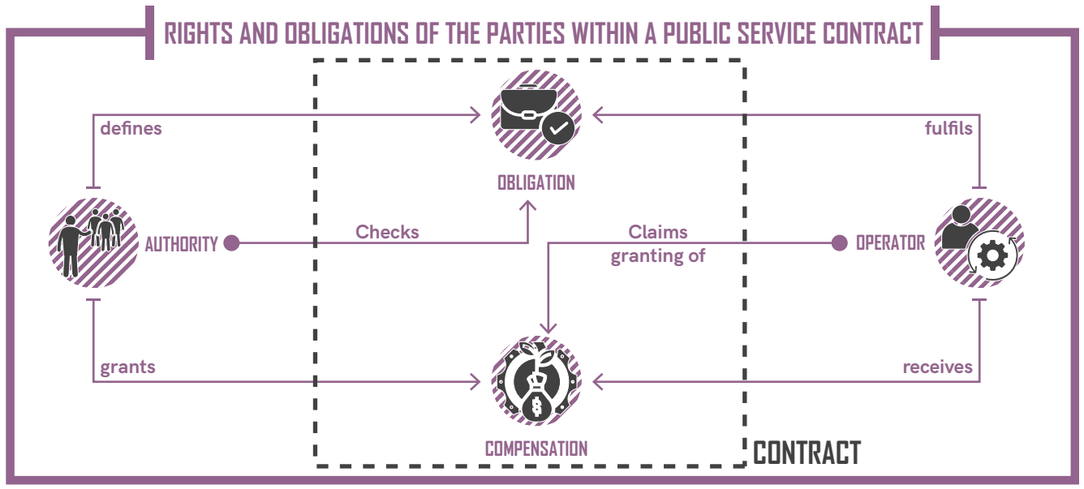
> *Figure 27 3 Tier system*

Box 11 - Institutional arrangement:

In the case of Seoul, the bus system functions under a quasi-public bus system. In this system, the Seoul Metropolitan Government (SMG Nodal authority) acquired the position and functional capacity to perform regulatory, monitoring, and planning functions, while coordinating with other public agencies; a joint council run by the SMG and private players manages the revenue distribution, and private players operate the bus system. It is a robust collaborative system. In LAMATA (the nodal authority) in Lagos, the main BRT line is run as per the franchise model, where a private bus operator procures, operates, and maintains the service. Across all models, the critical aspect is to separate the **regulatory, planning, and implementing authority from the running of the daily bus services.**

HOW DO YOU STRIKE BALANCE BETWEEN 'SERVICE' AND 'BUSINESS'

To ensure that bus services are able to respond effectively to travel demands, it is imperative to define a Public Service Obligation (PSO)[13] by a competent authority, in this case a Public Transport Authority. To legalise this, it is imperative for the PTA (whether city led or state led agency) to enter a Public Service Contract (PSC)[14] with a bus operator. The PSC will define a stable long-term framework and the necessary conditions to produce and run bus services efficiently and effectively. For the former, it clearly defines how public transport services need to be delivered through Service Level Agreements (SLAs)/Service Level Benchmarks (SLBs). For the latter, it clearly defines the compensation for services provided and enables long-term planning (by guaranteeing these payments for a certain period) and it minimises political interference in daily operations and management. The PTA should also include performance-based incentives to improve operators' services over time. Finally, the PSC should be modelled after a gross cost contract, under which the compensation is to be allocated to per km subjected to minimum service level agreements.



> *Figure 28 Rights and obligations of parties within a PSC, Source - Inno-V et al, 2008*

13 *A PSO can be defined as "A requirement defined or determined by a competent authority in order to ensure public passenger transport services in the general interest that an operator, if it were considering its own commercial interests, would not assume or would not assume to the same or under the same conditions without reward." Further details refer (Dieter Egger, 2009.)*

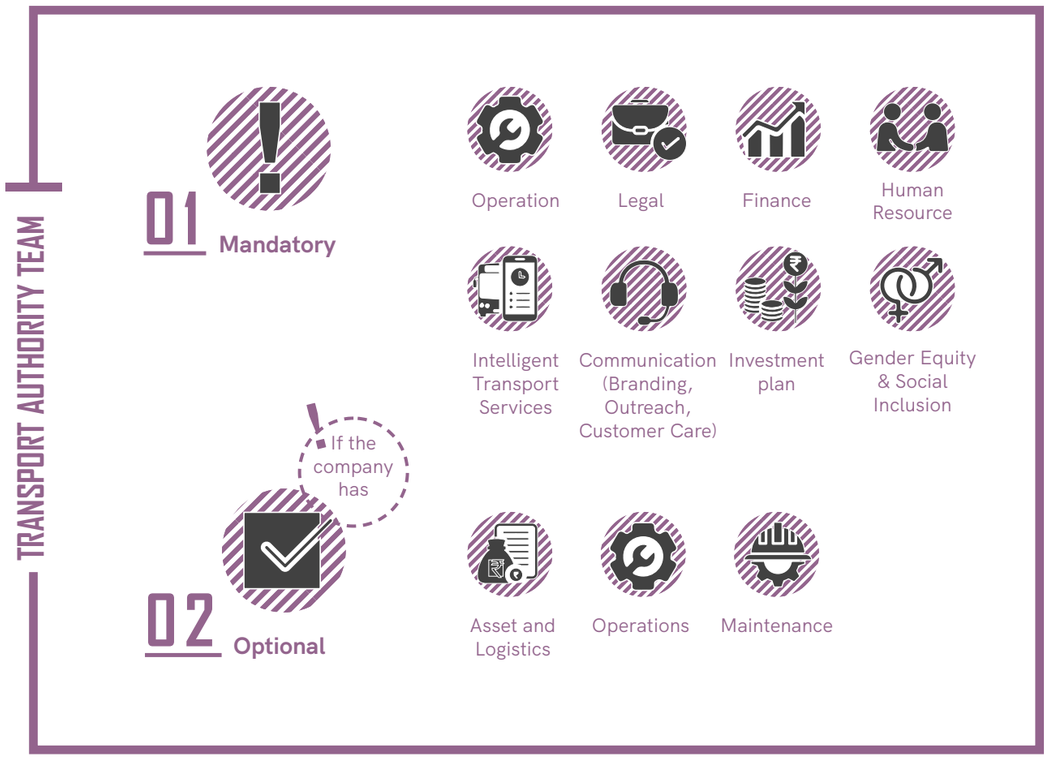
14 *A PSC can be defined as "one or more legally binding acts confirming the agreement between a competent authority and a public service operator to entrust to that public service operator the management and operation of public passenger transport services subject to public service obligations." Further details please refer (Dieter Egger, 2009.)*

WHOM DO YOU NEED TO RUN A GOOD PUBLIC TRANSPORT AUTHORITY?

To run a good bus service, the following positions need to be created:

1. Mandatory roles: operation, legal, finance, human resources, intelligent transport services, communication (branding, outreach, and customer care), investment plan and Gender Equity and Social Inclusion (GESI)
2. Optional: If the company has assets, asset and logistics, operations, and maintenance.

It is also important to ensure that these roles are not **Joint Charges**.



> *Figure 29 Transport authority team*

4.2.2 LONG TERM AND SYSTEMATIC INVESTMENT

MAKE A BUSINESS PLAN FOR BBPT

While the city mobility plan spells out in detail the future growth trajectory of urban transport, this must be supported by a Service Business Plan. It is often debated whether public transport is a "service" or a "business"; rather than debating the difference, we call it a Service Business Plan to include both the objectives. The Service Business Plan should have three key components:

BASELINE

This section will elaborate on the existing situation of the BBPT system. It should document fleet sizes, fleet infrastructure (routes, depots, and garages) scheduling and dispatching, administrative facilities, maintenance facilities, human resources, fares, capital expenditure and revenue expenditure (operational and maintenance).

OPERATIONS PLAN

This section will chart out the expansion or reform plans for BBPT. It should include all components that need to be planned to ensure the effective operation of BBPT. Some of the mandatory components are route rationalising, fleet expansion, physical infrastructure expansion (routes, bus stops, and depot), maintenance plan and a modernisation plan. (This section will also plan and investigate how to assimilate newer technologies into existing operational or management functions.)

