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Sustainable Bus Rapid Transit initiatives in India: The role of decisive leadership and strong institutions

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ABSTRACT

The Government of India's Jawaharlal Nehru National Urban Renewal Mission is instrumental in providing policy, financial, and institutional support to meet the growing needs of urban agglomerations (UAs). In addition to discussing the recently implemented Delhi Bus Rapid Transit (BRT) system and the Indore Busway project, which served to renew the nation's interest in public transport, this work presents a case brief from three UAs for which the author prepared detailed project reports on the BRT systems. This paper highlights the role of leadership and institutions in the successful completion of feasibility studies (Visakhapatnam and Vijayawada), the process delays (Hyderabad), planned implementation (Visakhapatnam), full-scale operationalization (Indore), and the problems caused by quick deployment (Delhi), the last of which has led to a national debate on BRT viability in India. In conclusion, this work brings to the fore the felt need for a decisive leadership and strong institutions in evolving sustainable public transport solutions.

1. Introduction

The Jawaharlal Nehru National Urban Renewal Mission (*Jn*NURM) was introduced by the Government of India in 2005. The Mission, through project funding, gives an impetus to sustainable service improvements in urban agglomerations (UAs) with a population of one million-plus, and aims to encourage reforms, improve infrastructure, and roll out fast-paced urban transport initiatives including Bus Rapid Transit (BRT) systems. The mission is led by the Prime Minister's Office, the Ministry of Finance and the Ministry of Urban Development (MoUD, 2006). It interfaces with state and local governments that are eligible for project funding. *Jn*NURM draws mainly from the National Urban Transport Policy (NUTP, 2008), which promotes investments in infrastructure and reformation of state transport units (STUs).

India's UAs are witnessing a rapid growth in population because of heavy rural–urban migration brought about by economic expansion. During 1951–2001, the population in the UAs increased from 17.3% to 27.8% (NIUAAR, 2000). While the population grew at a compounded annual growth rate (CAGR) of 2.1% during this half century, the passenger-kilometers traveled increased at 9.4% CAGR (IRC, 1996), mostly in the UAs. In 2001, some UAs had more than 10 000 persons per square kilometer (Demographia, 2008). Also, in the period 1995–2005, the number of motor vehicles more than doubled (30.3–66.3 million) (MoHA, 2007). Population growth is testing the government's ability to meet the growing demand for quality road infrastructure and public service delivery systems. The central government and some state governments are now actively working to address problems in the UAs.

This paper presents the Indore Busway project, the Delhi BRT system, and brief cases from the cities of Visakhapatnam, Vijayawada, and Hyderabad in Andhra Pradesh (AP) (ASCI, 2007a, 2007b; ASCI and IIT Delhi, 2008).[2] Its purpose is to illustrate the role played by strong institutions and a decisive leadership in successfully initiating public transportation projects.

Section 1 begins with the general policy on public transport while Section 2 presents a perspective on the need for system improvements. Section 3 provides a brief on the uniqueness of the studies presented here. Sections 3.1, 3.2, and 3.3 present the Indore busway project, the three case cities in Andhra Pradesh, and the Delhi BRT system, respectively. Section 4, containing the main theme of this work, discusses political involvement (Section 4.1), public administration (Section 4.2), special purpose vehicles (Section 4.3), socio-economic assessments (Section 4.4), capacity-building (Section 4.5), and leadership roles (Section 4.6). Section 5 illustrates the challenges faced by the cities and briefly discusses

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[2] The author prepared the BRT detailed project reports (DPR) for Visakhapatnam, Vijayawada, and Hyderabad, and interacted with political representatives, senior bureaucrats, city administrators, and technical staff.

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the timely interventions of leaders and supporting institutions. Section 6 presents the concluding remarks on developing sustainable transportation solutions in India.

2. India's public transport: a perspective

The pervasiveness of public transport in UAs is demonstrated by the data that the bus share among all the modes is 1.1% nationwide but 9.9% in the top 23 UAs (Ministry of Shipping, Road Transport and Highways, 2007). Recent literature highlights some of the concerns in UAs such as increasing traffic congestion, increasing air pollution, and poor transit quality. While Badami and Haider (2007) pointed to decreased transit ridership and higher operating costs, Pucher et al. (2004, 2005), Schipper and Fulton (2002), and Singh (2005) discussed the need for quality transportation systems in India. It is clear that providing high quality services should be the core theme of India's transport systems development strategy. The case studies presented here illustrate the possibility of accomplishing this objective.

