International Experience in Bus Rapid Transit (BRT) Implementation:
Synthesis of Lessons Learned from Lagos, Johannesburg, Jakarta,
Delhi, and Ahmedabad

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“Real power in Bolivia often seems to lie with the transportistas, the owner-drivers of buses and taxis who ferry people and goods around a big, sparsely populated country...” They clashed twice with the country’s president and won each time, first over a proposed steep rise in petrol price and second over a ban of imported second-hand cars.

*The Economist*, June 25, 2011 (p. 48)

I Introduction:

Such is the power of informal bus, mini-bus and shared-ride taxi operators. Due to the sensitivity of the population to transport issues and its impact on day-to-day life, any local incident involving mismanagement of the sector gets widely reported by the press and other media and makes national news. The number of people directly and indirectly engaged in providing public transport services can be very large. For example, in Lagos, there are over 75,000 minibuses and 200,000 commercial motorcycles, moving far more people than any other transport mode and providing direct employment to over 500,000 people. Assuming one public transport worker per household (with an average household size of 5) means that over two and one half million people receive their sustenance from the sector, or almost 15 percent of the total population. The size and importance of the sector gives them the power to cripple the local economy by calling a strike in response to any negatively perceived government action, denying transport to millions. The sheer number of people impacted gives them enormous political power. In turn, the politicians have a significant stake in maintaining the status quo because of the opportunities for their own financial gain (many informal sector vehicles are owned and operated by public officials) and the ability to use their position to distribute patronage, often in return for financial benefit.

Despite the power they wield, such loosely regulated operators are able to offer only low quality service, dominated by over-supply on some routes and under supply on others. Several cities have attempted to improve the organization with a view to ensure more balanced supply and demand across all parts of the city and a significant improvement in the quality of service. Bus Rapid Transit (BRT) systems have been among the most commonly adopted strategies for such reform.
II Study Objectives and Design

It is in this context that this study has been undertaken to document BRT case studies in terms of the political setting, institutions/governance, public involvement and communications, service/operations/management and planning and their relationship to investment performance. The study has been undertaken in recognition of the fact that successful implementation and operation of BRT systems often reflects non-physical actors like leadership, communications, organizational structure, service planning and operating practices rather than the design of transitways, stations, terminals and vehicles. This paper does not seek to compare BRT with other forms of public transport but only seeks to evaluate a sample of BRT systems in terms of the softer issues that have contributed making a BRT system successful or not so successful.

The study will help decision makers and practitioners understand the most difficult issues in the challenging environments of developing cities, issues that are rarely addressed in the literature.

The study should prove to be a useful tool for those contemplating new BRT systems because it will add to the body of knowledge that has up to now focused on the “hard” engineering aspects of BRT. It is based on extensive literature review, interviews with appropriate stakeholders and primary data collection to document lessons of BRT experience in five case study cities—Jakarta (Indonesia), Lagos (Nigeria), Johannesburg (South Africa), and Delhi and Ahmedabad (India)¹. Thus, the paper spans two continents, namely Asia and Africa. It has deliberately not used examples from Latin America as this is a region where BRT applications have been similar and have been implemented in similar environments. Cities in other parts of the world have tended to replicate the Latin American model, but to varying degrees in different political, institutional and operational environments. The objective is to learn from this variation.

Following this section, Section III presents a brief background and context for the paper, highlighting a need to expand the size and improve the quality of conventional road based public transport systems. Section IV presents a synthesis of case studies and key findings. The detailed case study write ups are shown in the Annex.

¹¹ This paper is based on case studies developed by Anil Baijal (Delhi and Ahmedabad) and Colin Brader (Lagos, Johannesburg, and Jakarta).
Each BRT case study is approached as follows:

I. Geographic, Economic, Demographic and Transport Context: What are the Key parameters impacting travel and public transport demand?

II. Political, Governance and Planning Background: What is the planning and decision making, institutional framework for public transport in general, BRT in particular; what was BRT’s planning History?

III. Communications: What was the communications program undertaken for BRT and what was its role in planning, implementation and operation?

IV. System Concept, Integration, Performance: What was implemented, how does it relate to the rest of the public transport system and how is it working?

V. Operating Arrangements: What are the institutional arrangements for the operation of BRT?

VI. Finance: What were the financial arrangements for BRT implementation and its subsequent operation?

III Background and Context for the Paper:

Almost all cities in the developing world are facing rapid urbanization and improvements in standards of living. This causes an even faster growth in the urban travel demand, particularly so for personal motorized modes of travel. This, in turn, has meant increased congestion, leading to deterioration in air quality and a growing incidence of accidents, both of which have severely negative health impacts. The significantly increased use of fossil fuels for transport also has negative implications for climate change and creates foreign exchange and national security problems for developing and developed countries. In the absence of a proportionate increase in road space, congestion is increasing, compromising the ability of cities to remain competitive and livable. In response, governments are increasingly looking at ways of improving public transport. Investments in Bus Rapid Transit (BRT) are an attempt to provide efficient and effective public transport services, often in places where no formal public transport currently exists.
The most commonly adopted strategies to mitigate these problems worldwide have been improving public and non-motorized transport through a variety of management and operations strategies and infrastructure investments, as well as traffic management. The objective of this approach is to reduce personalized vehicle travel by offering more competitive, more sustainable and less intrusive travel alternatives, improved public and non-motorized transport.

In addition to expanding the size and increasing the quality of their conventional road based public transport systems, cities are also electing to invest in one or more forms of rapid transit, both road and rail based. Rapid transit systems provide high speed and reliability, as well as improved comfort and convenience to large numbers of travelers. They can also serve as a land development tool, inducing more sustainable development patterns.

For the purposes of this paper, rapid transit is defined as a public transport mode that combines the following into a fully integrated, branded system:

- a high frequency, easy to understand service plan designed around high volume, medium to long trip length corridor travel markets
- attractive, substantive, fully accessible stations
- efficient (e.g., off-board) collection
- high capacity, attractive, easy to board/alight from and environmentally friendly vehicles
- passenger information and other advanced information and communications technologies (ITS) applications
- dedicated running ways

Metro and light rail (tramways) have been common rapid transit investment choices. BRT is becoming increasing popular in developing cities as it can provide high performance, capacity and levels/quality of service at costs affordable to them, and is usually more cost-effective than other, rail-based alternatives.

Pioneered first in Curitiba, BRT systems have been implemented worldwide, from a large number of Latin American cities to Asia, Europe, Oceania, and North America.

The busiest BRT system, in Bogotá, Columbia, carries over 1.4 million daily trips, with line volumes exceeding 40,000 passengers per hour, both more than most metro systems.
BRT is seen as an appropriate solution to addressing mobility needs in an age of growing income, rising car ownership and use, and constrained fiscal resources.

While BRT systems\(^2\) have proven successful in most cases, there are examples of those that have not done well, at least initially. Though they can be simpler and less costly than rail-based rapid transit, BRT systems have unique planning and implementation challenges which if not adequately addressed up-front can lead to less than successful outcomes. The introduction of BRT systems often require a need to migrate from a loosely organized public transport sector to one that is regulated and controlled. There is also the need to coordinate activities of the multiple agencies involved in planning, financing, implementing, and operating or regulating various aspects of the public transport system. There is also often the need to undertake new functions no institution has been doing.

Apart from these issues, another unique challenge is that BRT systems often involve dedicating roadway space previously available to any vehicle to exclusive use by BRT services. Even though the clear majority of people traveling in virtually any developing city corridor are on public transport, this is perceived as interference with the “rights” of car owner/users, an influential societal group.

Despite these challenges, planning and implementation of BRT is too often seen as an engineering problem focused on the provision of segregated BRT transitways, procurement of state-of-the-art vehicles and complex ITS applications. The primary focus is on BRT “hardware” rather than the market and the services which are the most important planning and design criteria, or the critical institutional and governance changes and political and technical champions necessary to get BRT successfully planned, implemented and operated.

The public transport systems in all the case study cities (except Delhi and Ahmedabad) shared the common need to migrate from a loosely organized bus transport sector to one that is regulated and controlled. The sector is dominated by private, largely informal, minibus services due to significant deterioration in service coverage and quality or total collapse of the large, formally organized bus companies that previously existed in the respective cities. Beginning in the 1980s, urban public transport in most developing cities underwent a major transformation, with the private sector assuming a much greater role as operators of minibuses or shared ride taxis.

\(^2\) BRT has many definitions. The widely referenced Institution for Transportation Development Policy’s (ITDP) BRT Planning Guide defines BRT as:

“……a high-quality bus based transit system that delivers fast, comfortable, and cost-effective urban mobility through the provision of segregated right-of-way infrastructure, rapid and frequent operations, and excellence in marketing and customer service.”
Delhi and Ahmedabad are exceptions and continue to be served by large buses operated on prescribed routes, with formal stops by a state owned enterprise and the private sector in a regulated regime. In fact, in Delhi such publicly operated services run alongside privately operated buses of the same size and using the same routes and stops.

The advantages of minibuses are their agility in meeting market needs, ease of acquisition, viability without subsidies, and flexibility of schedules, stopping patterns, and even fares and routes. However, minibuses also have disadvantages, particularly in terms of the negative externalities (congestion, poor safety and security, environmental impacts). Their numbers are often determined by political expediency (or even corruption) rather than real capacity needs and financial viability, making it difficult for operators to provide a minimally acceptable level and quality of service. These problems are unlikely to be addressed by market forces alone, but public regulation is often poorly enforced or non-extent.

Implementation of a formal BRT system in a city that only has an informal public transport system operating without formal schedules, stops or even fixed fares requires strong commitments; technical commitment to be able to determine what new types of public transport should be offered and political commitment to change the business model for providing it and get the funds and authority to actually implement.