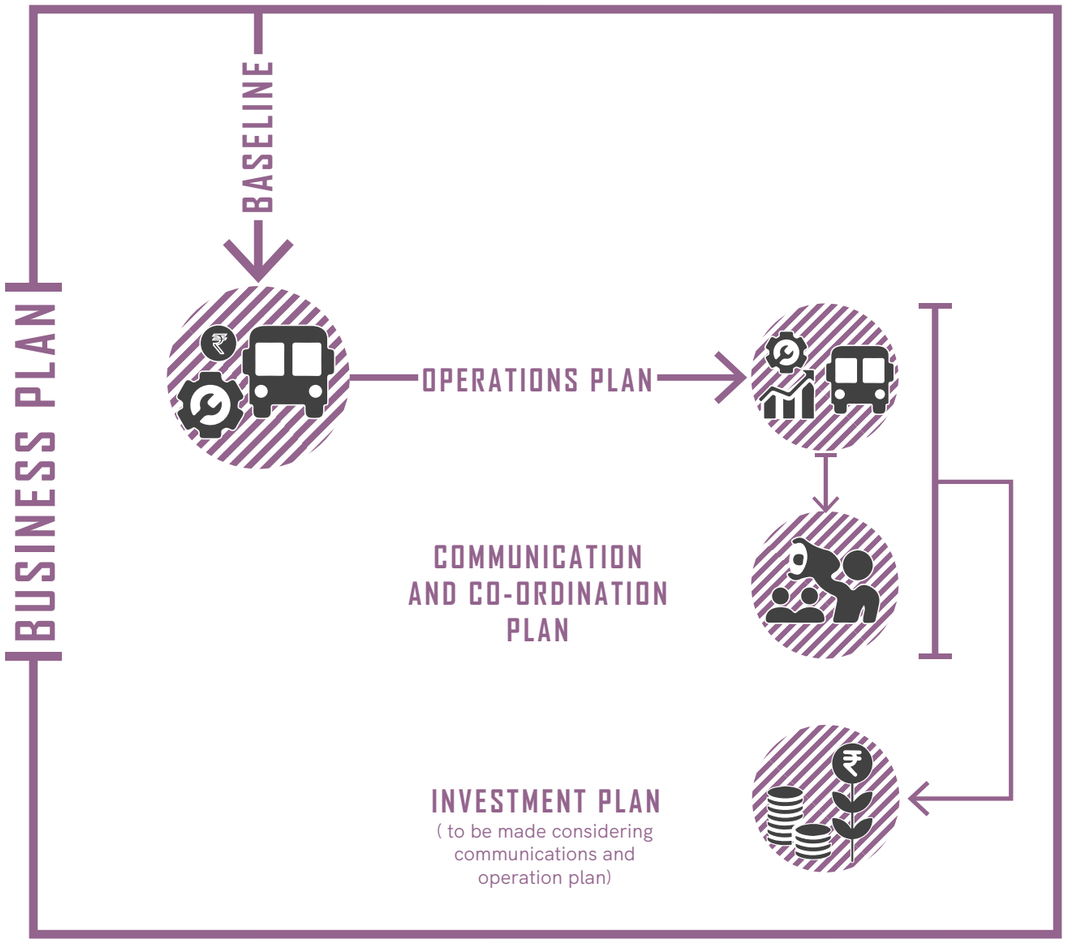
COMMUNICATION AND OUTREACH PLAN

This section will plan the required methods and degrees of participation with relevant stakeholders. It must be prepared in conjunction with the Operations Plan.

FINANCIAL - INVESTMENT PLAN

The investment plan should include a forecast of all anticipated expenditures (capital assets and recurring expenses). And also,

identify possible revenue streams (state or central grants, soft loans, urban transport fund, franchise fees, advertisement fees, real estate development, etc.). This must be made in conjunction with the Operations and Communication and Coordination Plans. Finally, the above processes need to be institutionalised. Hence it is imperative to create wings or appoint personnel whose sole function will monitor and develop the Service Business Plan periodically (every five years).



> *Figure 30 Parts of a business plan*

HOW CAN YOU INSTITUTIONALISE THE PLAN MAKING PROCESS?

Finally, the above processes need to be institutionalised, hence it is imperative to create wings or appoint personnel whose sole function will be to monitor and develop the Service Business Plan periodically (every 5 years).

4.2.3 HOW TO GET STARTED AND SUSTAIN A GOOD BUS SERVICE?

GENERATING BUY IN

COMMUNICATION AND OUTREACH PLAN

An effective communication plan is imperative to generating buy-in among citizens, commuters, and the like, as it empowers and informs citizens and all other stakeholders to make informed decisions. Here the idea of communication is focused more on generating buy-in or a sense of responsibility through the buy-in. This can be achieved by organising social media campaigns and awareness days, workshops with citizens, and stakeholder meetings to emphasise the importance of BBPT and through participatory planning.

INTEGRATION WITH UNIONS AND PRIVATE OPERATORS

Most cities in India, have a strong IPT system, which is responding to the demand for a strong robust and reliable public transport system. Whether one wants to plan and create a new system or reform of the existing one, it is imperative to organise and integrate unions and private operators into the Larger Public Transport Network. For further details, please refer to the section on IPT.

INSTITUTIONALISING BUY IN

Another critical aspect is the need to continue this effort as an institutional practice, to ensure buy in is continued. These efforts can greatly improve the overall public transit patronage. Here, institutional practice could mean setting up specific wings to oversee these functions, whether it is setting up communication campaigns like the "public transport day" organised by KMRL, or ensuring representation from all agencies by means of a governing council like the case of LAMATA.

BUILDING BACK BETTER - LEARNING FROM FAILURES

A success story may start with some initial failures. A resilient organisation constantly learns from its mistakes and failures and perseveres to build back better. While building back better could be incorporated as a mechanism, by putting in place a strong monitoring and evaluation framework, this also indicates a certain value/attitude.

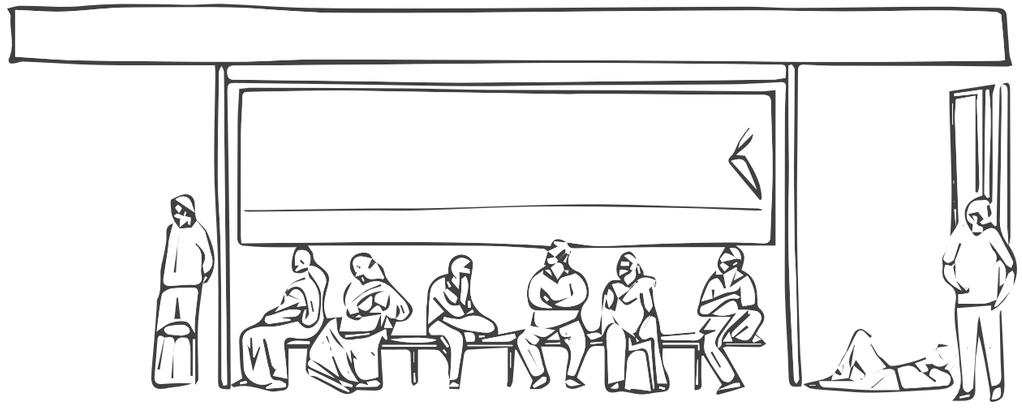
Box 12 -

In the case of the Seoul bus reforms of 2003, the city government faced massive protests prior to the pilot due to the lack of sufficient buy in from citizens, bus owners and operators. This resulted in the constitution of the Bus Reform Civic Centre led by civic society organisations who were supportive of the reforms. The body went on to become a key stakeholder in negotiating the concerns of operators, owners, drivers, civil society organisations and citizens, eventually playing a critical role in developing and setting up the Seoul Bus System.

4:2:4 PROCURING AND EMBRACING TECHNOLOGY

It is impossible to move forward in the present Information Age without the appropriate technology. Hence, the infrastructural building should not be limited to the building of physical infrastructure (BRT lanes, bus fleets, and depots) but must also include procuring and embracing cleaner technology (such as electric vehicles[15] , CNG and hydrogen-powered cells and biofuels) and digital infrastructure (namely, smart cards, transit apps, and bus fleet management systems). New technology can either be procured along with necessary technical expertise or be developed in-house. Given that resources must be used judiciously, the approach chosen must be incremental. This approach also allows the widespread acceptance of such infrastructure, as it slowly assimilates into the users' daily lives. The incremental approach can be planned and implemented as part of the Bus Modernization Plan to be part of the Service Business Plan.