3. Case studies

Indore's bus procurement and special purpose vehicle (SPV) framework has served as a model for the DPRs of Visakhapatnam, Vijayawada, and Hyderabad. These three projects are distinct in that the first moved swiftly to implementation, the second is under design, and the third is linked to the city's rail transit project. The recently implemented Delhi BRT system offers important lessons on leadership involvement. This work presents cases that are unique in some respects. First, these projects began as initiatives of the District Collectorate (Indore), Municipal Commissionerates (Visakhapatnam, Vijayawada, and Hyderabad), and state administration/academic professionals (Delhi). Initially, the projects faced opposition but the drive for change led to their acceptance. Second, these projects faced obstacles because land was either not available or was not provisioned through regulation. Third, the current data systems proved inadequate to quantify or justify project expenditures, i.e., there was a general lack of information regarding project benefits and costs and system outputs of earlier city projects. This work presents models that hope to build sustainable transportation solutions for the future.

3.1. Indore busway system

Headed by the District Collector (DC) and with a seed capital of INR 2.5 million, the project SPV, Indore City Transport Services Limited (ICTSL, 2010), was incorporated in 2005 to create, operate, manage and maintain high quality intra-city bus services in the public private partnership (PPP) mode. Pre-ICTSL, the city had

- high travel demand; an unregulated and inadequate public transport system;
- informal public transport comprising private mini-buses and vans;
- poor bus infrastructure, amenities, and time schedules;
- few public transport options for women, children, and senior citizens.

Broadly, the SPV has three components with the following functions:

(1) ICTSL is responsible for infrastructure provisions, the passenger information system (PIS), data management, dispute resolution, public relations, security services, management of ticketing facilities, and facilitation of revenue sharing among operators.
(2) The planning, management, control, and maintaining unit fixes the fares and tariffs, maintains high quality services, determines and monitors standards, ensures environmental compliance, franchises services, and monitors project contracts.
(3) Vendors are responsible for bus operations, employee supervision, fare collection, fleet maintenance, and PIS management using GIS and GPS tools.

The financing structure comprises revenue generation through daily fare collections, operator premium, and advertising at bus stations/buses/PIS. To ensure the viability of the PPP, 60% of the advertising revenue, 80% of the season ticket sales, and 100% of the daily fare collections are provided to the operators. ICTSL functions as an independent corporation and is a self-financing and revenue-generating model.

ICTSL procures modern 40-seater, fuel-efficient, low-floor vehicles with wide doors for easy entry and exit. Bus stations, built 600 m apart, have been constructed on a build-operate-transfer model, and were contextually designed to add aesthetic value to the city. Ticket vending is fully automated with appropriate monitoring and controlling processes in place. The system is now migrating to intelligent smart cards. The bus fleet and the routes are appropriately color-coded for branding purposes. As of 2009, there were 84 buses in operation with an average passenger load of 75 000 per day. The bus fare structure was designed after considering the local low-fare competition from vans, affordability for the poor, and incentives for middle-income families to persuade them to opt for public transport rather than personal automobiles. To improve customer service, ICTSL facilitated capacity-building training programmes for the operating staff. For boosting employee morale, the company also instituted communication protocols, a uniform salary structure, and a dress code for all operators as also the standard preventive and routine maintenance practices including vehicle cleaning. That the system was a success became clear within a year of its inception with the share of public transport growing from 16.4% to 21%.

3.2. The three case cities in AP

Visakhapatnam, a fast developing port city on the coast of the Bay of Bengal, is witnessing rapid industrialization. Vijayawada is on the banks of the river Krishna and is known for agricultural production. Hyderabad, the political and commercial capital of AP, is one of the nation's fastest growing cities and has pioneered India's global entry into the information technology sector. Table 1 shows the demographic profile and traffic characteristics of the three cities. The per capita trip rates, peak hour peak direction trips (PHPDT) and vehicle operating speeds were similar in Visakhapatnam and Vijayawada. The PHPDTs in Hyderabad were higher due to greater travel demand. Also, the mode shares varied largely among the three cities.

In Visakhapatnam, 90% of the 0.45 million registered vehicles are cars and motorized two-wheel vehicles. The current travel demand of 1.2 million person trips per day is estimated to grow to 1.6 and 2.8 million trips per day by 2011 and 2021, respectively. In Vijayawada, the demand is expected to grow from the present 1.26 million person trips per day to 1.5 and 2.3 million person trips per day by 2011 and 2021, respectively. The Visakhapatnam BRT project comprises 20 and 18.5 km long corridors with 38 traffic junctions and 48 bus stations. The recommended concept