As noted above, a large proportion of the population in most developing cities depends on the informal public transport sector, bus and or mini bus for transport and employment. The high numbers directly effected, the owner/operators, rightly have normous political power, which could be helpful in affecting change, or become an insurmountable obstacle. The success of BRT in the case study cities with a powerful informal sector has been related to how well the BRT proponents dealt with it, which is one of the focal points of the paper...
### IV. Case Study Synthesis and Findings

Tables 1 and 2 below compare technical performance parameters for the five projects:

#### Table 1: Comparison of Technical Data

<table>
<thead>
<tr>
<th></th>
<th>Lagos, BRT-Lite</th>
<th>Johannesburg, Rea Vaya</th>
<th>Jakarta, TransJakarta</th>
<th>Delhi HCBS Busway</th>
<th>Ahmedabad JanMarg</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Date of first line opening</strong></td>
<td>March 2008</td>
<td>September 2009 (line 1A)</td>
<td>December 2004 (line 1) February 2009 (line 8)</td>
<td>May 2008</td>
<td>July 2009</td>
</tr>
<tr>
<td><strong>Number of Corridors</strong></td>
<td>1 in operation; extension UC; additional line under construction</td>
<td>1 in operation; additional line being implemented</td>
<td>11 trunk routes and 3 feeder routes in operation;</td>
<td>1 in operation; 25 more planned</td>
<td>3 in operation; 5 more planned</td>
</tr>
<tr>
<td><strong>Total System Length Operating, planned</strong></td>
<td>22 Km 20+ km under construction</td>
<td>25.5 Km 300+ Km planned</td>
<td>135.11 Km</td>
<td>5.8 km, dedicated median transitway (being debated) 8.7 km, side-curb lanes without enforced segregation; 300 Km planned</td>
<td>45Km 41 Km additional planned</td>
</tr>
<tr>
<td><strong>Construction cost $US per Km</strong></td>
<td>$1.2m+/Km.</td>
<td>$14.2m/Km++</td>
<td>$1.3m/Km+</td>
<td>$5m/Km</td>
<td>$3m/Km</td>
</tr>
<tr>
<td><strong>Corridor percent segregated</strong></td>
<td>60%</td>
<td>100%</td>
<td>90-95%</td>
<td>40%</td>
<td>100%</td>
</tr>
<tr>
<td><strong>Number of existing stations</strong></td>
<td>26</td>
<td>30</td>
<td>142</td>
<td>29</td>
<td>67</td>
</tr>
<tr>
<td><strong>Type of vehicles utilized</strong></td>
<td>11.7m High Floor</td>
<td>Medium Floor: -- 18m artic. (trunk), - 12m (feeder/complementary)</td>
<td>18m articulated (some lines) 11.5m high floor</td>
<td>DTC: Primarily 12m low floor; Some A/C Other: Variety of types and sizes</td>
<td>12m high floor</td>
</tr>
</tbody>
</table>

+ Initial transitways had to be rebuilt  ++ All stations have passing lanes
Table 2: Comparison of Performance Data

<table>
<thead>
<tr>
<th></th>
<th>Lagos, BRT-Lite</th>
<th>Johannesburg, Rea Vaya</th>
<th>Jakarta, TransJakarta</th>
<th>Delhi</th>
<th>HCBS</th>
<th>Ahmedabad, JanMarg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average daily ridership on system (Approx.)</td>
<td>200,000</td>
<td>45,000</td>
<td>280,000</td>
<td></td>
<td>85,000</td>
<td>135,000</td>
</tr>
<tr>
<td>Max. Load Point, Peak Direction, Peak Hour Volume (Approx.)</td>
<td>10,000/Hr.</td>
<td>3,500/Hr.</td>
<td>10,000/Hr.</td>
<td>10,000/Hr.</td>
<td>2,000/Hr.</td>
<td></td>
</tr>
<tr>
<td>Former mode of BRT passengers</td>
<td>Car (6%), Public Transport (90%)</td>
<td>Not known</td>
<td>Car (14%), Motorcycle (6%), Public Transport (69%)</td>
<td>Not known</td>
<td>Bus (40%), Rickshaw (35%), Auto (13%)</td>
<td></td>
</tr>
<tr>
<td>Av. Revenue Speed (Approx. Km/Hr)</td>
<td>20 for all stops local service</td>
<td></td>
<td>18 on Median transitway</td>
<td>25</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Travel time savings from previous</td>
<td>29% over length of initial corridor</td>
<td>40-50% over length of each corridor</td>
<td>30% over length of median transitway</td>
<td>20-30% over length of each corridor</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

As the detailed case study write ups in the Annex indicate, all of the projects can be considered successful in some way. They all delivered improvements in public transport speeds, reliability and customer satisfaction and increased PT usage in their respective corridors. They were all cost-effective in terms of the value received for the relatively modest expenditures. This having been said, some have performed better than others. It is clear from the cases studies that the major causal factors of this variance were:

- Political Leadership, Planning and Development: How the projects were developed politically and institutionally
- Communications: How well the nature of the projects, their objectives and potential benefits, and how to use them after opening was conveyed to decision makers and the effected general public and how stakeholder concerns were communicated back to project sponsors
- Service Plans: What kind of BRT and complimentary public transport services are offered in the respective corridors?
Operating Arrangements: What institutions/organizations provide BRT and complimentary services? How managed and/or regulated?

Implementation and Operating/Maintenance Finance: How were initial implementation and subsequent operations and maintenance paid for?

The purpose of this paper is to address all these issues. The “soft” subject areas noted above were the focus of the synthesis because the case studies demonstrated that the difference between great success and limited benefits was most often how these issues were addressed rather than the particular hardware used for the system.

Each will be discussed below.

Political Leadership, Planning and Development

Without question the projects that were implemented the fastest, with the least opposition and hence at the lowest cost, had consistently strong, forceful support from a politically astute champion. The champions were complimented by a solid organization with superior administrative and technical skills and public transport experience.

The projects in Jakarta, Lagos and Ahmedabad are closely associated with political leaders who made special, focused efforts to generate support from the general public and other political leaders. These champions also helped the often new organizations actually implementing BRT overcome opposition from vested interests. These ranged from other public officials in charge of “competing” agencies to private operators of shared ride taxis and minibuses who were rightly concerned about their livelihoods.

Such political leadership allowed the technical teams to do their jobs unhindered by the challenges that the political leadership was best equipped to deal with.

In the most successful cases, the technical people doing the planning had strong public transport experience, and took advantage of international consultant, non-governmental organization and international development bank technical experts in public transport in general and specifically BRT.

The planning history of the projects was somewhat mixed in terms of where BRT fit into a more global public transport agenda. Delhi, Jakarta, Lagos and Johannesburg all had multi-modal strategic transport plans of which BRT (or busways) were one important component. That BRT moved forward when it did in each city was related to “external” factors like the World Cup in Johannesburg and the election/appointment of strong leaders who wanted to do something during their tenures in office.

The decision to begin BRT in Ahmedabad was also situational, the arrival of a strong leader, the then new municipal commissioner who was convinced that something had to be done for public transport. He, in turn, received enthusiastic support from the
charismatic, elected chief minister of the state who was of a like mind to get something done to address the transport problems that everyone acknowledged were becoming intolerable.

There had been nascent plans for a metro system for years, plans that are still in process. The concept of a BRT system had also been discussed but in a clearly secondary, “complimentary” role to metro; however, the financial requirements and long implementation period of even an initial metro line were such that the decision was made to proceed with the easier and less costly to implement BRT system.

This was to be done in corridors removed from the city’s core where a potential conflict with metro proponents was unlikely.

Underpinning this leadership was a comprehensive technical team with a competent, dynamic director, housed at the local “Center for Environmental Planning and Technology”, CEPT University. This staff took charge of actually preparing the project until a special purpose vehicle, the Ahmedabad Janmarg Limited, could take over, completing implementation and contracting for and overseeing operations. Without this confluence of three leaders, it is doubtful that the project could have succeeded.

There was similar political leadership in Jakarta and Lagos. In Lagos, there was also extremely competent technical leadership and staff at the Lagos Metropolitan Transportation Authority, the preeminent transport authority in sub-Saharan Africa.

Leadership in Johannesburg was at a city level, the City Council Transport Committee Chairperson, but the opposition from the informal private shared ride taxi industry was much more difficult to overcome than was the case in Lagos.

Communications

At a BRT public meeting in South Africa, the Section World Taxi Association Witsand (SWTAW) members were “upset at being left out of the city’s Bus Rapid Transit (BRT) system’s planning and negotiations as their routes are earmarked as feeder bus routes for the planned BRT rollout…” It was the first they had heard about it. (Public Meeting, October 20, 2011)

Coincidently, Johannesburg stands as a place that had great difficulty getting its BRT system implemented and then successfully operated. On the other hand, Lagos, under similar if not more difficult circumstances, was able to get its informal sector on board relatively early in the development of its BRT Lite system, resulting in much quicker and less problematic implementation. This range of experience reflected different approaches to stakeholder communications and management.
Stakeholders are defined as organizations/groups that have an interest (positive or negative) in a project and can impact its success. Communications covers all activities related to informing stakeholders and listening to them about the project. Stakeholder management involves using communications to manage their expectations. Stakeholder management and communications ultimately results in projects which do the most to account for stakeholder needs and expectations in design and implementation while informing them why is cannot be done if that is the case. Managing expectations is one way to mitigate the inevitable opposition to change.

These significant differences between Lagos and Johannesburg are one indication of the importance of two-way communications, consultation, and stakeholder management. If the case study cities are an indication, there are a number of distinct stakeholder/interest groups, each with a different perspective and stake in the public transport system. For the majority of the population in developing cities without access to private transport, the main concern is the affordability, safety and quality of the access public transport provides to jobs, education, shopping, recreation, and all the activities that life involves. Any change that increases costs and/or reduces available options, and/or the quality and/or the level of service would be negative for this group. Mitigating the fear that this could happen needs to be a focus of any communication strategy.

For the large proportion and numbers of families directly dependent on public transport jobs for income, the concerns are even greater, including basic sustenance. In Lagos, for example, mini-buses, shared-ride taxis and motorcycle-taxis provide direct employment to well over 500,000 people which, with dependents, constitute roughly 15% of the population.

The informal public transport provider “industry” can be further divided into two or more sub-groups, workers and owner/operators, each of which often have different associations or unions representing them. Owners of operating franchises and vehicles are one unique stakeholder group, while labor, drivers, conductors, mechanics, etc. are another with distinct interests. A third is the group that both owns and directly provides service.

As long as the number of people employed doesn’t change, labor will almost always benefit from the better pay and working conditions that comes from BRT’s more formal organizational regime; however, there is still a risk that the number of jobs may be reduced. This fear-inducing uncertainty needs to be addressed by a communications strategy.

From the perspective of the owners, the introduction of BRT systems often requires at migration from this loosely regulated (and taxed) arrangement to one that is more tightly
organized and controlled by the respective government\(^3\). This requires a major cultural shift and a change in business models, the broader implications of which cannot be underestimated. The economic power of owner/operators translates to political influence because of their ability to buy political favors and, in extreme cases, disrupt the life of a city.

