PUBLIC TRANSPORT

VOLUME 1 - POLICY FRAMEWORK

Smart City
MISSION TRANSFORM NATION

Ministry of Housing and Urban Affairs
Government of India

WRI INDIA
ROSS CENTER

Ministry of Housing and Urban Affairs
Government of India

ABOUT MINISTRY OF HOUSING AND URBAN AFFAIRS (MoHUA)

The Ministry of Housing and Urban Affairs is the apex authority of Government of India to formulate policies, coordinate the activities of various Central Ministries, State Governments and other nodal authorities and monitor programmes related to issues of housing and urban affairs in the country. The Smart Cities Mission was launched by the Ministry in 2015 to promote sustainable and inclusive cities that provide core infrastructure and give a decent quality of life to its citizens, a clean and sustainable environment and application of 'Smart' Solutions.

WRI INDIA
ROSS CENTER

ABOUT WRI INDIA ROSS CENTER

The World Resource Institute is a non-governmental global research organization that aims to protect earth's environment and provide for the needs and aspirations of current and future generations, including but not limited to improving the quality of life in cities, by developing and scaling environmentally, socially, and economically sustainable urban transport solutions, with capabilities to identify and implement such solutions in over fifty countries including within Europe, United States, Mexico, Brazil, Indonesia and India.

Table of Contents

List of Acronyms

PT- Public Transport

MRT: Mass Rapid Transport

BRTS: Bus Rapid Transit System

MoRTH: Ministry of Road Transport and Highways

EXECUTIVE SUMMARY

1. EXECUTIVE SUMMARY

Cities worldwide rely on public transport to keep their citizens moving and economies working while mitigating the negative environmental impacts of rapid motorization. Increasingly, these cities are upgrading or even transforming their public transport systems to better serve the needs of their populations and the environment. Some of these efforts have been more successful than others and some more widely publicized. Public transport needs to be a viable alternative to driving, it needs to be hassle-free.

The government today is encouraging public transport operators to make things as easy as possible for travelers. By providing up-to-date travel information, comfortable vehicles and a wide range of facilities at stations, for instance. It is well known that public transport occupies less road space and causes less pollution per passenger-km than personal vehicles. As such, public transport is a more sustainable form of transport.

Cities with a population of more than one million should start planning for high capacity public transport systems. In doing so, they should look at various proven technologies around the world, including the use of available waterways, they should adopt a technology that would best suit the city requirements in the next 30 years. Comprehensive city-wide plans should be drawn up comprising trunk and feeder corridors as well as good integration with personal modes, suburban traffic, etc. High cost trunk route systems should, through appropriate hub-spoke arrangements be integrated with feeder systems that enable higher ridership on such trunk systems. In large cities like Delhi, Mumbai, Kolkata etc. (exceeding population of 10 million), mass transit represents the most efficient transportation system as large volumes of passengers need to travel. Without its extensive use, such cities suffer from chronic and debilitating street and highway congestion, because highway modes do not have sufficient capacity to carry very large volumes of passengers.

Thus, there is a need to give priority to public transport and this policy framework documents are aimed at encouraging public transport in a way that it can be self-sustaining.

2. INTRODUCTION

Public Transport consists of mass rapid transit (MRT); Para-transit and personalized PT. MRT, both rail and road based along with city bus is the backbone of city transport as they are the only modes that carry very large number of people using minimum space. Paratransit Modes i.e. tempos and mini buses supplement MRT in large cities and can be the main mode of PT in medium and small size cities. Personalized PT i.e. autos and taxis and cycle rickshaw cater to the demand of commuters seeking a substitute for personal transport. We need to plan a citywide integrated multimodal public transport network comprising all three modes of PT along with first and last mile connectivity for easy access to MRT stations/ stops.

This document is aimed at providing basic knowledge of what public transport for a city would mean and pointers on how to access the needs of a city. We have also written out the various financing methods that the city could adopt to implement bring forth a well-designed proposal of project conceptulisation to implementation and maintenance.

When approaching public transport for a city we must take a wholistic approach and plan for the entire city region in case of metropolitans we must plan for the metropolitan region. Secondly, public transport proposals can never work as stands alone theoretical proposals they need to consider both operational as well as financial factors. Hence, keeping in mind this factor we have made the document in two sections

• Public transport

This section details what are the policy farmeworks the city must follow while planning for its city wide transit and how to integrate it with the rest of the services.

• Finacial for Public Transport

This section details out how the city can find funding options to its proposals. With a brief on Various Innovative financing techiniques thay can be used.

