

1.0 Introduction

1.1 Background

India's urban population is expected to increase from 286 million in 2001 to 534 million in 2026 (38%). Our country has to improve its urban infrastructure to achieve objectives of economic development. However, most of the cities in India have inadequate infrastructure. Urban transport is one of the major problems, affecting the mobility of people and economic growth of the urban areas.

These problems are due to prevailing imbalance in modal split; inadequate transport infrastructure and its sub-optimal use; no integration between land use and transport planning; and no improvement or little improvement in city bus service, which encourage a shift to personalized modes. In view of this, the Government of India approved the National Urban Transport Policy (NUTP) in April 2006.

The Policy primarily focuses on the mobility of people and not the mobility of vehicles. This will require the public transportation system to be more attractive to use. The challenge for improved bus transport is to provide good quality service at an affordable price. It is important to evaluate alternative public transport technologies in the context of city characteristics. The public transport options vary between low cost buses to high cost rail metros. Moreover the shape of a city is very important for selecting the appropriate mode of transport and capacity building is a very important factor in introducing and implementing public transport system.

Several initiatives have been taken in India in this regard: Many cities have prepared Comprehensive Mobility Plans and have plans to introduce modern bus services; Bus Rapid Transit System (BRTS) is coming up in eleven cities; six cities are planning new metro rail systems; and Unified Metropolitan Transport Authorities have been set up in two cities. The Government of India has funded 15,260 modern and intelligent transport systems enabled buses for city transport for 61 mission cities as a part of the economic stimulus package.

Amongst various urban transport projects, rail based Metro are being developed in many cities of India, viz. Delhi (357.37 km, ₹ 58298.47 crores), Mumbai (62.89 km, ₹ 20587 crores),

Bangalore (33 km, ₹ 6395 crores), Kolkata (13.77 km, ₹ 4676 crores), Chennai (50 km, ₹ 14600 crores), Kochi (25.3 Km, ₹ 2991.5 crores), Hyderabad (71.29 km, ₹11892 crores) [Annex-I]. Light rail systems have been proposed in Kolkata while monorail systems in Delhi, Bangalore and Mumbai.

Under road based Bus Rapid Transit System (BRTS) in JNNURM, many projects have been sanctioned, the cities, namely, Ahmedabad (88.50 km, ₹ 981.35 crores), Visakhapatnam (42.80 km, ₹ 452.93 crores), Indore (11.45 km, ₹ 98.45 crores), Jaipur (39.45 km, ₹ 479.55 crores), Bhopal (21.71 km, ₹ 237.76 crores), Rajkot (29.00 km, ₹ 110.00 crores), Vijayawada (15.50 km, ₹ 152.64 crores), Pimpri-Chinchwad (42.22 km, ₹ 738.16 crores), Pune (101.77 km, ₹ 1051.00 crores), Surat (29.90 km ₹ 469.00 crores) and Delhi (14.6 Kms- implementing with its own funds) [Annex-III].

The BRT projects are also being considered in a number of cities, like, Vadodara, Mumbai, Hyderabad, Nagpur, Bangalore, Bhubaneswar, Chennai, Lucknow, Kanpur and Kolkata. BRT has started in Pune, Ahmedabad and Delhi (from Moolchand to Ambedkar Nagar) also. Attempts were made to privatize the passenger transport in many cities of India, like, Delhi, Jaipur, Bhopal, Indore Visakhapatnam etc. However, in some cities, such as Jalandhar, Ludhiana, Amritsar, Ajmer Nagpur, Jodhpur and Surat initiatives are being taken in this regard.

Keeping in view of the above-mentioned initiatives taken by the cities of the country, it becomes imperative to review them and document them in a proper way. This would help the planners and researchers for future planning and implementation of the projects. Accordingly, this study has tried to document the initiatives / projects / best practices in the field of urban transport. These projects may be based on Public Private Partnerships.

1.2 Objectives, Case Studies and Methodology

Objectives

The objectives of the study are to:

- 1) Document the initiatives (rail based and bus based projects) undertaken and are being undertaken by 10 cities of India with focus on PPP.
- 2) Identify challenges, lessons learned and give suggestions.

Case Studies

The present study indicates the success stories – best practices in the field of urban transport. Besides, it throws light on the challenges or constraints encountered during planning and implementation of the projects. Finally, it makes suggestions on the basis of lessons learned, to improve planning and implementation of projects in future.