Political alliances are established by incumbent providers with the intent of sustaining their profitable but unregulated monopolies and even extending them. This having been said, the actual impacts of BRT introduction on current public transport providers could range from minor reductions or even increases in income to a complete loss of business opportunities. Like with labor, this uncertainty leads to fear for this stakeholder group. Again, a proper communications strategy will address these fears.

Owners of private vehicles, automobiles and motorcycles constitute another important stakeholder group. A major concern for them is the loss of road space leading to even more intolerable congestion. This group is particularly important in developing cities, because they are usually the wealthiest and most politically influential sector of society even though they are less numerous than public transport users. Many BRT projects, will actually free up road space for general traffic even if they dedicate lanes to BRT, by reducing the fleet of unregulated minibuses and taxis and better controlling their behavior. Even when this isn’t the case, the majority of the traveling public irrespective of mode will benefit from the BRT project. Either way, the facts need to be communicated and the concerns reflected in planning and design.

Owners of private vehicles are important stakeholders from another perspective. They are a target group of commuters who need to be attracted into using the BRT instead of their cars and motorcycles. Therefore, continuous communications has an important role to play during the operational phase of the BRT. Private vehicle users need to be persuaded to move to the BRT by highlighting its convenience, safety and other aspects. Presenting easy to understand information on schedules, routes, fares, etc and differentiating it from low quality informal public transport options can go a long way in securing a shift from personal modes. New BRT systems in developing cities have captured up to 20% of their riders (e.g., Jakarta) from private modes.

\(^3\) The crisis of the 1990s and the resulting collapse of the state owned or subsidized private enterprises led to the emergence of informal, loosely organized, privately operated public transport systems
For precisely these reasons, Ahmedabad has kept up its communications even after the system has started operations and continuously keeps releasing performance statistics to the press on a regular basis. This serves as a powerful tool for communicating with commuters to use the system. Such a strategy has helped it to secure a continuous enhancement in its ridership.

Still another important stakeholder group are the people that are directly affected by the construction of infrastructure like transitways and facilities like stations, terminals and depots. Many of these stakeholders do not actually own the land they occupy, but could still be negatively affected by any construction which requires it for right of way.

The final stakeholder group that needs to be a communications focus during BRT planning, implementation and operations are the non-public transport government agencies affected by the enterprise. Examples include owners/operators of the roadways in the respective corridors and the traffic police.

In fact, in some places, the traffic police see BRT as creating safety issues (e.g., car, pedestrian and bike intrusion into high speed BRT rights of way, requiring making all BRT trips to cross half the respective arterial roadway to access median stations). The police are technically best able to address these issues, and no matter what approach is taken, their work burden for enforcement, etc. is likely to increase. This indicates that for public entities with a direct stake in the project, even more than two-way communications could be needed. A formal, direct role in planning and design decision making may be warranted.

The reality of the different concerns noted above for each group may be vastly different than the perception for a specific BRT proposal. Both the perception and the reality need to be addressed for the project to succeed. The inability to understand and address these issues comprehensively, to the satisfaction of all stakeholders, placed two BRT projects, New Delhi and Johannesburg, in jeopardy in their initial years.

In Delhi’s case, inadequate communications led to problems with both private vehicle owners and the traffic police. There was and remains the perception that a reserved, dedicated median transitway automatically causes congestion and safety problems and that reserving road space for public transport is somehow “undemocratic.”. Neither is correct, but improved communications among all stakeholders, particularly the traffic police, could have gone far to mitigate whatever real problems have actually occurred.

In Johannesburg, the informal mini-bus/taxi operator stakeholders were concerned about their livelihood and sustenance. These concerns had been more or less successfully addressed in Lagos and Jakarta, but the specifics of how this was done were not fully explained to the effected stakeholders. Once serious negotiations began between the group and the BRT proponents, agreement was reached.
In both cases, the reality of the impacts of BRT implementation and operation on the variety of stakeholders was far less onerous than the initial perception.

All of the case studies showed that early development and implementation of a formal, multi-media communications strategy addressing the spectrum of stakeholders noted above is fundamental to the success of BRT. The best communications strategies built on the strengths of the then current situation and developed a widespread sense of project ownership while managing resistance to change. This enhanced legitimacy by providing stakeholders with a sense that they were being listened to and improved the quality of decisions by making them better reflect the interests of the general public as a whole.

The key questions a communications strategy must address include:

- How should stakeholders be managed?
- What communications approaches should be utilized and how should they be organized and carried out?
- What process should be used to adapt projects to public needs and perceptions surfaced through ongoing communications?

Management of stakeholders, communications, and public involvement increase the chances of project success because they result in better understanding of issues on the part of proponents, and increased buy-in and appreciation from other stakeholders.

The key principles of stakeholder management involve: a) understanding motives and interests of the multiple organization/people with some stake in successful implementation; b) building and maintaining active support and commitment of the stakeholders to adapt the project to the needs and to facilitate delivery of the project; and c) ongoing, regular engagement with stakeholders to inform, negotiate, receive feedback, and adapt the project accordingly.

**Communication Strategies and Approaches in Case Study Cities:** The common thread across each of the five cities when the BRT was first proposed was that: a) BRT was a new and unfamiliar concept; b) public transport had a poor image while private transport, both two and four wheeled, was becoming increasingly available; c) public transport was most often provided by informal and unregulated private operators; d) the safety, security, level and quality of public transport services were poor and not attuned to the needs of the user.

The lack of exposure to and understanding of any form of mass transit let alone one as novel as BRT, presented a significant communication challenge. Each city needed to address the challenge to overcome opposition and ensure that the proposed project met stakeholder expectations and needs.
While the requirement for good communications in the preparation and implementation of BRT projects was generally recognized, different approaches were used. Some were more successful in navigating among the often conflicting interests of multiple stakeholder groups than others. While a few began early in the planning and development process to understand and integrate diverse interests (e.g., Lagos, Ahmedabad), others had to improve their communication strategy and change their projects in response to strong adverse initial reactions from a variety of stakeholders (e.g., New Delhi).

The initial communications program in the case study cities had different priorities. In Lagos, for example, the early objective was clearly to design the system around users. Focus group surveys were undertaken to establish their needs so that the end product best met them. In Jakarta public apathy resulting from former grand but unimplemented plans led to a communication strategy designed to excite the public about BRT’s benefits. In Johannesburg, however the early focus was on the taxi operators as they were potentially a significant barrier to implementation of Rea Vaya. All of the cities had to involve the then current public transport operators, but Johannesburg was less successful early on.

While Ahmedabad did not have a well structured communications plan at the initial stages of project preparation, the plan evolved as the BRT project took shape and gradually helped transform opinions of the various stakeholders. The design and preparation of BRTS in Delhi lacked a comprehensive communications strategy till after the BRT was implemented and opposition had reared its ugly head from almost all quarters. The system faced a lot of criticism from private vehicles, political leaders, media and other interest groups in the initial years. In response, a comprehensive plan for public outreach was prepared and gradually the system gained acceptance though there are still major issues.

The common approach across all the systems, with varying degree of success, in development and implementation of a BRT communications strategy was to:

- Identify all key stakeholders
- Have a separate strategy for each stakeholder group and project phase, planning, construction, and operations
- Maximize exposure through a variety of approaches, including:
  - workshops, discussions and forums in general for the general public and in detail for specific stakeholder groups;
  - study tours for selected individual from key stakeholder groups, e.g., operator unions, politicians
- meetings and presentations within specific ethnic and geographically defined communities
- Use the media to pass on central messages relating to BRT to the general public, what it is, what it would be and look like in the respective city and its benefits
- Promote BRT with current public transport users through leaflets and marketing materials
- Use pervasive, integrated branding to convey system identity and attributes, position BRT in the transport market place for potential new public transport users and generate pride among service providers, politicians and citizens

**Service Plans**

The related aspects of the case studies synthesized here are the service and operating plan utilized and the arrangements for operating that service plan. Both reflect the flexibility of BRT as a mass rapid transit mode that utilizes buses. Buses can be of varying size, from a maximum capacity 80 for a single 12Mtr vehicle to about 220 passengers for a bi-articulated, 25 meter unit. They can also operate on and/or off dedicated transitways and do not require extensive unique specialized training to maintain and operate.

While this capacity range has negative operating cost implications in certain high volume situations, combined with on-transitway/off transitway capabilities, it provides the flexibility to offer services that directly match origin-destination patterns without requiring undue transferring and indirection of travel.

The BRT system in each case study city uses buses and paved transitways adapted for the particular application but similar if not the same as the vehicles, facilities and infrastructure that were already in use.

This meant that operating and maintenance activities can be carried out by a variety of actors without necessarily requiring unique, often internationally supplied expertise.

Rea Vaya, TransJakarta, Lagos and Ahmedabad operate simple service plans consisting of transitway-only, all stops routes. Alone among them, Rea Vaya has integrated feeder and complimentary networks managed under the BRT Special Purpose Vehicle, all with common ticketing. Because it has relatively low demand, it operates at lower frequencies than the other systems. This makes it easier to maintain fixed intervals between bus arrivals, especially given the fact that there will be a GPS-driven ITS system that can be used to manage operations “on the street.”
Ahmedabad has an effective “background bus” operator, the Ahmedabad Municipal Bus Service with BRT interfaces. AMTS also provides dedicated “feeder” services.

TransJakarta and Lagos, on the other hand, operate much more frequent, all BRT stop service because of much higher demand. TransJakarta’s inability to control dwell times at stops and passage through intersections inevitably leads to service variability problems and bunching. The lack of a GPS-driven control system means that there is no ability to re-establish headways once vehicles have entered service. TransJakarta also relies on the background mini bus system to provide “feeder” connections.

Lagos BRT-Lite also operates an “independent” service plan with no integrated, formal “feeder” services as is not the case in Johannesburg. People who cannot walk at either end of their trips to travel origins, destinations or both, must use informal sector taxi or mini-bus connections. BRT Lite Vehicles are dispatched constantly to meet the high levels of demand experienced at the given terminal and as reported from “downstream” by mobile phone. As with TransJakarta, there is no control system and the tight headways operated lead to vehicle bunching.

Whilst operational inefficiencies in Lagos and Jakarta are obvious, it is the high demand that creates the strain. In Johannesburg demand is much lower, headways more manageable and the control system will become more important as further routes are added and demand grows.