15 Refer "Procurement of Electric Buses: Insights from Total Cost of Ownership (TCO) Analysis" under bus based public transport in "additional resources"



4:2:5 WHAT KIND OF BUS SERVICE DO YOU NEED?

Box 13 -

The incremental approach was adopted in Seoul, where owing to earlier investments into setting up traffic management systems, the installation of the TOPIS system was merely an upgrade. Further, the acceptance of the T-Money card was made easier because earlier versions of the smart card were already in use. Difficulties may arise when changes are not introduced incrementally. This is being witnessed in Lagos, where the traditional ubiquitous IPT system, that is, Yellow buses/ Danfo's are set to be phased out. It is expected to result in resistance from operators as well as citizens.

To conceptualise and execute a "commuter first" bus service, it is imperative to understand the Demand-Supply Relationship. Here demand reflects the expectations or requirements expected of the BBPT system, and supply reflects the kind of service that needs to be provided. To articulate the same, we can employ the framework laid down by (Walker, 2012) and (Higashide, 2019) which goes to define this relationship through seven key demands made by commuters.

The demands are as follows:

COMMUTER SPECIFIC

Accessibility:
Does it take me where I want to go?

The first thing to do is to understand whether there is a transit station/stop close to the origin and destination of a commuter's trip? Secondly, one must evaluate whether the transit system connects the origin to the destination.

Availability and frequency:
Does It take me when I want to go?

Span of service is a concept which helps answer the question of whether transport runs at all when you need it? What is the scheduled time of the first and last trip in each direction? How frequent is a bus service? Transit Frequency is a critical factor, which contributes to freedom of mobility.

Time and speed:
Does it save me time?

Is the travel time too long for the desired trip? Frequency and speed are critical here. Is the commuters travel time useful?

Affordability:
Can I afford it?

What is the cost? Is it affordable? Is it cheaper to travel using private transport than BBPT and other shared transport services?

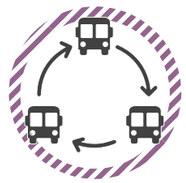
Civility:
Does it give me safety and comfort?

Travel choices are often less about mobility and cost, and more about whether the transit is clean, safe, and comfortable? This is a subjective matter and hence the nuances would vary based on cultural contexts, gender, social groups, and age. This factor is particularly relevant to the COVID-19 pandemic; therefore, one must also consider whether safety protocols are being followed.

COMMUTER SPECIFIC

Reliability:
Can I trust it?

Trust in the available modes of transport is decisive. Is the service unpredictable or fixed? Moreover, is the frequency of buses sufficient to allow one to follow through with one's plans?



Spontaneity:
Do I have the freedom to change my plans?

Here the variation is whether the transit service can accommodate spontaneity in a commuter's trip. That is, whether it allows for last minute changes in trip plans. This question is highly dependent on the frequency.

Given the current challenges of climate change it would also prove imperative to extend the above framework to also include a demand of the time/era. That is the demand for sustainability.

NEED OF THE HOUR

Carbon free service:
Is the bus using clean technology?

Here the focus would be to understand and evaluate whether the bus service meets the necessary technological and operational standards so that climate goals can be met and one's carbon footprint is reduced.

While the above eight demands and the questions raised are relevant across all contexts, the responses and actions are subjected to practically adapting them to the local context (cultural, social and economic), citizens, city commitments (for example - sustainable development goals) and constraints (finances).

05

Informal Public Transport

5.1 MYTH BUSTING

MYTH 1

IPT VEHICLES CREATE TRAFFIC CONGESTION AND HENCE SHOULD BE BANNED

IPT vehicles are often treated as a cause of traffic congestion but they do carry more people than private motorised vehicles. There is no control on the ownership or usage of private vehicles in Indian cities. An absence or undersupply of IPT vehicles will lead to an excessive dependence on private vehicles and hence cause more traffic congestion. There is an urgent need to get governments to consider IPT as a sustainable mode of transport. They are sometimes irregular, lacking in discipline and poorly operated; they also sometimes randomly overtake other IPT vehicles in order to get more passengers. But they provide an affordable and flexible mode of transport more efficient than two-wheelers. Banning IPT vehicles can lead to increased dependency on private motor vehicles and cause more traffic congestion. Instead, the cities should make an effort to formalise the sector and establish service level benchmarks for ensuring discipline and passenger comfort. The ideal way to find out exact number of permits to be issued in IPT sector, is to first finalise the expected mode share of IPT along with mode shares of other sustainable modes. Based on the calculations of passenger trips by IPT, peak hour factor etc- the number of IPT vehicles required can be calculated.

MYTH 2

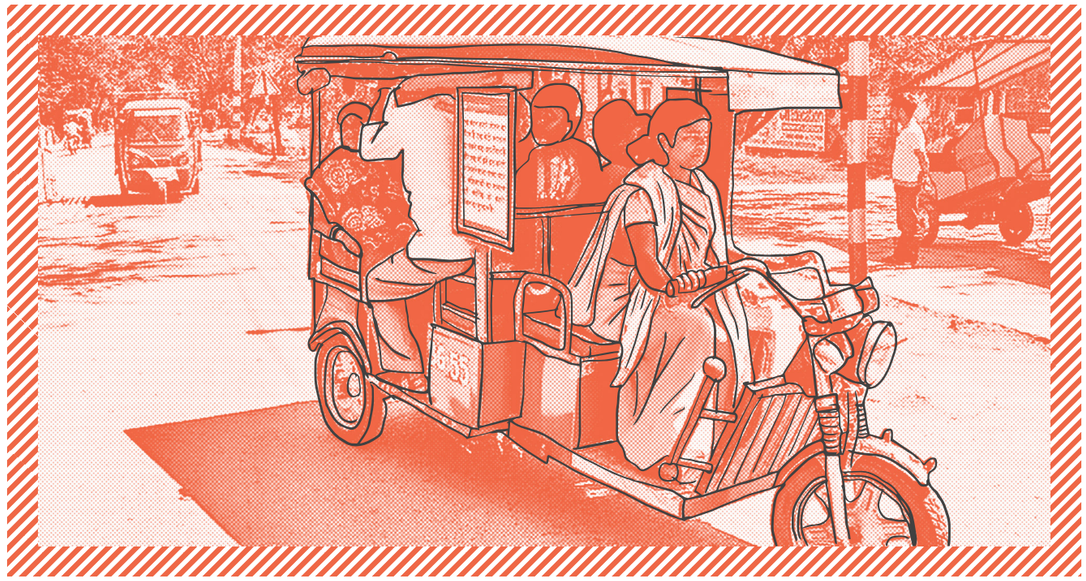
WOMEN DO NOT WANT TO JOIN THE IPT INDUSTRY AS DRIVERS AS THERE ARE MANY OTHER SECTORS FOR THEM TO WORK IN

While there are many other job opportunities for women, women drivers can improve overall system safety and can provide more comfort to women passengers.

MYTH 3

INTRODUCING A NEW PUBLIC TRANSPORT SYSTEM WILL AUTOMATICALLY SHIFT PEOPLE FROM IPT TO THE NEW SYSTEM AND IPT WILL EVENTUALLY ACT MERELY AS A FEEDER SERVICE

It has been found that IPT vehicles continue to ply parallel to new public transport systems if the IPT operators are not provided better alternatives. While planning such systems, stakeholder consultations should be arranged right from the beginning; stakeholder consultations are essential to ensure that the livelihood of IPT operators will not be affected adversely. Often the new systems expect existing IPT vehicles to operate as feeder services to the new public transport system; but such complementary systems cannot be expected without stakeholder consultations right from the beginning.



> *Figure 31 A woman auto rickshaw driver*
>
> *Source: https://karuna-shechen.org/project/female-electric-rickshaw-driver/*

5.2 GET IT RIGHT!

The following actions are recommended for cities in the immediate-, short-, and medium-term for achieving IPT reforms.