There are many direct and indirect costs associated with the high dependence of personal modes of transport for achieving increased mobility. High degree of dependence on personal vehicles is not sustainable considering the limited resources. To attract people from personalized modes, provision of good quality, public transport

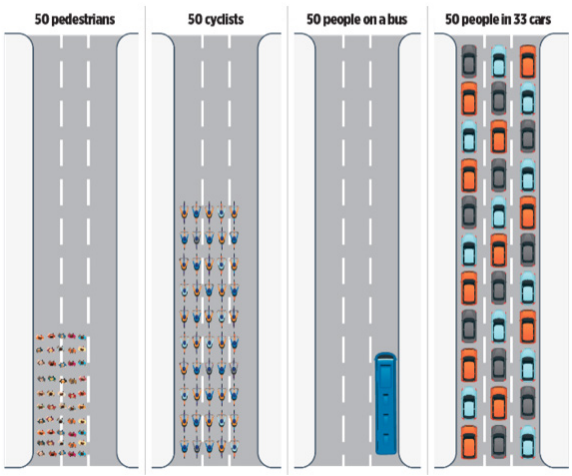
at affordable prices, is vital. Moreover, public modes of transportation provide service for all persons, while two wheelers and cars can be used only by those who own and can drive them. Thus, cities need, and they benefit from public transportation services which offer greater mobility for the entire population. Transit systems are also needed in urbanized areas of India to make high-density of diverse activities, such as residences, offices, factories, recreation, etc., physically possible, while keeping cities livable and attractive for people.

3. PUBLIC TRANSPORT

3.1. Introduction

Public transport occupies lesser road space and causes less pollution per passenger-km as compared to personal vehicles. Hence, cities must promote investments in public transport as well as measures that make its use more attractive to the user as opposed to up until now. All cities must plan for public transport modes and in doing so, they should look at various proven technologies around the world, including the use of available waterways, they should adopt a technology that would best suit the city requirements in the next 30 years.

Image 1 | **Road space requirement of various modes of transport (WHALEN, n.d.)**



Comprehensive city-wide plans should be drawn up comprising trunk and feeder corridors as well as good integration with personal modes, suburban traffic, etc. High cost trunk route systems should, through appropriate hub-spoke arrangements be integrated with feeder systems that enable higher ridership on such trunk systems.

Para-transit Modes i.e. tempos and mini buses supplement trunk routes in large cities, can also be the main mode of PT in medium and small size cities.

3.2. Quality and pricing

Fares for public transport have been set with the intension of providing for the travel needs of the poor which means that the fares have been kept low as a measure of social equity. Which in turn reduces the profitability of public transport which feeds into poorly operated public transport systems that have been financially sustainable only through serious compromises on the quality of the service they render.

In the present day, we want cities to encourage more and more people to use Public transport this helps in reducing congestion on roads while contributing largely in reducing air pollution that is causes if the same users move by means of personal vehicles. But to create a massive shift from private vehicles to public transport there needs to be substantial improvement in quality of service and not so much for low fares. It is, therefore, necessary to think of different types of public transport services for different segments of commuters. Those who place a premium on cost are the poorest sections of society and they need to be given affordable prices. The cost of providing public transport to this section of society needs to be subsidized by other sections of society. However, there is another segment that values time saved and comfort more than price. This segment is comparatively better off and would shift to public transport if high quality systems are available to them. The cost of providing public transport to them need not be subsidized and can be met from the fare revenues. It would be encouraged to have the provision of different levels of services – a basic service, with subsidized fares and a premium service, which is of high quality but charges higher fares and involves no subsidy.

To facilitate premium service, infrastructure such as improved bus stations and terminals, improved passenger information systems, use of intelligent transport systems for monitoring and control, restructuring of State Transport Corporations, etc. would be required. The fare fixation should be such that public transport system is self-sustaining.

3.3. Technologies

There is a wide spectrum of public transport technologies. At one end are high capacity, but high cost, technologies like underground metro systems and at the other are low capacity bus systems running on a shared right of way. Within these extremes are a range of intermediate possibilities, such as buses on dedicated rights of way, elevated sky bus and monorail systems, electric trolley buses, etc.