For all systems other than New Delhi, fares are collected off-board, with either full or partial “validation” by inspectors rather than drivers. This is critical for minimizing dwell times and fare evasion.

In New Delhi, few if any changes were made in the bus network service plan to take advantage of the median transitway. Existing public transport routes simply changed from operating in mixed traffic in all lanes to operating on the exclusive median transit facility.

On the DTC and privately operated public transport buses, tickets are issued and fares collected manually on board the buses. For the other public vehicles, fare collection system is governed by the specific terms of the carriage contract of the operating agreement. This fare collection approach has caused some of the difficulties that have plagued the New Delhi system. First, all boarding travellers must board through a single door so fares can be paid to a conductor, making for inordinately high dwell times. Second, the fact that privately operated public transport buses wait at busy stops to increase their passengers volume also increases dwell times, especially since there are no passing lanes around them.

Passenger intermodal interchanges are important across all cities in order to meet whole journey demands of the travelling public. In Johannesburg, unique among the cities, interchanges among BRT, feeder and complimentary services taking place
within single stations. The multi-corridor Jakarta BRT network itself is more comprehensive, transfer demands are huge and the integration with the rest of the public transport system more complex. Some BRT-BRT and BRT-minibus interchanges cannot be accommodated within a single station/terminal but require walk trips of up to 600m between services.

In Lagos, interchanges between BRT Lite buses and mini buses take place primarily at three terminal locations. At each terminus, parking and passenger waiting areas have been set aside for mini bus buses and taxis that provide for onward journeys. These services will be more comprehensively planned in the BRT extensions currently being considered.

Other than Johannesburg and Ahmedabad, the cities were all relatively weak in service planning and operations management. Lagos and TransJakarta depend on the informal mini-bus sectors to provide “last kilometre” connectivity without benefit of integrated fares and an integrated network. The lack of integration, “leaving the existing operators alone” results from political, not technical considerations.

Given the huge volume of passengers being carried in Lagos and, to a certain extent, Jakarta, an argument could be made for leaving at least some of the existing minibuses to ply the respective corridors. The advantages of doing so are to provide public transport options by allowing short trips to be made on min-buses while longer trips are made on BRT or BRT- Lite. Such an approach would also support differential fares so that lower income travellers had an alternative to BRT.

The disadvantages of leaving the minibuses alone include the lack of fare, service and physical integration leaving passengers with a less than satisfactory experience. There are also continuing emissions and safety issues. Perhaps the worst problem is that taking existing road space away to dedicate to BRT and leaving a huge number of minibuses to continue to operate in the smaller number of general traffic lanes could cause significant congestion. This would create a political problem for BRT even though it carries a disproportionate number of passengers for the road space it consumes. This does not appear to be the case in Lagos, but certainly was an issue in Jakarta, at least initially.

The experience in the five cities suggests that a critical ingredient that was not properly addressed in most of them was service and operations planning. This resulted in BRT not offering the best performance possible and the fullest possible net benefits. It also created political issues that could have been avoided.
Operating Arrangements and Management

In all cities there was a need for some type of change in the way public transport services were operated. The changes were least dramatic in New Delhi, a fact that led to many of the ensuing problems with the High Capacity Bus System, HCBS busway. As noted above, the first stretch of 5.8 km of the HCBS is a median transitway on which any bus plying in the corridor can operate. There is no single operator or group of operators dedicated to providing uniquely BRT service on a few dedicated BRT routes. In the main, the public transport buses plying in the corridor belong to DTC and private operators licensed by the Transport Department of GNCTD. In addition to public transport buses, other vehicles are allowed to ply in the corridor, including school, tourist and private company buses, and vehicles carrying security and other emergency service personnel.

In Ahmedabad, the supply, operations, and maintenance of buses for Janmarg are being done by Charter Speed Private Limited under the supervision of Ahmedabad Janmarg Limited, a special purpose vehicle led by the municipal corporation. Even though there is a commitment from the Ahmedabad Municipal Corporation to fund operating deficits, revenue from direct fare and advertising has been able to cover all costs of operations, including bus service contractors. In each of the other cities aside from Lagos, new operating management entities were formed. These entities were responsible for service planning, procurement of operators, performance monitoring and oversight for enforcement.

In Lagos this role was undertaken by the existing Lagos Metropolitan Area Transportation Authority, LAMTA, while actual operations are performed by a share capital corporation formed by the then existing minibus operators union. Administration of road passenger transport operations in Nigeria falls, by law under the National Union of Road Transport Workers (NURTW). Whilst NURTW is a national body, it is organized along State lines with each having its own Council and related administrative functions. There was no single private-sector undertaking capable of operating the BRT-Lite system on its own. As part of the initial design, it was agreed that this scheme would include an operator development function in partnership with NURTW under the private-public financing approach envisaged for mass-transit. NURTW established a special purpose entity for the actual operation of BRT-Lite – Lagos NURTW (1st BRT) Cooperative Society Limited (referred to as FBC, standing for 1st BRT Co-operative). Once FBC was formally constituted and empowered, it commenced the range of preparations for the launch of the BRT-Lite service.

In Jakarta, a special purpose vehicle named TransJakarta was set up to manage and oversee the operation of BRT services. These, in turn, are actually operated by a
number of contractors, some simply a corporation formed by the then current minibus operators in the respective corridor; in others, the winning bidder in a competitive procurement.

In every city except for New Delhi, contractors are paid on a gross cost, per kilometre operated basis. Payment on a gross cost, per kilometre basis means that there is no competition for passengers. In both Lagos and Jakarta, more than one public transport operator uses the same dedicated transitway facility. In Jakarta there is inter-corridor service and in Lagos, there is one operator for express services and one for all-stops local services. This does not create any overt operational challenges because they are not competing for customers at stops in order to get gain more revenue and be paid a higher amount.

In Johannesburg a single operator simplifies contractual issues but further operators will be introduced as further lines are developed and multiple operators in a single corridor could happen there too.

The bottom line is that the best operating arrangement seems to be to have a public special purpose vehicle responsible for planning, procurement, monitoring and perhaps dispatching of BRT services. In the best case, this special purpose vehicle would have similar authority over all public transport services operating in a metropolitan area irrespective of mode. Payment on a gross cost basis, with proper performance incentive and penalties would help avoid any negative consequences of having more than one operator in a given corridor. At the same time, having more than one operator in a given corridor provides “back-up” in case there are performance, labor or contractual problems with one of them and allow contract periods to be staggered.

Finance

In all cases, infrastructure and facilities like stations and terminals were financed by governments. In Ahmedabad, a share of each of these was financed by three different levels of government, the municipality, the state of Gujarat and the Government of India. In Johannesburg, infrastructure and facilities were financed by the South Africa National Government while vehicles were financed by the city. In Jakarta the Province paid for all construction while vehicles were paid as part of operating contracts or some lines, provided by the government on others.

Construction of the bus way in New Delhi was entirely financed by the local municipality, while infrastructure and station operating and maintenance costs are financed from advertising revenues.
While infrastructure and facility implementation costs were all paid by government, there is variation in how ongoing operations and maintenance costs are paid for. TransJakarta and Rea Vaya (Johannesburg) both require substantial operating subsidies in excess of fares. In New Delhi, DTC services, including those using HCBS transitways, are highly subsidized, while private operators must make do out of the fare box.

In Lagos and Ahmedabad, fare and other operating revenues cover 100% of the cost of operating and maintaining BRT services, infrastructure and facilities, including the provision of vehicles and administrative overhead.

The reasons for the variation in terms of operating and maintenance finance across the case studies are too numerous to discuss here in detail. They include the size of the market and hence revenue captured, the nature of the contracts with private operators, the levels of fares charged and the amount of competition from the informal sector operators where they are present (Jakarta, Lagos, and Johannesburg).

However, Lagos and Ahmedabad demonstrate that it is possible for BRT systems in different developing city environments to meet their operating and maintenance costs and even the cost of vehicle amortization and depreciation out of operating revenues, fare, advertising, etc.

Conclusions

The case study BRT, BRT Lite and High Capacity Bus systems in Lagos, Johannesburg, Delhi, and Ahmedabad have been in operation for a number of years, with the oldest, Jakarta, in operation since 2004. Each city, improved their public transport system using a general bus-based approach that had been conceived elsewhere, but had not been tried before in the given place. The techniques applied were different in each case because they were adapted to be able to deliver something of value within the respective political, institutional, operating, physical financial constraints. Despite these constraints and the critique offered above, each system is delivering significant benefits to the citizens of each city in excess of its modest costs and impacts.

Key lessons emerging from this evaluation are:

- Consistently strong, vociferous support from politically astute champions is needed; in all city examples, the champions were complimented by a solid organization with superior administrative and technical skills and public transport experience (Johannesburg, Lagos, Ahmedabad, Jakarta)
Early development and implementation of a formal, multi-media communications strategy addressing the spectrum of stakeholders noted above is fundamental to the success of BRT (Lagos, Ahmedabad, Jakarta).

Management of stakeholder expectations, two-way communications, and public involvement increase the chances of project success. For proponents, they result in better understanding of issues and likely outcomes, and increased buy-in and appreciation from other stakeholders (Ahmedabad).

BRT can be an attractive, potentially cost-effective rapid transit option, anywhere, because it offers:
- high speed, reliable service
- attractive to passengers of all incomes
- attractive to developers
- relatively modest costs, easy to build and operate

BRT offers a flexible, adaptable solution to address mobility issues:
- It provides the ability to serve a variety of travel/land use patterns well;
- Even if right-of-way dedication is less than 100% (Lagos), it can still perform efficiently and effectively;
- Vehicles, running ways, systems (Ahmedabad, Lagos) can easily be upgraded after the commencement of operations in response to problems or when more investment funds become available;
- Implementation times can be relatively short (e.g., within single term of political office, e.g., Jakarta, Johannesburg, Lagos, Ahmedabad.

There is no single BRT system prescription:
- use transportation analysis, planning to develop the most appropriate BRT system package
- begin with market analysis
- match markets with comprehensive, integrated public transport service plan, plans and then designs for running ways, vehicles, stations, etc.