The study covers bus based projects, viz. Bus Rapid transit System (BRTS), Modern Bus Services (by Government funding or PPP based models) and their supporting infrastructure such as multilevel or under-ground parking etc. Nevertheless, it describes each case study (project) under the heads and sub-heads of the ‘Best Practice Format’ (as followed by UN-Habitat Best Practice Documentation, Annex IV of the study) to make it meaningful and technically sound. All case studies are based on the information which could be shared with us by the transport agencies/organizations, discussions held with the concerned officials of the respective projects and observations of the study team.

In order to achieve the objectives of the study, the first hand information (lists of urban transport projects) regarding the completed projects and ongoing projects were collected from the Ministry of Urban Development. The information regarding various urban transport projects in India were also downloaded from the Internet.

The selection of 10 urban transport initiatives / projects for the study has been done on the basis of the population size of the cities, regions / states, progress / performance of the projects, involvement of the private sector etc. Ahmedabad and Kolkata are two mega cities of Gujarat and West Bengal, respectively. Surat (Gujarat), Jaipur (Rajasthan), Vadodara (Gujarat), Visakhapatnam (Andhra Pradesh), Jabalpur (Madhya Pradesh), Pimpri - Chinchwad (Maharashtra) are the cities having million plus population. However, Jalgaon (Maharashtra),

and Jalandhar (Punjab) have less than one million populations. Moreover, barring Pimpri-Chinchwad, Jalgaon and Jalandhar, all cities are JNNURM cities. All the selected cities, except Jaipur, have PPP based transport projects.

Out of a total of 11 BRTS projects (undertaken or being undertaken) in different states of India, 4 BRTS projects of Ahmedabad, Pimpri-Chinchwad, Jaipur and Visakhapatnam have been selected for the study. Amongst BRTS projects of Ahmedabad, Delhi and Pune (which are operational), Ahmedabad BRTS is the most successful project which is why it has been selected for the study. The selection of remaining three BRTS projects of Pimpri-Chinchwad, Visakhapatnam and Jaipur has been done keeping in view of their progress.

Modern City Bus services on PPP model have been planned in 15 cities of different states / regions of India. Amongst 15 projects, 5 cases of city bus services of Jalandhar, Surat, Jabalpur, Vadodara and Jalgaon have been selected for the purpose. City bus services of Surat has been awarded first prize for the excellence in best PPP practices in urban mobility in December 2008. Vadodara city bus service has been awarded for Excellence in Urban Mobility, in 2008. City bus services of Jalandhar, Jabalpur and Jalgaon, having different PPP models, are being operated successfully. Amongst these three, Jalgaon City bus service is being operated on a different type of PPP model (Table-1). Kolkata Multilevel Parking is a PPP based project and this approach is being replicated in many cities such as Pune, Mumbai etc. Therefore, we have included it as a best practice.

Table 1.1: Urban Transport Initiatives-Case Studies

S. No.	Case Studies	Nature of Projects	PPP Based / Non-PPP Based	Status of the Projects
1)	Ahmedabad Bus Rapid Transit System	BRTS Project	PPP based	Implemented
2)	Jaipur Public Transport Service through BRTS and Modern City Buses	BRTS Project	Non-PPP Based*	Partially Implemented
3)	Jalandhar City Bus Service	Modern City Bus Service	PPP based	Implemented
4)	Jabalpur City Transport Service	Modern City Bus Service	PPP based	Implemented

5)	Surat City Bus Service	Modern City Bus Service	PPP based	Implemented
6)	Pimpri-Chinchwad Bus rapid transit System	BRTS Project	PPP based	Under progress
7)	Vadodara City Bus Service	Modern City Bus Service	PPP based	Implemented
8)	Jalgaon City Bus Service	Modern City Bus Service	PPP based	Implemented
9)	Kolkata Car Parking System	Parking Project	PPP based	Implemented
10)	Vishakhapatnam Bus Rapid Transit System	BRTS Project	PPP based	Under progress

**Private Sector would be involved in future for constructing bus stops / bus shelters.*

Methodology

The whole study is based on the information obtained from primary as well as secondary sources. As per the objectives of the study, the required information on the selected projects were collected mainly by administering the ‘Best Practice Format’, which included information mainly on situation before the implementation of the initiative / project; description of the initiatives / project / best practice, indicating problems / needs addressed by the best practice, reasons for the adoption of the particular system and preparation of feasibility report; factors of success, budgetary implications and sustainability and impact of the initiatives / best practices.

This format was sent to the selected transport agencies or organizations to furnish the requisite information of their projects. After receiving the feedback on the format along with the supporting documents, the information was analyzed and worked-out gaps, which were to be discussed with the concerned authorities. Field visits were undertaken by the study team of the Institute, during which the concerned officials were contacted. The required information for the study was collected through discussions. Finally, the study team compiled the information and incorporated their observations and findings in the study.