ACTIONS		TIME - PERIOD			
		0-6 m	6 m- 1 yr	1-3 yrs	>3 yrs
Set up a 'Mobility Department' at the city level					
1	State Government directs cities to work on IPTreforms	▨			
2	ULB sets up a 'Transport Committee'	▨			
3	Transport committee sets up a 'Mobility department'	▨			
Acknowledge the role of IPT					
1	**Bring statutory reforms:** Mobility department facilitates the formation of IPT co-operative society		◔		
2	**Identify other aligned objectives:** Mobility department identifies long term objectives		◔		
Generate Political Will for investing in IPT					
1	Mobility department makes a case to support IPT reforms		◔		
Conduct Social Impact assessment					
1	Prepare gender equity and social inclusion plan		◔		
2	Prepare a Communications and Outreach plan		◔		
Prepare IPT modernisation plan					
1	Create a Detailed Project Report (DPR) on the Transition		◔	▨	
Implementation of the DPR					
1	DPR implementation			●	●

LEGEND : ▨ Preparation ◔ Preparation + Implementation ● Implementation

> *Table 3 Actions to be taken over the next 3 years and beyond*

5.2.1 SET UP A 'MOBILITY DEPARTMENT' AT THE CITY LEVEL

The state government shall assign this task of IPT reforms to the ULBs or district authorities. Irrespective of the State directives, Urban Local Bodies (ULBs) or district authorities can take the lead in the process of IPT reforms. The long-term institutional arrangement made will play an important role in IPT reforms. Irrespective of the long-term goal, like air quality improvement or the introduction of a new transit mode in the city, the formalisation of the IPT sector is highly recommended for cities dominated by IPT.

The immediate step cities can take is 'formation of IPT committee' that is formed by senior representatives from various departments. The committee shall facilitate the process of formation of 'mobility department'. The formation of 'mobility department' might require time and hence this committee can function as decision making body in the interim. The department's focus shall be on 'mobility' which considers management, operations, commuter satisfaction along with creation of infrastructure rather than being a conventional department that deals with building roads and bridges only. Eventually, the cities shall form 'Unified Metropolitan Transport Authorities' as recommended in the National Urban Transport Policy.

For any type of an arrangement, certain key staff positions are a must. These should include five key divisions, their heads and support staff as per the requirement: legal, financial, operations, Gender Equity and Social Inclusion (GESI) and communications and outreach. The mega and metro cities shall hire technically qualified staff from the market for setting up the department. In mid-size and small cities, the dependency on IPT vehicles and associated challenges are more severe, and hence they will need all key positions. If the implementation agencies find it difficult to recruit technically qualified staff, they can depute existing staff and develop their capacities to perform the assigned roles. While adopting models of corporatisation or co-operatives, it is equally important to ensure the creation of a long-term institution, which can coordinate with the new formal entity. The following table describes various options with details.

	UNIFIED METROPOLITAN TRANSPORT AUTHORITY (UMTA)	MOBILITY DEPARTMENT	SPECIAL PURPOSE VEHICLE/ PUBLIC COMPANY	IPT COMMITTEE
Time to formulate	Long	Moderate	Moderate	Quick
Autonomy	High	Moderate	High	Low
Pre-requisites	Requires high amount of statutory compliances	Requires moderate amount of statutory compliances	Willingness of Urban local body(ULB) to form a new SVP is essential	It shall be chaired by the municipal commissioner
Multi-stakeholder coordination	Easy	Easy	Easy	Easy only if representation from all stakeholders
Role	UMTA will ensure inter agency coordination including IPT	This department shall handle all types of transit- BRT, IPT, NMT, etc	SPV can be formed only for specific public transportations and/or IPT operations	It shall be chaired by the municipal corporation
Suitability	Introduction of a new transit mode and multimodal integration	Formalisation of IPT sector and multiple other objectives	Air quality reforms by technology interventions	Formalisation of IPT sector
Relevant case study	Kochi	Manila	Dar es Salaam	---

> *Figure 32 Comparative analysis of available options for a long-term institutional arrangement*

The implementation agency shall further identify the roles of various stakeholders.

BENEFICIARIES

IPT operators and IPT users are key beneficiaries of the project. The project should be designed to improve their experience. Apart from this, there could be secondary beneficiaries—for instance, in case of introduction of a new transit mode, potential users and agencies of that mode will also fall under this category.

SUPPORTING GOVERNMENT AGENCIES & DECISION MAKERS

The implementors are various government and semi-government agencies, special purpose vehicles of government and decision-makers associated with them. Within the identified set of implementors, the agency that is willing to bring about IPT reforms shall take lead in coordinating with other agencies.

PARTNERS

The partners could be one or more from the list below. Partners need to be identified to initiate a dialogue on the key benefits of the project for mutual parties, and from the beginning of the project, these partners should be involved.

a) Financial institutes such as national banks or multinational development banks

b) Non-banking finance companies, microfinance institutes, and credit societies

c) Original Equipment Manufacturers (OEMs) and suppliers of new IPT vehicles

d) IPT maintenance workshop owners

e) Private transit operators in cases where the city is willing to corporatise the IPT sector

f) Training institutes for hard and soft skill training of IPT operators

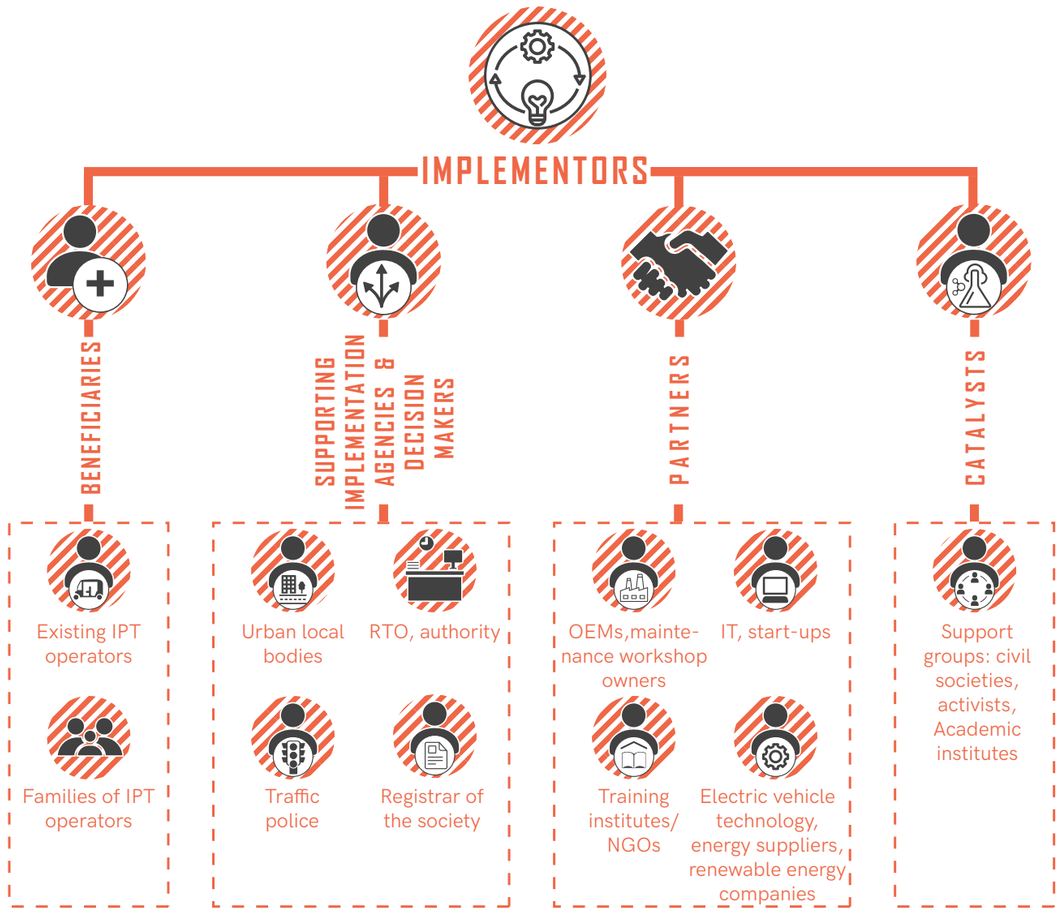
g) Non-Government Organisations (NGOs) working on gender equity, social livelihood, etc. formally associated with the initiative

CATALYSTS

The role of support groups such as technical advisers, civil societies and activists working on sustainable mobility or social inclusion is important. The city should identify such partners and get them to support the initiative. The support groups can also include local institutes, media agencies, etc.

Box 9 -

In the Philippines, the national government is keen to improve mobility and reduce air pollution through IPT reforms.The case study highlights that the technical advisers and civil society organisations played a significant role. The technical advisory agencies funded by external funding agencies helped the government prepare a technical proposal. In Metro Manila, the civil society organisations are working with the government to support the programme and also propose modifications to the programme design to increase its acceptance by IPT operators.