Image 2 | **Mono rail**

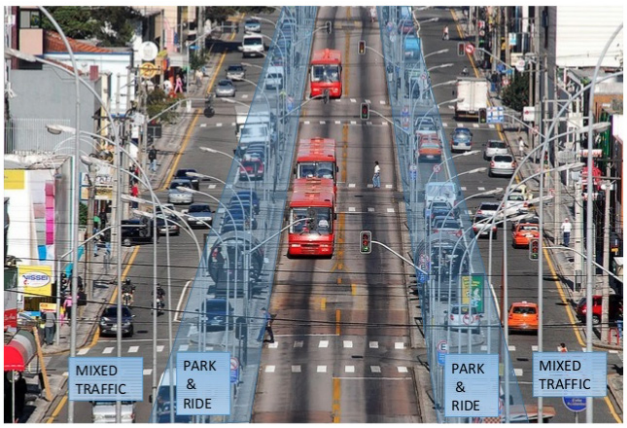
While some of them are most effective over high-density trunk corridors others prove useful as feeder systems or subsystems that serve limited subareas within a city. Similarly, there are examples of available waterways being taken advantage of for public transport as also systems like ropeways that suit hilly terrains. While the high capacity rail systems and buses on shared rights of way are the only ones tried out in India, several of the others have proved successful in other parts of the world. Electric trolley buses have been running in San Francisco. New Bus Rapid Transit Systems (BRTS) have become very popular in cities like Bogota (Colombia) and Curitiba (Brazil).

Each of these technologies has its unique characteristics and is best suited to a specific situation. Factors such as the urban form, terrain, availability of waterways, level of demand, direction and extent of sprawl, projections for future growth, extent of population density etc. are major determinants of the technology that should be chosen.

3.4. Integrated public transport systems

All cities have corridors that have varying densities of travel and hence need technologies that best match the level of demand on the corridor. This often requires different operators managing such systems. However, a good public transport system is one that is perceived by the

Image 3 | **BRTS in Curitiba Brazil**



user as a single system and allows seamless travel between one made and the other as also between systems managed by different operators. Such seamless interchange is possible if proper inter-change infrastructure is available and users are able to use a single ticket over all such systems. This also requires that a single agency takes responsibility for coordination so that there is a common approach to public transport planning and management. 22. Accordingly, the Central government would expect that investments in public transport systems would also seek to ensure that such systems are well integrated and offer a seamless system to the users. Central government's financial support would be contingent on appropriate authorities/ entities being set up to ensure that a coordinated and integrated public transport system becomes available.

4. FINANCING FOR PUBLIC TRANSPORT

Urban Public transport in India can be classified into rail and road. Of the total passenger movement by Public Transport (PT) in the country, approx. 80% demand is met by road transport i.e. buses, while the railways carry the remaining 20% (MoST, 2008 now called MoRTH). India with a population of around 1.2 billion (census 2011), stretching over a distance of about 3,000 km from north to south and from east to west, presents a daunting challenge for providing efficient and adequate transportation facilities in the urban areas (MoUD, 2008). It has been the Government's utmost concern to provide and maintain transport facilities for people within the country in order to cater to the growing economic, social and cultural needs of the people.

4.1. State Transport Undertakings

The State Transport Undertaking (STUs), which are presently operating city buses are suffering financial losses in urban operations. Consequently, the STUs are not expanding their fleet in urban areas, though the cities are exploding with population. Most of the state road transport undertakings operating in cities are financially losing-except in Bangalore. There are 15 STUs operating city bus services exclusively- total fleet held by them for the year 2003-2004 was 17,006 (which is 15% of the total fleet of association of state road transport undertaking). Apart from these urban STUs, there are some STUs in states like Andhra Pradesh, Maharashtra, Karnataka, etc., that operate all types inter- city and urban services. As intercity and rural services have to share services of operations, theses STUs have been classified as Mofussil.

4.2. Private Sector Operations

Bus transport operations in private sector are conducted mainly by private individuals or small companies that are scarcely distributed and perform independently. Passenger trip is thus largely disorganized resulting in fierce and unhealthy competition with STUs in the cause. These operations are common in large cities where there is large commuting population. However, there is no proper information about the number of buses, passengers carried and bus days of operation. There is an urgent need for operative details from private sector operations.

4.3. Legislative Frame-work

The two main enactments that regulate the functioning of public transport services are:

- Motor Vehicle Act 1988 and
- Road Transport Corporation

4.4. Existing Financing Framework

As per the present practice, the government makes budgetary allocations both in the revenue and the capital account. This is linked to the overall government budgeting and not necessarily to the needs of urban transport in a city and hence is seldom adequate. A policy on budgetary allocations, user charges, and tapping other source of funds based on taxation of non-user beneficiaries, land development and vehicle taxation on the polluter pays principle should be provided to the city. All cities should have a formula-based funding from the central and state governments and should leverage debt as well. Involvement of the private sector is a potent source for financing and managing urban transport services in the city. This source should be used for services that yield direct revenue to the private entrepreneur to recover his investment with commercial profit.

4.5. Resource Generation

Urban Transport is a very capital-intensive component of urban infrastructure, and thus, a proper financing plan needs to be in place for effective implementation of various transport development proposals and reduction in the gestation period of project implementation due to lack of adequate funds.