1.3 Conceptual Framework

Before documenting various case studies, it becomes imperative to understand the following:

Need of a Public Private Partnership

The concentrated growth of urban population in large and metropolitan cities of India leads to increase in their area and consequently results in substantial increase in transport, in total number of trips per person per day, average trip length, trip costs etc. Hence, there is a dramatic increase in demands for various modes of urban transport, which are efficient, economical and adequate.

The rail and road based mass transport system are supposed to be the efficient transport modes to meet the increasing demand. The task of providing road based mass transport service is the responsibility of either the State Government or Urban Local Bodies. Public services, however, are often run not with a profit motive but keeping in view the socio-economic benefits of the commuters.

The fare is pegged at low level and does not cover even its operating costs from the fare box. Nevertheless, these have to provide a series of free and concessionary passes, which are not compensated by any agency or authority. Hence, the public transport systems incur heavy and mounting losses. In such situation, it becomes very difficult for a public transport to maintain even its existing level of service what to talk of increasing their fleets to meet the rising demand for urban transport. As a result, a number of private vehicles increase many folds leading to congestions on roads. This congestion not only make the movement of people difficult but results in road accidents, high levels of noise and air pollution, wastage of time, fuel etc.

In order to check the proliferation of private modes of transport, it becomes essential to make the public transport system financially strong so that they can provide quality services to meet the transport demand. For doing this a level of investment is required. However, in the past, the external agencies have offered much support for public sector and management improvement schemes. In this context, a question comes again and again whether the investment, provided by the external agencies, gives benefits to the citizens to the level it should be. This may be one of the reasons for urban transport authorities to look more towards private sector as a source of investment and improved efficiency of transport services.

Generally, the method in which public and private sector cooperate and partner with each other to provide infrastructure and / or improved public services is known as *Public Private*

Partnership. It has no universal definition, however, the nature of partnership contingent on the type of project, scope of services, duration of the project, responsibilities of sectors and risks between the private as well as private sector. Generally, 'Public is represented by SPV, State and Central Governments, Local Government, Transport Authority, Transport Committee etc. 'Private Sector' is represented by Private Sector Organizations / Companies, Resident Welfare Associations, Non - Government Organizations, Community groups etc.

In case of water supply, sewerage and solid waste management, PPP is being used for last many years but in the field of urban transport it is a new concept. There is a range of PPP models varying from simple service contract (which may be renewed every year) to long term concessions contracts, which may be extended up to 25-30 years. Service Contract, Management Contract, Concession and Lease, Built-Operate-Transfer(BOT) / Built-Own-Operate and Transfer (BOOT), Design, Build, Finance, Operate and Transfer (DBFOT) are the PPP models, which are used depending upon the scope of project, project costs, project duration, allocation of roles and responsibilities, risks involved etc.

In order to maximize the benefits of PPP to the public and ensure long term sustainability of the project, some guidelines should be there to follow the PPP route - lifecycle. The lifecycle of a PPP is referred to a set of activities starting from project identification and initiation to construction / implementation and commencement of operations.

It consists of seven stages, viz. project initiation and assessment, feasibility analysis, project structuring, detailed project preparation, bidding process project construction and monitoring and commencement of regular operations. The details of the lifecycle have been given in a 'Toolkit for Analysis of Urban Infrastructure Projects for Public- Private- Partnerships under JNNURM (2008)', prepared by the JNNURM Technical Cell, Ministry of Urban Development.

In the field of Urban Transport, the National Urban Transport Policy (NUTP), 2006, suggests that the priority should be given to the use of public transport. It is in favor to adopt such measures that discourage the use of personal motor vehicles and encourage using public transport for daily trips to work or school etc. In this connection, the Central Government

promotes investments in public transport as well as measures that make its use more attractive than that of personal motor vehicles.

For this purpose, the Central Government encourages high capacity public transport systems being set up through the mechanism of SPV and offer financial support either in the form of equity or one time viability gap financing, subject to a ceiling of 20% of the capital cost of the project after examining various parameters, viz. extent of resources likely from private participation, willingness to involve the private sector in operations under the overall supervision and coordination of a public agency, willingness to introduce premium public transport systems that are priced high but offer better quality with a view to limit the subsidy requirements in normal services etc.

There are many activities for which private sector can be engaged, saving financial resources for activities that public organizations can best do. The Central Government encourages the state Government to involve the private sector in providing transport services under the structured procurements contracts.