> *Figure 33 Key players in IPT reforms*

5.2.2 ACKNOWLEDGE THE ROLE OF IPT

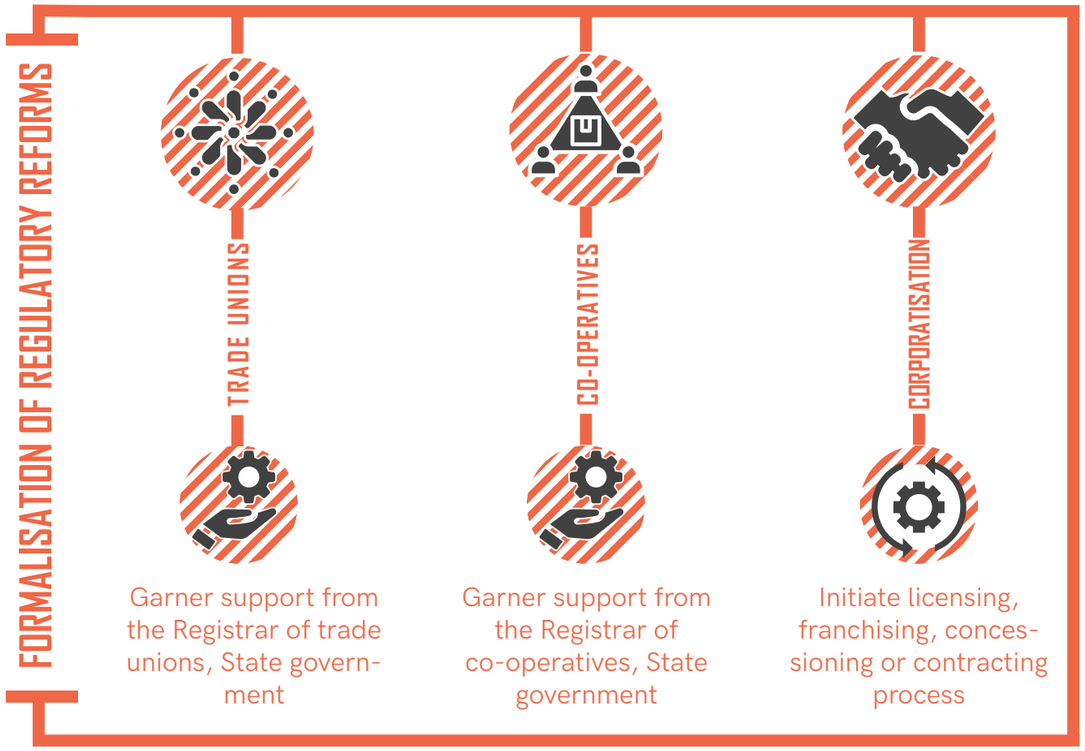
The implementation agency needs to acknowledge the role of IPT in the city, including aspects like affordability and other operational benefits. It should also emphasise the need to incorporate IPT infrastructure (e.g. IPT stands, terminals, static and dynamic passenger information systems) in the city's street design intervention projects. Acknowledging the roles starts with goals and objectives for mobility sector of the city and formalising the sector, for which statutory reforms are essential.

BRING STATUTORY REFORMS.

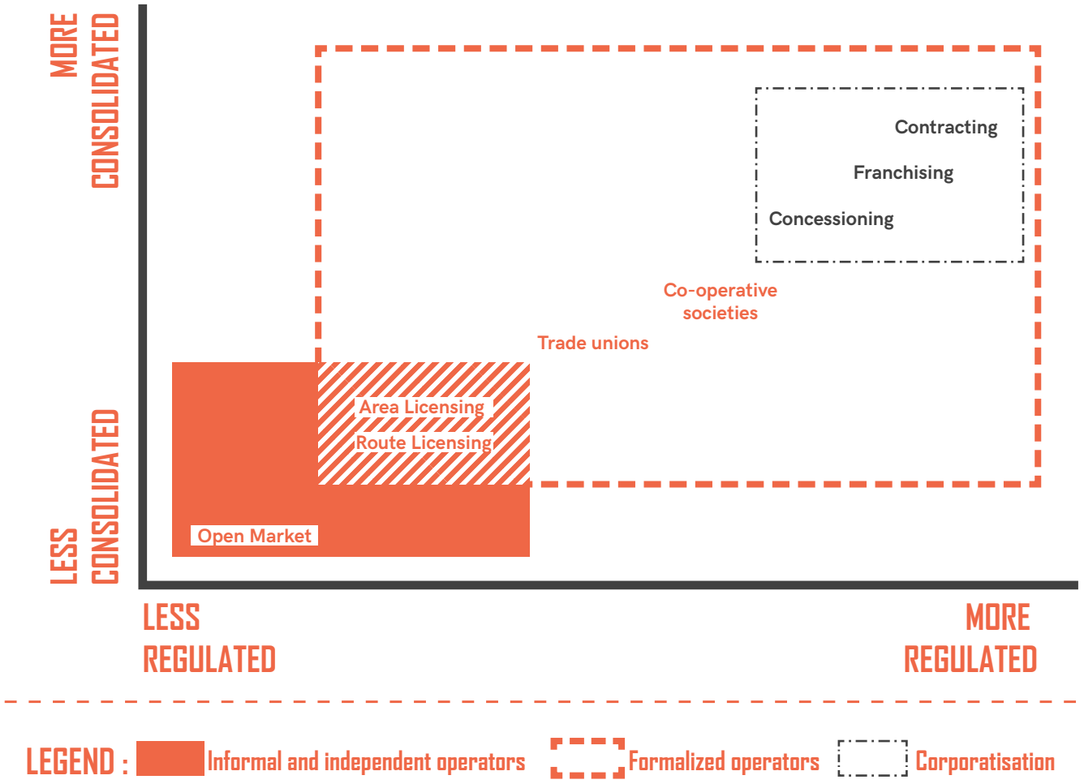
As mentioned in the section above, formalisation of the sector is essential, and it can be done in multiple ways, as shown in Figure 34. The most popular models include corporatization or formation of cooperatives. In an informal environment, the system is less regulated and less consolidated. In some Indian cities, the authorities follow licensing system for bringing discipline in operations. However, for moving towards formalisation, the system needs to be more regulated and consolidated. This can be achieved through the formation of trade unions or a co-operative society of IPT operators. The IPT operators in Kochi have recently formed a co-operative society that also ensures benefits for the operators. The cities in Latin America are moving towards corporatization. Various models exist within corporatization. In licensing, the operators apply for "area license" or "route license". Under franchising or concessioning, "for the market" competition is facilitated through an award of operating rights to one or more operators for a fixed time. Lastly, under contracting, operating rights are awarded by tendering one or multiple operators.

IDENTIFY OTHER ALIGNED OBJECTIVES

The objectives of the implementation agency will also provide focus areas to meet the vision. The city's larger goal can be to improve air quality by replacing IPT vehicles or introducing a new formal transit option, as shown in Figure 36. For instance, market research on the latest vehicle technology will be crucial if the city aspires to improve air quality by getting rid of old polluting IPT vehicles, and replacing them with modern vehicles. Similarly, while introducing a new formal transit mode, it is important to understand whether the "industry transition" option is feasible or not and work out an integrated operations plan for the city or study area. It shall be noted that formalisation of the industry is inevitable in achieving IPT reforms.