For BRT to be most successful, focus on:
- level of service
- quality of equipment, infrastructure, facilities
- system integration: Make the entire PT network service plan of which BRT is a part, running ways, stations, vehicles, fare collection, ITS….function as one system
- Differentiate BRT from the local bus system; position in market place to compete with driving, taxis

- In all cases, infrastructure and facilities such as stations and terminals were financed by governments; however, it is possible for BRT systems in different developing city environments to meet their operating and maintenance costs and even the cost of vehicle amortization and depreciation out of operating revenues, fares, advertising, etc (Lagos, Ahmedabad)
Annex:
Case Study Summaries
Annex: Case Study Summaries

Lagos

**Geographic, Economic, Demographic and Transport Context**

Lagos, located to the south on the Bight of Benin, is Nigeria’s largest city and is the Nation’s centre of commerce and industry and largest port. The Lagos metropolitan area has a population variously estimated at between 15 and 18 million, and conservatively projected to grow to more than 25 million by 2025. The city’s main commercial and government centers and largest business district are on Lagos Island, with only five bridges connecting it to the mainland where most of the population resides.

Lagos is one of a few mega-cities (population in excess of 10 million) without any formally organized public transport system (a legacy system left by the British collapsed by 1990). Public transport is provided by a large fleet of (over 75,000) mini-buses (*danfo*) together with a smaller number of midi-buses (*molue*) and shared-ride taxis (*kabu-kabu*). More recently, motor-cycle taxis (*okada*) and motor-rickshaws (*keke*) have emerged as public transport modes.

The road network is inadequate in terms of coverage, capacity and condition. The relatively high level of car ownership encouraged by unrestricted imports of second hand cars, and the high level of vehicular traffic enabled by subsidized petrol prices has lead to extreme congestion. This is exacerbated by the manner in which the informal public transport system operates. The huge, virtually unregulated number of danfo’s, okada, etc. constantly weave back and forth from median to curb lane and vice versa seeking customers and looking for breaks in the traffic. They congregate on the street at markets, pedestrian crossings and other places where they are likely to find willing customers, effectively shutting down a significant share of available road space.

Typical journey times for commuters to Lagos Island from the main residential areas to the north and west of the city on the mainland are in excess of two hours, longer if there are vehicle breakdowns, accidents, or flooding blockages on the main roads leading to the few bridge crossings.

**Political, Governance and Planning Background**

There were three significant factors in the success of BRT Lite in Lagos. The first was an ongoing political commitment at the highest levels to doing something about the increasingly poor transportation situation in Lagos. The second was the institution that was created as an instrument to effect change while the third was the strong communications program.
The poor quality of public transport, and the related pervasive roadway congestion and environmental degradation led to the State Government identifying transport as one of the most pressing issues it faced. The governor, Asiawaju Bola Ahmed Tinubu, directed development of a multi-modal transport system which included rail and waterway mass-transit investments integrated with a core road passenger transport network. Enhanced bus services to complement the proposed mass-transit railway system were a core component of the plan.

It was recognized that in order for this to work, it would be necessary to exercise government regulatory control over the informal, private bus operators, to introduce order where demand responsiveness had been taken to extremes.

Because of the need for a formal body to implement the interventions and reforms envisioned in the plan, an authority was created and measures to ensure its financial sustainability were introduced, with strong backing by the Governor. The politically insulated Lagos Metropolitan Area Transport Authority (LAMATA) was established in 2003 to coordinate transport policies, programs and actions of all agencies at different tiers of government as well as to oversee fundamental investments in the transport system. The authority was given a modest vehicle registration tax to finance its operations and cover some of its investment expenditures.

The creation of LAMTA and its staffing by highly motivated, educated and experienced professionals under contract provided the basis for the Governor to proceed with an “early action agenda to create momentum for the rest of the plan and political support for his other initiatives. BRT received the highest priority on that early action agenda.

The Governor and his deputy, later successor, provided strong political leadership and championed the project against early, strong opposition by the taxi industry, and other government agencies that had lost authority and power with LMATA’s creation.

Without that political insulation and active support by two successive administrations, it would have been very difficult, if not impossible for BRT Lite to have been implemented and then operated successfully.

Regulation of road passenger transport operations in Nigeria falls by law, under either of two separate non-governmental organizations – the Road Transport Employers Association of Nigeria (RTEAN) and the National Union of Road Transport Workers (NURTW). Over time RTEAN, which mainly represents the interests of vehicle and franchise owners’, came to dominate the inter-urban and large-bus sectors, while NURTW, with a focus on the transport operators, dominates the urban and small-bus sectors.
The NURTW is a national body but it is organized along state lines with each state having its own Council and related administrative functions. The operational level of the Union is managed at its Branches, which divide the network into zones based on the principal terminals (known locally as vehicle or lorry parks). Routes (lines) are controlled by the relevant branch(es), with vehicles paying fees for registration and each terminal departure. Vehicles queue in turn for boarding, and only leave the terminal when full (in the direction of predominant travel, at peak times). NURTW exercises little control over operations once vehicles have left the terminal, and most services board and alight passengers on demand along the line of route.

The large majority of the small commercial buses that dominate the sector are not actually operated by their owners, but rather by individual drivers who pay a daily rental fee (‘deliver’) to the owner for their use. The driver meets all direct operating expenses, such as hiring a conductor, buying fuel, making minor repairs, and paying system access fees (including extortion by enforcement agencies). The owner retains responsibility for maintenance and major repairs, and covers fixed costs such as finance, licensing and insurance. As such the relationship is analogous to an operating lease for use of the vehicle, and is a standard practice for the sector in Sub-Saharan Africa.

Communications

LAMATA utilized an aggressive communications program while developing and implementing Lagos BRT Lite, to ensure that all stakeholders were aware of its plans and what the potential benefits might be. The approach to consultation as a means of gathering information made a genuine and meaningful contribution to scheme development.

The project was not just about BRT-Lite but about facilitating movement within the corridor. This created public acceptance and pressure that was used too overcome resistance by sceptics within Government at “rival” organizations and among the taxi/minibus industry. This program made good use of quality, professionally produced videos, web sites, brochures and even regularly scheduled radio and TV programs.

These modalities have been used to establish communications with many, many different groups of public transport system stakeholders, including taxi and mini-bus owners and operators, women, school children, non-governmental organizations representing the disabled, religious groups, etc. Key to both stakeholder engagement and wider marketing was the engagement of NURTW. Whilst NURTW had become convinced that it was appropriate for the city to move to a more regulated form of public transport provision, its many members needed convincing and developing into ambassadors of the new transport mode.
A sense of status was created for BRT personnel whereby the best Molue drivers were encouraged to re-train to become BRT “pilots” of which their status amongst peers was greater and there was a feeling that they were engaged in the transport revolution that was sweeping across Lagos. It was also a case that there was now a need for more drivers than before and a change in working conditions in order to replace the tense, and often violent, atmosphere within vehicles and at stops with a more ordered humane set of service-users. This new relationship is perceived as more synergistic as more respectful drivers lead to a more compliant population which in turn leads to more and further respectful drivers. BRT was seen as the catalyst for change.

The communications program was not limited to project preparation and implementation, but continued well beyond the start of operations, with a bi-weekly television program dealing with relevant BRT issues such as fares and fare collection methods.

**BRT Lite System Concept, Integration, Performance**

In an attempt to improve the public transport system and regulate the market, government decided to introduce BRT along a 22-km corridor along a busy, multi-lane expressway with service roads for the most part. The system is referred to as BRT-Lite because of certain design compromises reflecting a limited budget and a politically motivated short implementation time. The system was inspired by Bogotá (Colombia) and Curitiba (Brazil) practices but adapted to a Nigerian context and budget and timing constraints.

**Service, Physical and Operational Features**

- There is a single trunk, all stops local service plus several express/skip stop routes; The mini-bus (danfo) and other public transport services in the corridor were left alone when BRT lite service began, though over time service levels went down as significant numbers of passengers migrated to BRT Lite.
- Stations are curb-side low platform with branded shelters, and a fenced area for queuing passengers who must have their tickets checked before boarding through a the front door
- Vehicles are front engined, high floor, body on truck chassis, two narrow door buses in common use in developing countries
- There is a dedicated, physically separated lane on the main part of Ikorodu Road, for 60% of the 20 Km corridor; The lane is on the outer part of the expressway and separated from the mixed traffic service lanes where the taxi’s ply by an island; The rest of the corridor is either in mixed traffic or on a bus lane delineated by a yellow line and signage
The initial service plan has a single local, all stops line operating in the corridor, with the rest of the PT system left to operate unimpeded. Because of crowding on the inner portions of the line and intense congestion at the northern, “Mile Twelve” terminal, two service plan changes were made soon after opening. LagBus services from northern suburbs beyond Mile Twelve (e.g., Ikorodu) now provide direct service on the transitway through Mile Twelve instead of being turned back at that terminal, and a shorter, “turn back” BRT Lite route introduced to provide more capacity in the inner portions of the Corridor.

The initial line was delivered at very low cost per kilometer compared to BRT projects in other parts of the world, in a very brief period from planning to operation (24 months?) opening for service in March, 2008. An extension and an additional corridor is in engineering and others are planned.

The high ridership on Lagos BRT Lite, over 175,000 passenger trips per day it popularity with the general public and support among the informal public transport sector, especially labor has been unexpectedly good. End to end commercial speeds are double those of the previous minibuses and taxis operating in the corridor and exceed 25 Km/Hr. for some express services.

The system is recovering all costs other than the modest infrastructure costs out of fares. There are currently some performance issues (e.g., missed trips, ill maintained vehicles) caused by the Taxi-union cooperative’s lack of managerial experience with large enterprises. These are in the process of being addressed through the hiring of professional managers as well as professional development.
Figure 2-1: Lagos BRT-Lite Phase I
Operating Arrangements

At the outset of BRT development, there was not even one private company in Lagos capable of operating the BRT-Lite system on its own – far less a range of potential operators among whom this opportunity could be competitively tendered. Therefore, it was agreed that this scheme would include an operator capacity development function in partnership with the National Union of Road Transport Workers (NURTW) under the private-public financing approach envisaged for mass-transit in the LUTP.

A special purpose entity for the actual operation of BRT-Lite was established by NURTW– Lagos NURTW (1st BRT) Co-operative Society Limited (referred to forthwith as FBC, standing for 1st BRT Co-operative). Whilst this entity remains a wholly owned subsidiary of the Lagos State Council of the National Union of Road Transport Workers, it is managed on an arm’s-length basis with day-to-day control vested in the 50 or so members who subscribed equity at its launch. Subsequent members may only be admitted to the Society by agreement with those already included, and on payment of the same equity subscription.