There are many options in which the public organizations / agencies can involve private sector, such as hiring buses from private sector without crew, hiring buses from private sector with crew, tenders routes or areas to private sector (gross cost contract or net cost contract), BOOT contract for bus stops / shelters and GPS, concession agreements with bus operators / supplier and pass issuance operators etc. Each option has some advantages and some disadvantages but the SPV has to decide as per its requirements. Besides the above, Public Private Partnership is also being used for urban transport infrastructure projects such as underground or multilevel parking, traffic improvement schemes etc.

Options Available for Efficient Urban Transport System

In the field of urban transport, Mass Rapid Transit System (MRTS) is an innovation around the globe that can broadly be classified into 'rail system' and a 'bus system'. The rail based MRTS is capital intensive and includes systems like metro, monorail, Light Rapid Transit (LRT) etc. The bus based system includes Bus Rapid Transit System, commonly known as BRTS.

The BRTS is not a technology but an organized way of operating buses on dedicated corridors with high tech information system. Selection of a particular type of system depends upon many characteristics of the city. The present study has documented BRTS of four cities, namely, Jaipur, Ahmedabad, Pimpri-Chinchwad and Visakhapatnam. Amongst these, Ahmedabad BRTS has been implemented and operating successfully.

Another option is to operate modern and intelligent transport systems enabled buses. As mentioned earlier, the Government of India has funded 15,260 such buses in 61 JNNURM cities as a part of the economic stimulus package. A 'Handbook on Service Level Benchmarks for Urban Transport', Ministry of Urban Development, 2009, has mentioned the formula to calculate the presence of public transport system in urban areas (%) in terms of city buses under the ownership of State Transport Undertaking / Special Purpose of Vehicles or under Concession Agreements.

Success Stories – Best Practices¹

It is true that every success or failure conveys some message as to what we should do or not do. If a project is successful, it can be replicated in other cities. Problems / challenges or constraints alert the planners, implementing agencies and managers to take care of them for future planning and implementation of the projects. In a nutshell, one can learn from success and mistakes of each other.

In general, if a project achieves its objectives / targets within a given time frame work, it is said that the project is successful. The success of any mass transport system is judged by its operational performance. The operational performance is largely contingent upon financial performance which itself is subject to management efficiency and fare structure. It is expected that the system should initially recover at least its operating cost from its fare box, which is known as a breakeven point. Capital investments should also be recovered in a fixed time period either by the main stream of revenue (fare box) or by other revenues, like, revenue from advertisements, rents etc.

In other words, a good financial performance improves the operational performance of a mass transport system to a greater extent. A transport system having good operational performance attracts people and the ridership is increased. An increase in ridership means that the commuters, who were travelling by other modes of transport (especially personal vehicles) earlier, have switched over to public mass transport system.

This process not only improves the financial performance of the system but reduces the congestion on roads which occurs due to the operation of personal vehicles. Moreover, if the congestion is reduced, air pollution, noise pollution, wastage of fuel, wastage of time, rate of accidents etc. are also reduced. Thus, the mobility of people increases, which finally affect the economic growth of the country.

1.4 Limitations of the Study

This study has following limitations:

- 1) The PPP based Metro Rail Projects, under the Mass Rapid Transit System (MRTS), belong to an organized sector and are at initial / implementing stages. Therefore, the present has not documented them. Nevertheless, the highlights of PPP based Metro Rail Projects of Hyderabad, Mumbai and Delhi (from New Delhi Railway Station to IGI Airport and from IGI Airport to Dwarka Sector 21), along with their Funding Pattern (Funding Models), have been given in Annex II.
- 2) As mentioned earlier, all case studies (projects) are based on the information which was shared with us by the transport agencies / organizations. As a result, some parameters for the projects could not be compared in the study.
- 3) A case study on ‘Thane Railway Station Area Traffic Improvement Scheme’ does not fall in the criteria chosen for the selection of a sample but it has been documented in addition to our commitments (Annex- V). The reason this being is that this is a success story in the field of urban transport infrastructure. It has been awarded by MoUD in the Conference & Exhibition on Urban Mobility India – 2009.

- 4) The Indore City bus Service – Indore City Transport Services Ltd is the first Public Private Partnership (PPP) model in India. The present study has not documented the same because it has already been documented and disseminated extensively. However, for purpose the purpose of ready reference, Annex VI of the study deals with its description. The information given in this Annex is based on the information gathered from Internet and from researchers’ papers.

Report Outline

Detailed case studies are described in Chapter 2 to 12 and Chapter 13 provides Summary and Conclusions of the study.

¹ The UN defines best practices as successful initiatives which have a demonstrable and tangible impact on improving people’s quality of life; are the result of effective partnerships between the public, private and civic sectors of society; and are socially, culturally, economically and environmentally sustainable. Best Practices often incorporate active solutions for problem solving based on effective partnerships and institutionalized interface with stakeholders and citizens.