> *Figure 34 Formalisation process*



> *Figure 35 IPT market considerations vs regulation*

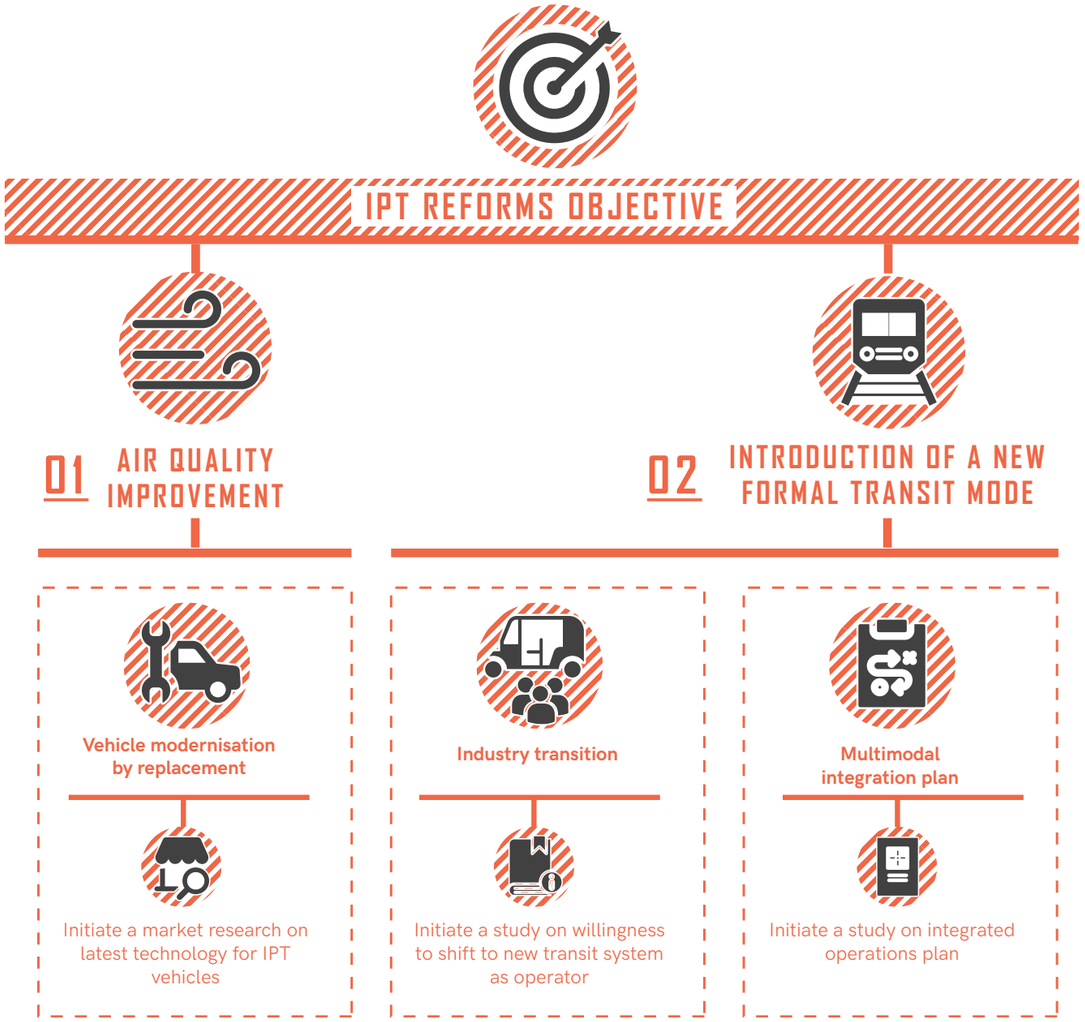
These aligned objectives will also help give the city an opportunity to legalize its IPT operations if there are multiple illegal vehicles. The implementation agency can decide the criteria and process for the same. The challenges of operating without permits and "stage-wise" operations under the "contract carriage permit" can be resolved while introducing IPT reforms.

For the introduction of a new vehicle to improve air quality, new permits need to be issued against the new vehicle under the "stage carriage". For multimodal integration and formalization of the existing IPT sector without vehicle replacement, the process of monopoly of issuing stage carriage permits needs to be broken.

Box 10 -

Dar es Salaam utilised the opportunity of introducing a Bus Rapid Transit (BRT) system in the city for IPT reforms. The implementation agency conducted displacement study and adopted an "industry transition" mechanism to include existing IPT operators in the new BRT system as bus operators. The biggest relief to the Daladala operators who shifted to the BRT system was relief from the "target system".

On the other hand, Kochi Metro Rail Limited (KMRL) utilised the opportunity of Metro rail implementation and initiated the process of multi-modal integration



> *Figure 36: IPT reforms aligned objectives*

5.2.3 GENERATE POLITICAL WILL FOR INVESTING IN IPT

Political will plays a crucial role in IPT reforms, whether it is about just formalisation initiatives or achieving any other objective. Urban local bodies or district authorities can play a major role in garnering political support. The key component of garnering support will be to demonstrate the role of IPT in the mobility sector as well as the social aspects of it such as affordability, number of direct and indirect jobs in the IPT industry and many such positive aspects.

It has been found in many cities worldwide that cities are moving towards the "contract system", which is a highly consolidated and regulated type of IPT formalisation. Broadly, the contract system in IPT works like gross cost contract in bus system. For the contract system to work smoothly, the government will be required to provide Viability Gap Funding (VGF) the same way Bus-Based Public Transport needs VGF from the government. The mobility department shall make a strong case by demonstrating the benefits of IPT and its importance in the mobility sector for supporting IPT through VGF. The mobility department can also work out a larger plan for vehicle

Box 11 -

'Political will' played a major role in IPT reforms in Manila's Passenger Utility Vehicle Modernisation Programme (PUVMP). The programme to transform jeepney sectors was on the government's drawing board for a long time. However, the real transformation started in 2016 when the new government was elected. While political will played a big role, the programme could be launched because the supporting studies were ready since 2014. Interestingly, the government's top priorities included promoting rapid infrastructure development, reducing air pollution and traffic congestion in Metro Manila and hence the President was keen to implement the programme. Politically, a desire to address traffic congestion also played a big role as traffic significantly worsened around 2015-2017 and people were keen for change. The Transport Secretary widely shared his personal experience of losing his 11-Year-Old and highlighted the benefits of improving air quality with the help of the programme.

technology transition or adopting other aligned goals explained in the subsequent sections. This will help in establishing interest in the decision makers for investing to improve the sector.

5.2.4 SOCIAL IMPACT ASSESSMENT IS A MUST

This step cannot be excluded in the process of IPT reforms, even if the city is not willing to achieve big objectives and is only interested in the "formalisation process". It shall include understanding the baseline, social challenges of IPT operators as well as commuters and the impact of the reforms on them.

CONDUCT SOCIO-ECONOMIC SURVEYS

The implementation agency will need to conduct **socio-economic surveys** that include passenger opinion surveys and IPT operator surveys. The passenger opinion surveys help to understand passengers' issues related to comfort, safety, and gender aspects. IPT operator surveys shall focus on collecting data on the livelihood details of drivers, such as earnings, ownership of vehicles and challenges in operations. Analyze the data to identify the income levels, profit margins, and expenditure on various needs such as health and education. This data will help formulate benefit schemes for the IPT operators to improve their livelihood opportunities. Similar data shall also be collected and analyzed post programme implementation to understand the success or gaps in the programme and improve it further. For the cities that are introducing any new formal mode of transit whether bus-based or rail based, shall conduct a separate "displacement study". This study shall aim to identify IPT operators that might face negative impacts due to the introduction of a new transit mode. The mitigation measures shall be designed based on the assessment.

PREPARE AN EQUITY AND SOCIAL INCLUSION ACTION PLAN

This document shall spell out the mechanism for introducing women and transgender IPT operators. It shall also highlight the concerns of women commuters and mitigation measures to overcome them. The gender action plan shall be monitored periodically.

PREPARE A COMMUNICATIONS AND OUTREACH PLAN

The Communications and Outreach (COP) plan shall include various tools and techniques of communication and outreach, such as consultations, jingles, social media outreach and open competitions. The implementor shall also try to brand the new system and change the perception of IPT industry through the COP.

EMBRACE A PARTICIPATORY APPROACH

IPT commuters and operators (owners and drivers) are crucial stakeholders of such initiatives, so their participation should be ensured. The engagement plan should target ensuring that the level of participation is between six to eight on Arnstein's ladder of participation,[16] which indicates citizen power. Levels 1 to 5 indicate "non- participation" or "tokenism" that means either one- way communication or finalising decisions in consultation with a particular "single-interest group". ; For instance, a city may introduce a formal bus system and the decision-makers of the new system work out a plan to reorganise IPT operators as feeders without involving the IPT operators themselves. Such an approach might result in creating unnecessary competition between two sustainable modes of transport and a chaotic situation.

It is advisable to create **a multi stakeholder platform**. This platform should include representatives of commuter groups, IPT vehicle owners and civil society groups working on social or sustainable mobility aspects. The other members will be government agencies, technical advisers, original equipment manufacturers, and so on. The implementor shall facilitate the discussions on outlining a sustainable mobility vision for the city, aspects of safety, gender, child-friendliness, commuter comfort, fuels, vehicles, safety, fares and routes. The implementor shall provide technical expertise to facilitate the discussions, refine ideas and create a technical proposal. The process of participation shall not stop at proposal preparation but shall be followed up in implementation phase.