Once FBC was formally constituted and empowered, it commenced the range of preparations for the launch of the BRT-Lite service. This focused initially on the creation of a small management team and the recruitment and training of the pilots (drivers). The latter represented a particular challenge in that relatively few NURTW members held large-bus licences, and even fewer were qualified to drive such vehicles or had recent experience of so doing. The problem was exacerbated by the need for the competence to drive smoothly and at consistent speed within the confines of the BRT-Lite running lanes, which are only 2.8m wide in places.

During this developmental phase, it soon became apparent that NURTW actually lacked the relevant experience for the operation of a large-scale scheduled bus service. In effect their sector skills had been based on the management of terminals, with vehicle queuing and passenger boarding being their priorities, with little or no control along the line of route. LAMATA realised that they would have to step in to provide the relevant expertise, and recruited a Senior Public Transport Specialist from one of the major private-sector bus and coach operators in Nigeria for this purpose.

In addition to this external advisory function, it was also recognised that a number of the specialised activities of a large commercial passenger transport undertaking would need to be outsourced. First of these was the vehicle maintenance function, where the vehicle supplier was required to provide full technical support covering both trained personnel and spare parts stockholding. Second was financial management, where the bank recognised the critical nature of cash flows during the early years of the scheme and needed to control its risk exposure.
Third was operational management itself, with this being outsourced to a specialist business handling 1,600 vehicles and 2,600 drivers across Nigeria and covering the full range of human resource issues.

**Finance**

Infrastructure and facilities for the initial BRT Lite line were financed directly from Lagos State general revenue provided through LAMTA. LAMATA also has a dedicated source of funds (road use taxes) which will be used to partially finance future lines.

The question of financing vehicles to operate on the BRT corridor proved to be more of a challenge with the experience of earlier initiatives to encourage fleet investment (both at the Federal and State levels) by informal sector owners not having proved sustainable, and hence acting as a deterrent to banks for their involvement in the sector. No financial institution chose to make good on its expression of interest in participating in the bus finance scheme.

The vehicle supplier eventually resolved this matter by offering to accept deferred payment over two years, provided that a local bank underwrote the counterparty risk. This arrangement was agreed to by Ecobank Nigeria PLC, but it in turn then required the lodging of collateral personal guarantees from senior officers of NURTW in order to mitigate the risk exposure. Fortunately the levels set for these guarantees were proportionate to the affordability of those who had to provide them, covering less than 10% of the total transaction value, and so could be put in place. Once all the financial arrangements had been finalised, the order was confirmed for shipment in the first half of 2007. Delivery was then made in two batches, arriving in Lagos in June and September of 2007.

India's Tata corporation, the vehicle supplier, also financed and managed construction of the depot which was paid for by the Union Corporation as part of the vehicle lease/purchase program.

There are no public operating subsidies for BRT Lite in Lagos. In fact, the system has made a sufficient operating profit that allowed the loans used to purchase the buses from Tata have been paid back early.
Johannesburg

**Geographic, Economic, Demographic and Transport Context**

Johannesburg is the largest city in South Africa with a population of around 3.2 million. Inclusion of its suburbs increases the population to around 7 million. Though not the political capital, Johannesburg is the undisputed financial, communications and business capital of that country as well as a major industrial and surface logistics center.

As a result of migration from other parts of the country the city's population continues to grow rapidly, placing ever intensifying demands upon the city's economic and social infrastructure. The population of Johannesburg increased by 22 percent between 1996 and 2001.

The geography of Johannesburg, not constrained by water or mountains, has been driven by apartheid, a perverse social and political policy which has had a significant impact on the shaping of both land use and public transport.

The apartheid system in place in South Africa between 1948 and 1994 led to spatial planning that was designed to keep the pool of African workers residing within townships, far away from the commercial, financial and business core and traditional white residential areas, but close enough to them to provide the needed low cost labor. This policy led to the majority of black residential, township areas being situated between 25 and 30 km away from the CBD, leading to significant transport challenges.

The lack of public investment in transport for black, Asian and “colored” workers coupled with the extreme need through the separation of home and work place led directly to the growth of the informal ‘taxi minibus’ transport sector without any state control or support. The ability to readily meet a dire need without control led to a system that provided the best financial return to owners and operators while providing users with a generally poor level of service, high and unstable fares and poor and dangerously maintained vehicles driven by drivers with poor skills. The ability to make money with low levels of investment quickly led to an oversupply and intensified competition between rival suppliers and violence ensued, further marginalizing the user.
In addition to supplying critical mobility and employment, one of the positive legacy’s of the mini-bus system is that during Apartheid, the industry was perhaps the only significant entrepreneurial outlet for non-whites.

**Political, Governance, Planning Background**

There are three tiers of Government in South Africa. The national Government provides overall national policy and funding for transport schemes implemented at a local level. Regional Government (Gauteng Provincial Government) provides co-ordination across the province and Local Government (City of Johannesburg) derives local plans (reviewed by provincial and national government), local policy (in support of national policy) and implementation.

The City of Johannesburg is therefore the implementation authority providing expertise, co-ordination of stakeholders under political leadership to meet national policy aspirations. Figure 3-1 below shows the institutional structure.

*Figure* Error! No text of specified style in document.-1: *City of Johannesburg*  
Rea Vaya Institutional Structure
A dedicated Rea Vaya planning and implementation team was established reporting to the Executive Director of Transportation operating under the Member of Mayoral Committee for Transportation. The Transportation Team sits within the Johannesburg Roads Authority.

Following implementation, BRT has been run by the Rea Vaya Business Unit (system operating company). This unit has responsibility for operational control as well as managing specific aspects of system management such as bus operations, ticketing, revenue management, station management, system maintenance, inspection and enforcement.

The important suburban/commuter railroad system was not addressed by the City as it is within the purview of the South African National Railway.

In 2006, transport was given its own portfolio within the City government with responsibility for multi-modal transport planning and regulation within the city boundary.

**Communications**

There were three phases and different types of approaches to the Rea Vaya communications program. The initial phase was intended to build support for the program among the mini-bus or taxi industry owners/operators which were considered the most important stakeholder group to address.

Efforts included study tours to South America, workshops and discussions with the two major unions representing the industry in Johannesburg. These were intended to educate the industry as to what BRT was and what it could do financially and in other ways for industry labor and owners.

The city hired a technical expert to continue to work with the industry throughout the planning and implementation phase.

Special efforts were made to reach out to the riding public in general and to the disabled community in particular to receive their input and obtain their support in the face of expected opposition from the Unions. While there were consultations and promotions of Rea Vaya ahead of the system launch, financial constraints prevented the project team from spending large amounts on communications and promotion strategies. With these financial constraints in place, the team and particularly the political champions, courted local media to provide as much positive exposure as possible.

During the construction phase, while two key minibus stakeholder groups had agreed to co-operate with Rea Vaya, significant numbers of minibus taxi operators continued to oppose the system. These opposing operators became increasingly militant, holding strikes and protesting against the proposed system. The Rea Vaya team continued to talk to and negotiate with the affected taxi operators, while also carrying out workshops and road-shows for operators.
Another communications strategy adopted by the Rea Vaya team to counter opposition was to help build and promote the Rea Vaya brand through developing a logo and distinctive colouring to apply to all elements of the system and communications materials. The Rea Vaya branding and identity on vehicles, etc. was creative and consistent, helping to build system identity. Each station also has original and identifiable local artwork.

During the (current) operating phase, a variety of communications strategies are being used to maintain and build support for Rea Vaya. Facebook and Twitter sites set up during construction continue to report on the system and update users on a regular basis.

A specific budget has been allocated to communications by Rea Vaya. A marketing company has been hired to market the system more widely and this has allowed for the following marketing activities to be carried out:

− Press conferences,
− Produced pamphlets, posters and marketing materials - distributed to passengers and community members, and placed in stations
− Newspaper adverts
− Press releases,
− Radio interviews,
− Theatre productions within schools and community venues

The marketing team also encouraged other CoJ departments to include Rea Vaya when promoting the city. One example of this was encouraging the CoJ marketing department to include Rea Vaya stations in its “You Make Joburg Great’ campaign community outreach campaigns.

The marketing team also carries out daily media monitoring of Rea Vaya by cutting local press clippings and also sources electronic coverage. The office of the MMC (Councillor Moosajee), Executive Director and project manager are kept informed on matters of urgent reputational import so that swift corrective action can be taken.
Rea Vaya Concept, Integration, Performance

Rea Vaya is being developed in phases.

Rea Vaya System Plan

Rea Vaya Phase 1

Soweto
Phase 1A consists of the 25.5 km of dedicated roadway from Thokoza Park in Soweto to Ellis Park, on the east side of the Johannesburg CBD. Phase 1A construction contract was signed September 2007 with full service commencing September 2009.

Rea Vaya has the following service, physical and operational features:

- The service plan encompasses three types of services within the respective corridors. In the initial phase, there was a single “trunk” BRT routes operating only on dedicated transitways. Two “complimentary” routes, operate mainly on major arterials but also utilize dedicated transitways or lanes for part of their trajectory, effectively extending the reach of BRT beyond the dedicated running ways. The third type of routes, known as “feeders” of which there are five, operate virtually entirely on arterial streets, penetrating into lower density areas.

- Parallel mini-bus, shared ride taxi services were eventually reduced in Rea Vaya’s initial trunk corridor, and hundreds of vehicles scrapped per the agreement with the respective unions which set up the Reya Vaya operating companies.

- 41 High floor, 18.5 Meter. articulated buses are utilized in the BRT trunk route that runs entirely on an exclusive transitway.

- The articulated buses have three right hand side doors which speeds up boarding and alighting at busy high platform transitway stations.

- The 95 buses on complementary and feeder routes have doors on both sides. This allows passenger boarding/alighting through right side doors with no steps at
high platform median stations on dedicated transitways and via steps at curbside stops on other roads where they operate in mixed traffic.

- One of the left side doors on the 12Mtr. buses on “feeder” and complimentary routes serving curb side stops (as opposed to high platform stations) has a lift allowing complete access by the disabled

- Fully accessible, enclosed median stations have controlled entry/exit, are modular in design, are decorated with local artwork, naturally ventilated, electric sliding doors to vehicle entry/exit, high staffing levels with real time information;

- Station platforms and bus floors are at the same height (900mm) to facilitate level boarding;

- Station docking is facilitated by yellow line on carriageway which is aligned with yellow dashboard marking;

- Feeder services use median stations at terminals to facilitate efficient, cross platform passenger interchanges;

- All fares are paid before boarding the bus. Paper ticketing is being replaced by smart cards;

- Traffic signals are used to give priority at junctions, these will eventually be linked to the urban traffic control system;

- There is a centralized control centre with CCTV monitoring on vehicle and in station; headways are monitored and there is direct voice communication with station staff and drivers;

- Buses operate at high frequencies (every three minutes in the peak, every 20 minutes off peak);

- To ensure high capacity in the future, the trunk route has passing lanes for express buses, and multiple stopping bays at stations

After a variety of interruptions for strikes, etc., total ridership on the first phase of Rea Vaya is averaging around 45,000 daily riders (circa summer, 2011).