The strategy for funding of urban transport needs to be based on a consortium approach in which central and state govt. / city development authorities, property developers, private sector, debt from multilateral / bilateral institutions, and debt from domestic financial institutions contribute. The funds need to be channeled into Dedicated Urban Transport funds to be set up at the national and state levels. Operating and Maintenance losses in public transport services are inevitable. Mechanisms for covering these expenses need to be specified. As buses are the main component of public transport, even when rail transport is provided, the report has recommended that it is essential that in financing of buses, both capital and revenue be placed on a firm footing, because a very large number of small and medium size cities will not need rail transit.

Financing Plan for Total Investment in Urban Transport (12th FYP)

Source	Rs. (In crores)
Central Government	85,843
State Government	1,07,585
Property Development	5,268
Private Sector	1,35,560
Debt from Multilateral/ Bilateral Institutions	31,606
Debt from domestic financial institutions	22,447

Since the huge investment needs at the central government level cannot be met from traditional budgetary sources alone, innovative financing mechanisms will, therefore, need to be tapped. The report based on learning from the global examples, on the "polluter pays principle", and the Central Road Fund, has proposed a dedicated (non- lapsable and non -fungible) Urban Transport fund to be set up at the national level as envisaged in NUTP-2006.

A similar fund would also need to be set up at the state & city levels, albeit with different sources of funding. Since various taxes and duties at the central govt. level, state govt. Level, and ULB level form a major component of the cost of modern public transport, it has been proposed in the report that substantial tax concessions on public transport, both railways as well as bus-based, need to be provided. The report also suggests ensuring that bus-based transport systems in addition to rail-based systems are also covered in the definition of infrastructure so that the same can qualify for priority lending, long tenure finances at cheaper rates.

4.6. Public Financing

4.6.1. Five Year Plans

The economy of India is based in part on planning through its five-year plans, which are developed, executed and monitored by the Planning Commission. The eleventh plan completed its term in March 20012, and the twelfth plan is currently underway. Prior to the fourth plan, the allocation of state resources was based on schematic patterns rather than a transparent and objective mechanism, which led to the adoption of the Gadgil formula in 1969. Revised versions of the formula have been used since then to determine the allocation of central assistance for state plans.

4.7. Private Sector Financing

4.7.1. Private Sector Investment in Urban Transport

There is an ongoing public policy debate in India on how to find the necessary new investment as well as operations and maintenance on the growing transport infrastructure needs. The GOI and many state governments are interested in broadening the role of the private sector in transport infrastructure development with a view to strengthening and expanding private financing. There are several key determinants of the viability of privately financed programs, including the country regulatory and legal environment and the resulting nature of the public private risk regime. The rationale behind the private sector financing in transport projects is:

i. Bridging the funding gap: Private funding is often seen as an increasingly important means to bridge the funding gap between requirement of sector and public resources available.

ii. Achieving the efficiency gains: A second common argument in favor of private funding is to achieve efficiency gains, which can be attributed to the following factors:

- A system of incentives and sanctions
- Flexibility in adjusting resources
- Comprehensive approach
- Access to technology

iii. Broadening revenue base: private investors will have an incentive to maximize their revenue when they rely on it in whole or part for returns. This will be possible through reducing leakage and ensuring efficient collection. Further private investors will manage the demand and supply curves in a more rigorous way than the public sector that might have other objectives in mind. Also, prima facie, neither users nor government has any incentive to raise revenue levels to financially sustainable levels.

iv. Unbundling and Reallocation Risks: The potential benefits noted above can be described as unbundling and shifting the risk and rewards of a new investment from the public to the private sectors with the expectation that this will lower overall cost to the society.

4.8. Public Private Partnerships in Urban Transport

Public Private Partnership broadly refers to a long-term contractual partnership between public and private sector agencies specifically targeted towards financing, designing, implementing and operating infrastructure facilities and services that are traditionally provided by the government and/ or its entities. PPPs aim to take advantage of the strength of the public sector through stable governance, citizens' support, and those in the private sector by their enhanced operational efficiency, innovative technology, and managerial effectiveness, so as to deliver a higher standard of service to the people with better value for money. The other important features of PPP are allocation of risks to the partner best able to

manage them, thus minimizing the cost while improving the performance. The public sector assumes social, environmental, and political risks, whereas the private sector shares financing, construction, and commercial risks.

4.9. Innovative Financing Mechanism

The issue of urban transport financing has become increasingly prevalent in recent years as costs of providing transport services have expanded more rapidly than traditional revenue resources. To fund the imposing needs of urban infrastructure in general, and transport in particular, there are several innovative methods which, due to their ease of implementation and high usage, are methods for many local governments as sources of general revenue. It is also seen the non-fare box revenue has an important role to play in the overall sustainability of the transit system and some of the agencies are already using this potential.