16 *For details please refer to: Sherry R Arnstein, "A Ladder of Citizen Participation," JAIP 35, no. 4 (July 1969): 216-224, https://lithgow-schmidt.dk/sherry-arnstein/ladder-of-citizen-participation_en.pdf.*

5.2.5 PREPARE IPT MODERNISATION PLAN

It has been found that cities do take up opportunities to modernise vehicles while improving air quality. IPT reforms is an opportunity to modernise the vehicles and operations. Vehicle modernisation also helps IPT drivers and passengers by providing more comfort. Better vehicles can reduce maintenance costs substantially. Overall, IPT vehicle modernisation in a structured manner can help the implementation agencies, passengers, and drivers. In this process, cities are required to create a transition plan that includes operational and technical transition apart from social aspects as mentioned above.

CREATE A DETAILED PROJECT REPORT (DPR) ON THE TRANSITION

This section provides guidance on the broad steps involved in this process. The baseline and vision for IPT need to be formulated. The IPT vision shall provide a broad idea about the expected mode share of IPT in the city over the years and other expectations from the IPT industry. The transition plan also includes an operations plan, technology transition plan, Intelligent Transit Management System (ITMS) and financial plan. These shall be supported with environmental impact assessment.

FORMULATE A BASELINE

The first step in IPT reforms is to formulate a baseline. In many cities, data on IPT vehicles are either not available or poorly maintained. It is essential to record the total number of IPT vehicles with their types, age, routes on which they are operating, mode share of IPT, trip pattern of IPT users, corridor-wise ridership, number and type of permits and other necessary details. Cities can collect this data from primary surveys or secondary sources if available. In this process, mapping IPT routes, conducting number plate surveys, frequency occupancy counts and passenger transfer surveys, environment monitoring, data analysis and collecting data on ownership of IPT vehicles are important. The baseline data will also be useful for monitoring and evaluating the initiatives at periodic intervals.

PREPARE OPERATIONS AND INFRASTRUCTURE PLAN

The operations plan shall include the details of proposed routes for IPT and their complementarity with other modes in the city. The plan shall include multimodal integration details such as physical (infrastructure such as IPT stands, signages and maps, and terminals) as well as operational (fare integration) details in case of presence of other public transit modes.

PREPARE TECHNOLOGY TRANSITION PLAN

Cities that aspire to replace old IPT vehicles running on old technology with new vehicles that have lesser, or zero emission shall conduct a market assessment of vehicle types, readiness, and technical details.

PREPARE INTELLIGENT TRANSIT MANAGEMENT SYSTEM (ITMS) PLAN

While transitioning to new vehicles, the implementation agency shall embrace the use of Intelligent Transit Management System (ITMS), such as installing a GPS, adopting open data policy that can help prepare transit apps for commuters, and the integration of other transit modes with ITMS.

CONDUCT ENVIRONMENT IMPACT ASSESSMENT

Cities aspiring to replace old IPT vehicles by providing incentives to IPT operators shall conduct an environment impact assessment study to create a baseline against which the city can assess the level of success and air quality improvement over the years.

PREPARE A FINANCIAL PLAN

The implementation agency will need a detailed financial plan if the objective is to modernise the industry. Also, the government will need to fund social livelihood benefits in the form of providing soft benefits to operators of cooperatives such as insurance, Mediclaim, education etc, infrastructure improvements like IPT stands, IPT transit maps, multimodal integration, and so on. The financial proposal shall provide details of the total project cost, investment by the government, potential financial partners (such as Multilateral Development Banks or nationalised banks), which can facilitate the giving of financial assistance by the government to IPT operators. It shall also include the subsidy component given by the government in the transition process as it acts as a facilitator-cum-guarantor for availing loans from banks.

06
Building Back Better

The COVID-19 pandemic has had a strong effect on urban transport systems. The lockdown and fears of infection have led to a significant fall in trips made by public buses and informal public transport. This has severely impacted the incomes of operators. There have been anecdotal newspaper reports of recreational cycling gaining popularity in a section of society. But new data also show that motorization has been increasing after the initial lockdown was lifted. The numbers of both personal motor vehicles trips as well as the purchase of new vehicles has been on the rise. Meanwhile, cities have only started to build safe walking and cycling infrastructure.

COVID-19 has highlighted the importance of building and operating systems which are safe, adaptive, reliable, and resilient. The following actions are recommended at the national and local levels to dovetail existing programmes and a comprehensive approach to promote sustainable urban mobility.

6.1.1 ACTION POINTS FOR THE NATIONAL GOVERNMENT

1. Create a national NMT strategy, outcome (and output) monitoring and evaluation indicators; provide performance-based grants and develop targeted capacity-building programmes for all components of sustainable transport by expanding the National Urban Learning Platform (NULP).
2. Provide guidance to cities on modernisation of informal public transport vehicles in their clean air action plans and make use of the technology transfer to bring institutional reforms for better integration of IPT with other transport agencies. Encourage the setting up of a Mobility Department within the ULBs to coordinate between various public service providers.
3. Link all national funding schemes for urban buses to their Service Business Plans, commit to institutional strengthening, and make strategic investments in the bus-based infrastructure. Make use of technology transfer (that is, electrification of the fleet) to bring institutional reforms with a long-term outlook.

6.1.2 ACTION POINTS FOR THE STATE GOVERNMENT

1. Facilitate the city government with the formation of public transport authority to provide bus-based public transport in all major cities in the state and back it up with statutory powers where necessary
2. Encourage cities to set up a mobility department within the ULBs to coordinate between all transport service providers in the city (bus operators, IPT service providers, PBS service providers, E-bike service providers etc.). This will lead to an integrated urban transport system.
3. Encourage cities to make business plan for their public transport operations and coordinate with the national government to upgrade the bus fleet in various cities in the state
4. Encourage cities to take part in the national mobility challenges like 'streets4people', 'cycle4change', 'transport4all' and finance some of the initiatives for a quick upstart.

6.1.3 ACTION POINTS FOR ULBS

1. Appoint a Walking and Cycling Commissioner, create a dedicated walking and cycling team and a Non-motorised Transport Fund, and allocate at least 33 per cent of municipal transport budgets to fund walking cycling infrastructure and initiatives.
2. Publish annual walking and cycling surveys and increase the demand for them by organising regular car-free days and cycle days.
3. Undertake targeted efforts to increase the share of female cyclists
4. Expand the roads/traffic department of the ULB to create the Mobility Department responsible for the coordination and planning of all urban transport related services. The department should be tasked to incorporate IPT and to coordinate with all transport service providers.
5. The Mobility Department shall facilitate the process of formation of an organization of existing IPT operators that can help the operators to revive operations in the post-pandemic scenario.
6. Set up or expand the functioning of the Public Transport Authority in every city, bestowing it with the requisite statutory powers to plan/implement, operate and coordinate transport services.
7. Prepare a Service Business Plan that aims at modernisation of bus fleet, infrastructure, and operations. Augment the fleet size to overcome crowding and address latent demand by partnering with private bus operators on gross cost model.
8. Modify existing contracts with bus operators to include Service Level Agreements that ensure commuter comfort and satisfaction.