**Operating Arrangements**

This city planned a Bus Rapid Transit System (Rea Vaya), in preparation for the Confederations Cup hosted by South Africa in June 2009 rather than as part of a comprehensive strategic planning effort per se. This date was the target to have Rea Vaya operating. Whilst significant infrastructure had been built and vehicles purchased, finalisation of the busway, stations and importantly agreement with the taxi minibus industry frustrated its achievement.

In June/July 2010 the FIFA Soccer World Cup was held in South Africa and Johannesburg was the location of two of the stadiums used for the tournament. Rea Vaya was a crucial part of the transport plan for the event and its implementation and operation achievement was therefore seen as a national priority.
Negotiations with the various taxi unions in the run up to the World Cup games were contentious and even violent. There was a pervasive belief in the Taxi industry that implementation of BRT in general, especially in the initial Johannesburg central to Soweto Corridor would adversely affect the livelihoods of countless black taxi entrepreneurs. This later issue, the perception of negative impacts on the existing taxi industry and labor was a particularly difficult issue given the legacy of the Apartheid system, under which the taxi industry was one of the only business sectors that Blacks could enter.

Immediately before the World Cup began, there was an attempt by the Taxi industry to tie up the City to prevent Rea Vaya from going into operation. Tens of thousands of taxis were parked on major roadways in Central Johannesburg for days, until the Government threatened to confiscate them and tow them away.

Random violence accompanied the initial opening of Rea Vaya in the fall of 2009. The violence included a number of shootings against drivers and other staff, leading to one death. By the time of the World Cup, in June/July, 2010, the violence had disappeared, but ridership before and after the games, under 45,000 daily trips, was modest for the magnitude of the investment, in part because of continuing parallel mini bus service.

Given this history, Rea Vaya was originally operated by a private bus company Clidet, contracted for by the City because of the initial difficulty in reaching agreement on a new company with the relevant taxi operators. After several years of negotiations, Rea Vaya is currently operated by a share capital company known as PioTrans, comprised of the owners of nine former taxi operating companies with a 12 year operating contract, PioTrans has a 66.7% stake in Rea Vaya, with the City of Joburg and other stakeholders owning the remaining 33.3%.

The 316 private sector shareholders of PioTrans are from the Greater Johannesburg Taxi Council and are organised into nine taxi operator investor companies and one trust.

Coincidently, there was a seven week long strike in the fall of 2011 by Rea Vaya drivers who wanted the same pay and work rules to apply to them as to City-owned MetroBus employees.

**Financing**

Funding for the capital expenditure of Phase 1A was provided by the South African National Government, primarily through a national Public Transport Infrastructure and Systems Grant (PTIS) given to the City by Central Government. This funded the construction of the dedicated transitway, road reconstruction and stations along the route in addition to the transformation and transitional operating costs. In addition, grant funding was received for employment of support staff and consultancy contracts from the GTZ and United Nations Development Programme (Global Environment Fund).
In the absence of a special purpose vehicle with financial resources and the ability to finance them out of fares, vehicles were purchased by the city and provided to the operator at no cost.

The costs of operating Rea Vaya services are currently about R150m/year. These costs cover:

- Bus operating company payments
- Vehicle Maintenance Contract
- Employees
- Fuel
- Compensation payments to operators
- Metro Trading Company (managing stations)
- Station ambassadors, marshals, cashiers, and cleaners
- TMT (secure fare collectors)
- Station security staff

The fare revenues received in Year 1 total R50m, and are forecast to be R70m-80m in Year 2 or about 50% of total operating and maintenance costs not including depreciation or amortization.

The shortfall in fare box revenues is a result of patronage being lower than originally forecast. With this unanticipated shortfall in revenues, the system operation is subsidised by the City of Johannesburg.

**Jakarta**

**Geographic, Economic, Demographic and Transport Context**

Jakarta is the capital of Indonesia and its most populated city. The port city, crossed by many rivers and canals, is located on the North West coast of Java. It has a population of approximately 9.6 million, with a population density of 14,464/km2. The population of the region, including the suburban areas surrounding Jakarta, known as Jobotbek, is around 26.6 million, with the 2010 census showing a growing trend in the region's population.

An estimated 17 million trips are made each day in Jakarta City, of which only 53% are by public transport, prior to TransJakarta, public transport services and vehicles were considered to be low quality by the general public and the service offered inadequate.
The result of the significant number of private vehicles on Jakarta’s roads leads to serious congestion issues throughout the city. Before the implementation of BRT, economic losses arising from traffic congestion were estimated to be Rupiah 12.8 trillion / year (value of time, fuel costs, health costs etc), or roughly equivalent to $1.4 billion. By 2020 the cost of congestion has been estimated to rise to be Rupiah 65 trillion / year ($7.3 billion).

**Political, Governance and Planning Background**

Officially, Jakarta is not a city, but a province with special status as the capital of Indonesia. It has a governor (instead of a mayor), and is divided into several sub-regions with their own administrative systems. As a province, the official name of Jakarta is *Daerah Khusus Ibukota Jakarta* ("Special Capital City District of Jakarta"), which in Indonesian is abbreviated to DKI Jakarta. The city of Jakarta sits within a three tier political system. The national Government provides an over arching framework and the Jakarta Provincial Government takes overall responsibility for the development and implementation of transport strategy over the whole extent of the city. The actual implementation and operations is a city responsibility.

Development of transport strategy, including implementation of the Transportation Master Plan, is the responsibility of the Department of Transportation directly responsible to the Governor of DKI Jakarta Province.

A system development and delivery entity was established by Governor Decree within the Department for Transportation called *Badan Layanan Umum TransJakarta Busway (Public Services Agency TransJakarta Busway)*. The structure is summarised in Figure 3-2 below. The organization of TransJakarta, the BRT (not just busway) operator are shaded.
TransJakarta plans and manages the BRT network and as such has significant control over service levels; however, the Provincial Government designs and builds stations, whose operations and maintenance then is the responsibility of TransJakarta, and constructs and maintains the busway. Whilst TransJakarta sits within provincial Government, the separation between it and the Provincial Governments infrastructure maintenance division is susceptible to a reduced service standard through delayed reaction to maintenance needs.

The Jakarta Transportation Master Plan (PTM) was produced in 2004 and acts as the basis from which urban transport policy within the Jabodetabek region is developed.

The PTM recognised that emphasis “should be placed on sustainable economic development towards creation of better life in the region as well as for Indonesia’s national growth”, and that in order to do this domestic and foreign investment is essential. However, it then recognised that “inefficiency of the region’s transportation system such as poor accessibility to the Tanjung Priok port among other things has made the region less attractive for investors”, and an efficient and reliable trunk transport system was required.
There were three key strategies contained within the Jakarta Transport Master Plan as illustrated below. Within the public transport development strategy, BRT was highlighted as playing a significant contribution.

**Figure 2-3: Jakarta Transport Master Plan Strategy**

The concept for TransJakarta was therefore developed further, with plans for each of 15 corridors to be implemented by 2015.

To implement and then operate the BRT component of the strategic plan, TransJakarta was conceptualised in December 2001 by the then powerful and charismatic Governor of Jakarta, Governor Sutiyoso who had been advocating for a mass public transport system for almost a decade before. Sutiyoso recognised that BRT could serve the transit needs of Jakarta residents more quickly and at less expense than a metro system.

His and the public vision of BRT in Jakarta was “as a fast, safe, efficient, humane and comfortable public transportation with international standards”. Sutiyoso was a strong leader who stated:

“I have no fear. I am brave enough to decide and to make it happen. That is why I managed to construct seven busway (BRT) corridors in three years”
The development of BRT inevitably involved disruption, thus stimulating negative responses by those using the corridors where construction was taking place and businesses that fronted the future BRT corridors. This led to conflict between the National and Provincial Governments with the Minister for Transport (national) calling for postponement of the building of Line 1. Sutiyoso’s reaction was to intensify the programme of construction, bringing forward the date of opening by one month! Sutiyoso’s commitment was rewarded by plaudits upon the opening of the first line with almost instant recognition by the travelling public of the benefits of the system.

Since his leaving office in 2007 the BRT development programme has reduced in priority with the now shelved monorail project and still active MRT receiving higher priorities than BRT lines 9 and 10 and the development of a BRT control system. Sutiyoso continues to be active in advocating enhancements to the BRT network.

**Communications**

When Governor Sutiyoso first proposed to implement BRT in Jakarta in 2001, it was an entirely new concept for Indonesia. Public transport had a generally poor image while private transport modes such as motorcycles and cars were becoming increasingly popular, leading to chronic congestion problems. The implementation of BRT therefore required a comprehensive communications strategy to ensure that potential users, and non-users, understood its value to counter whatever negative publicity might arise from it slight impacts.

The communications strategy covered three stages:

- Design / Pre-Delivery Phase
- Initial operation
- Current

**Design/ Pre-Delivery Phase:** Public communications were particularly important during the pre-delivery phase because the Jakarta general public had a significant amount of skepticism when the system was first proposed.

Apathetic citizens believed the proposals to be a political stunt, and while they did not oppose BRT in principle, past experiences suggested that this would be another major project initiate with great fanfare, built at great cost that would then end in failure or not be completed.

To reassure the public that the proposals put forward by Sutiyoso were serious and would be delivered, the Governor put forward a clear implementation plan that was based around intense public consultation. The principal method of communication was through service advertisements on television.
Initially television stations were not interested in promoting BRT, however the Provincial Government employed the services of the Visi Anak Bangsa Foundation – a not for profit organisation that specialises in corporate communications and improving public distrust towards government which has several high profile employees. This led to a more creative approach to communicating and publicising to the Jakarta public, and this encouraged television stations to give more air time and provide more publicity to the BRT proposals.

The public service adverts created by Visi Anak Bangsa were run by several national TV stations, and the initial public reaction was positive. The adverts changed the public perception to both the system and its construction, and led to a greater level of acceptance by the public.