6.1.4 CAPACITY BUILDING PROGRAMME

TARGET AUDIENCE	LEARNING MODULES																		
			WALKING AND CYCLING					PUBLIC TRANSPORT					INFORMAL PUBLIC TRANSPORT						
THEMES	Introduction to sustainable urban mobility and integrated urban transport system	Understanding the perspective of different user groups	Policies, strategies financing for walking and cycling	Street planning, design and elements	Street management for walking and cycling	Utility planning & maintenance	Designing streets as public spaces	Public transport - policy, regulations, financing and taxation	Bus operations planning and transport management	Bus Modernization plan/electrification of fleet and services planning	Infrastructure design/planning for public transport	Information technology services and social marketing	Policies, strategies financing	Operations (service planning)	Passenger information system (static and dynamic-ITMS)	Vehicle technology, maintenance	Legal aspects, acts etc	Infrastructure for IPT	Traffic management (for sustainable transport)
Leadership in urban local bodies, UMTA, road owning agencies	■	■	■				▨	■	■	■	■	■	■				■		
Leadership in traffic police	■	■	■	▨	■							■					■		■
Chief Engineers, Executive Engineers, Assistant Engineers & other grades	■	■		■	■	■	▨		■	■	■	■			■			■	
Operators	■	■						■	■	■	■	■	■	■	■	■	■	■	
Superintendent of Police (Traffic), Inspectors & other grades	■	■		▨	▨												■		■
Urban design & urban planning consultants	■	■	■	■	■	▨	■	■	▨	■	▨	■			▨			■	▨
Traffic engineering & transport planning consultants	■	■	■	■	■	▨	▨	■	■	■	■	■	■	■	■	■	■	▨	■

LEGEND : ■ Mandatory ▨ Recommended

Additional Resources

INTEGRATED URBAN TRANSPORT SYSTEMS

NAME	TYPE	ORGANISATION
Regulated frameworks for integrated transport governance in India	*Report*	*UITP India,*
National Urban Transport Policy 2006	*Policy*	*MoHUA*
National Transit Oriented Development Policy 2016	*Policy*	*MoHUA*
Term of Reference for Preparation of Comprehensive Mobility Plan	*Terms of reference*	*MoHUA*
Urban Mobility Regulatory Reforms In India	*Report*	*MP Ensystems,*
Preparing a Comprehensive Mobility Plan – A Toolkit	*Tool Kit*	*IUT, MoUD (now MoHUA)*

WALKING AND CYCLING

NAME	TYPE	ORGANISATION
Safer Streets, Safer Cities in Bihar	*Report*	*The Urban Catalysts*
Placement guidelines for bus queue shelters in NCT of Delhi	*Report*	*The Urban Catalysts, ICLEI,*
Encouraging walking and cycling	*Website*	*Transport For London*
Evolution of Public Bicycle Sharing System In India	*Report*	*GIZ*
Complete Street Design Manual, Chennai	*Design Guidelines*	*ITDP India*

BUS BASED PUBLIC TRANSPORT

NAME	TYPE	ORGANISATION
Procurement of Electric Buses: Insights from Total Cost of Ownership (TCO) Analysis	*Report*	*WRI*
Operational Plan, Monitoring & Evaluation Guideline	*Report*	*Ministry of Transportation – Republic of Indonesia, GIZ*
Tools and Guidelines for City Bus Operations	*Report*	*GIZ*
Sustainable public bus transport financing: India	*Report*	*Janagraha Centre for Citizenship and Democracy,*

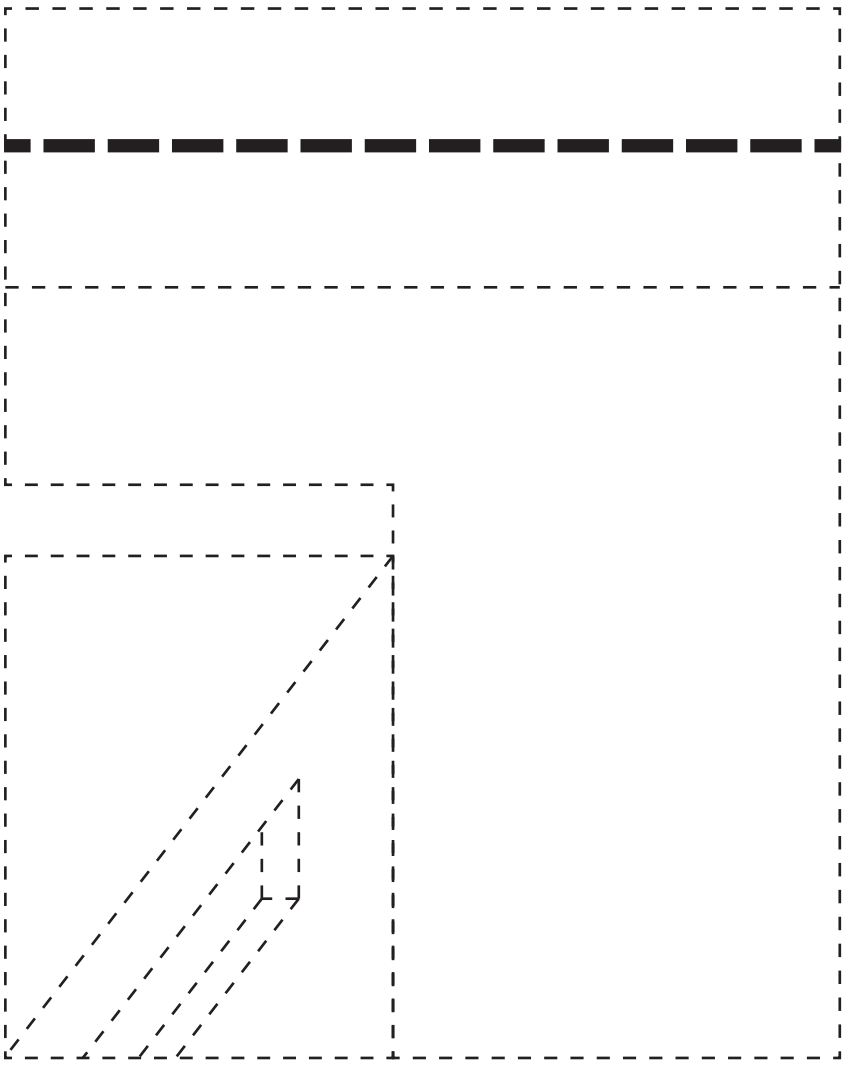
INFORMAL PUBLIC TRANSPORT

NAME	TYPE	ORGANISATION
Philippine Urban Mobility Programme Towards people-first cities empowered by efficient, dignified, and sustainable mobility	*Report*	*GIZ*
Reforming the (semi-)informal minibus system in the Philippines- The 'Public Utility Vehicle Modernisation Programme	*Report*	*GIZ*
The case for investing in paratransit- Strategies for regulation and reform	*Report*	*VREF*
Informal and Semiformal Services in Latin America	*Report*	*WRI, GEF, IDB*
Developing a Low Carbon IPT Action plan for Udaipur	*Presentation*	*Transit Intelligence*
Paratransit: A Key Element In A Dual System	*Report*	*AFC, CODATU*

Abbreviations

AMRUT	*Atal Mission for Rejuvenation and Urban Transformation*
BBPT	*Bus-Based Public Transport*
BRT	*Bus Rapid Transit*
CCTV	*Closed Circuit Television*
COP	*Communications and Outreach Plan*
CSR	*Corporate Social Responsibility*
DULT	*Directorate of Urban Land Transport*
E-auto	*Electric Auto*
GESI	*Gender Equiry and Social Inclusion*
HIC	*High Income Country*
HRIDAY	*Heritage City Development and Augmentation Yojana*
IDRD	*Instituto Distrital De Recreación Y Deporte (tr District Institute for Recreation and Sports)*
IISc	*Indian Institute of Science*
IPT	*Informal Public Transport*
IRC	*Indian Roads Congress*
ITDP	*Insitute for Transportation and Development Policy*
IT	*Information Technology*
KMRL	*Kochi Metro Rail Limited*
KMTA	*Kochi Metropolitan Transport Authority*
LAMATA	*Lagos Metropolitan Transport Authority*
LIC	*Low Income Country*
LTF	*Local Transport Fund*
MoHUA	*Ministry of Housing and Urban Affairs*
NMT	*Non-Motorised Transport*
NULP	*National Urban Learning Platform*
PBS	*Public Bicycle Sharing Systems*
PLOS	*Pedestrian Level of Service*
PMC	*Pune Municipal Corporation*
PSC	*Public Service Contract*
PSO	*Public Service Obligation*
PTA	*Public Transport Authority*
PUVMP	*Passenger Utility Vehicle Modernisation Programme*
QPBS	*Quasi-Public Bus System*
RTO	*Regional Transport Office*
SLA	*Service Level Agreement*
SLB	*Service Level Benchmarks*
SMG	*Seoul Metropolita n Government*
SPV	*Special Purpose Vehicle*
TfL	*Transport for London*
TOPIS	*Transport operation and information system*
ULB	*Urban Local Body*
UMTA	*Unified Metropolitan Transport Authority*
UTF	*Urban Transport Fund*
UTTIPEC	*Unified Traffic and Transportation Infrastructure (Planning & Engineering) Centre*
VGF	*Viability Gap Funding*

MOVING AHEAD : URBAN MOBILITY REFORMS FOR POST-COVID RESILIENCE IN INDIA



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