In addition to TV adverts, extensive public consultation was carried out at the Jakarta International Expo. This Expo is held every year between May and July and is visited by millions of people each year. The opportunity was used by the Jakarta government to distribute brochure and flyers about BRT and provide examples of the buses that will be used to facilitate providing an explanation to the public.

The Provincial Government also enlisted the help and support of NGOs, notably INSTRAN and the Pelangi Foundation to help communicate the benefits of BRT in both the printed and electronic media.

There was a determined approach to follow the TransMillenio model in developing the TransJakarta brand. This involved the development of a brand logo which was (and still is) used on all elements of the system that come into contact with the public, for example, at stations, on the side of buses, on employee uniforms, on all publicity materials and on electronic portals such as the website.

**Initial Operation:** Following the intense public consultation leading up to the implementation of TransJakarta, there was a significant change in the communications strategy in the first two years of operations. The Provincial Government, having experienced an extremely positive public reaction to Corridor 1, felt that there was little need to communicate their plans and the impacts of them when constructing further corridors because BRT was a concept that Jakartan residents and visitors could now understand and support.

It was during the first two years that the management of TransJakarta changed, with Badan Pengeloa TransJakarta (BP TransJakarta) being created to manage the BRT system. While this process was communicated through the media, BP TransJakarta had decided that it needed to ensure public relations remained positive to facilitate the further development of corridors.
To build this positive public image, BP TransJakarta recruited a media expert as Public Relations Manager whose key role was to build a positive image and strong links with journalists. This strategy was considered highly successful given the predominantly positive media coverage related to TransJakarta.

A website was also developed to disseminate service information and act as the primary electronic information source for users. The website also provides the opportunity for users to complain about the service (online and by SMS) and is transparent in its handling of these complaints.

Extensive public and employee consultation was undertaken to understand how the system operates and how services could be improved for users on corridor one and future corridors. A series of focus groups were carried out and the key issues were encountered.

The overwhelming issues following the implementation of Corridor One were:

- High temperatures within stations
- Station Cleanliness
- Crowding and difficult vehicle boarding/alighting

A community of around 1,100 TransJakarta users was also set up called Suara TransJakarta which holds regular meetings with the TransJakarta board to inform them of service improvements that could be made. The information gained through these public consultation exercises was (and continues to be) used to make improvements to future corridors.

Current: Since December 2006, BP TransJakarta changed its status to a public service agency under the name of Badan Layanan Umum (BLU) TransJakarta which led to the organization becoming a more technical implementation unit of the Provincial Department for Transport. This status change led to changes its communications strategy.

Since 2006, public communication has been more reactive through handling complaints instead of the more proactive approach adopted previously. Since 2006, there has been no specific communication strategy while the public relations manager is no longer in post. This change in strategy has led to a slight shift in opinions, with media coverage apparently less positive towards the TransJakarta system.

Since 2006, the website has been continually developed with the addition of Twitter and Facebook as key portals for disseminating information to and allowing feedback from users. TransJakarta has also become the Corporate and Social Responsibility partner for Coca Cola for promoting “greener and cleaner transportation”
The Concept, Performance and Integration

The concept for TransJakarta was therefore developed with plans for 15 corridors to be implemented by 2015. TransJakarta was conceptualised in December 2001 by the then Governor of Jakarta. The vision of the busway in Jakarta was “as a fast, safe, efficient, humane and comfortable public transportation with international standards”.

Figure 2-4: TransJakarta Network

Corridor 1 consists of 12.9km of mostly segregated bus lane with 20 stations at an average distance of 650 metres. Peak hour frequencies are around 1 minute while off peak frequencies on this corridor are 2-3 minutes. Further corridors were introduced over subsequent years, with the eighth corridor being implemented and operational in February 2009. A further two corridors have been constructed to be operational by early 2011.
TransJakarta Physical and Operational features:

- 18m articulated and 12m buses run in exclusive trunk bus lanes, mostly in the median
- The station platform and the bus floor are predominantly at the same height, 1.1m, to facilitate level boarding
- Buses have doors both sides to allow for occasional bilateral station entry/exit
- Buses have a mixture of 1 and 2 doors. Where buses have 1 door, the bus stops at the station at two locations, one to allow passengers to alight, and one to allow passengers to board
- Enclosed median stations have a controlled entry and exit, each station individually designed to fit the space available. Naturally ventilated with some fans, electronic sliding doors to vehicle entry/exit, high staffing levels
- Median stations have covered pedestrian over bridges for access. Over bridges have ramps at a 9% gradient to allow for wheelchair access
- Station docking is facilitated by a stop sign beyond the station for the driver to line up
- Interchange stations are linked via covered over bridges to allow interchange within the enclosed station environment
- All fares are paid before entering the station environment. Currently operate a token/ card and paper ticket based system, which will be replaced in due course with smart cards
- No priority at junctions, with signal cycle times of up to 4 minutes. No segregation at intersections, but painted surfaces to denote busway
- Buses are dispatched at each terminus by hand, and at present buses are not controlled by a central control centre, although it is hoped that this will be introduced in due course
- Buses operate at high frequencies on all corridors during the peak (1-4 minutes) and off peak (2 - 5 minutes)

TransJakarta first operated in January 2004 with Corridor 1 from Blok M to Kota, running north-south across the CBD, Figure 2-3 shows corridor 1 in context of the current network. For the first two weeks of operation, TransJakarta operated for free to allow users to better understand the new system. From 1st February 2004, the service started operating commercially and in 2004, TransJakarta carried 15,926,000 passengers.
Patronage increased in the second year of operation with 20,799,000 passengers using Corridor 1 by 2005. In 2009, 82 million passenger trips were made on the TransJakarta system, or almost 300,000 per day.

Journey time savings on TransJakarta have been significant since its introduction. Work carried out by INSTRAN demonstrated that on some corridors, journey times more than halved when compared to other modes of public transport using mixed traffic lanes. The effects of TransJakarta on journey times within corridors one, two and three are illustrated in the table below.

### Sample Journey Time Reductions Before and After Implementation of the First Three TransJakarta Corridors

<table>
<thead>
<tr>
<th>Route</th>
<th>Journey Length pre-BRT</th>
<th>Journey Length on BRT</th>
<th>% Reduction in Journey Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blok M – Kota</td>
<td>1hr 37min</td>
<td>45min</td>
<td>54%</td>
</tr>
<tr>
<td>Kota – Blok M</td>
<td>1hr 37min</td>
<td>45min</td>
<td>54%</td>
</tr>
<tr>
<td>Pulgadung – HCB</td>
<td>1hr 27min</td>
<td>40min</td>
<td>54%</td>
</tr>
<tr>
<td>HCB – Pulogadung</td>
<td>1hr 02min</td>
<td>35min</td>
<td>44%</td>
</tr>
<tr>
<td>Kalideres – HCB</td>
<td>1hr 41min</td>
<td>55min</td>
<td>46%</td>
</tr>
<tr>
<td>HCB - Kalideres</td>
<td>1hr 20min</td>
<td>45min</td>
<td>44%</td>
</tr>
</tbody>
</table>

The former mode of TransJakarta users is varied between private vehicles and public transport. Surveys undertaken by INSTRAN following the implementation of TransJakarta show that 14% of users previously used private cars and 6% used private motorcycles before using TransJakarta. 69% of users transferred from other forms of public transport including air conditioned (32%) and non air conditioned buses (35%).

There is no service or fare integration with the rest of the Jakarta public transport system, though a number of off-street intermodal passenger interchange terminals have been built to facilitate bus/BRT transfers.
**Operating Arrangements**

As of 2011, there were six different operators providing services on the TransJakarta network. Four of these operators are consortia of existing operators that were set up to take advantage of the compensation offered by TransJakarta for reforming the public transport services along those particular corridors. These were given no-competition contracts for the initial 7 year period of operation. Two of the operating companies were existing private organisations which won the opportunity to operate through an open, competitive tendering process, obtaining an operating licence for a period of 7 years. By 2014, all operating contracts will be competitively tendered.

The informal sector mini-bus operators still ply all TransJakarta corridors unimpeded.

**Finance**

Different elements of the TransJakarta network were funded by different bodies. Firstly, BLU TransJakarta is funded by the Jakarta Provincial Government. BLU TransJakarta is the body that manages the BRT network, but does not have financial control over the funding of infrastructure. The public works department of the Jakarta Provincial Government funded both the construction and maintenance of the BRT running lanes.

The road traffic management team within the Transportation department of the Jakarta Provincial Government (Dishub) funded the bus stations and the pedestrian foot bridges. Once constructed, the responsibility for managing and maintaining the stations and foot bridges lies with BLU TransJakarta.

Fare currently cover about 60% of short term avoidable costs compared to 90% in 2005 because of the opening of less productive lines. The operating and maintenance subsidy is funded by the Jakarta Provincial Government which funds BLU TransJakarta. Cost recovery is expected to improve as a higher proportion of operations are competitively procured as opposed to being given to existing operators at a negotiated price.

The financing of the fleet differs depending on the corridor. The buses that operate along Corridor 1 were funded by the Provincial Government, while those buses that will operate along corridors 9 and 10 once operational will also be funded by the Provincial Government with operators tasked with simply operating services. All buses on the remaining corridors are funded by the operators themselves and reimbursed for this outlay through the operating "per kilometre" payment provided by BLU TransJakarta. It is the intention of TransJakarta that bus investment is carried out by the government to reduce operational cost and subsidy.
Ahmedabad

**Geographic, Economic, Demographic and Transport Context**

Ahmedabad, a city of about 4.5 million inhabitants spread over an area of 466 sq km, is the centre of commerce and industry in one of India’s most prosperous states – Gujarat. Ahmedabad accounts for 14 percent of total investments in all stock exchanges in India and 20 percent of the Gujarat state GDP. It has 22 percent of all factories in Gujarat, and provides work and residence for 18 percent of the factory workers in the state.

Due to the strategic advantages of the proximity of Ahmedabad, the commercial capital, to Gandhinagar, a new purpose built political capital, there is a great potential for regional development, something which a regional land use and transport plan, being developed, will address.

The core of the contemporary city of Ahmedabad is the walled city founded in 1411 AD on the eastern bank of Sabarmati River. The growth patterns of Ahmedabad were determined by its emergence as a major industrial centre. The city has a well-developed road network, with 5 ring roads, 17 radials, and 11 bridges across the river to ensure connectivity. The functionally structured road system has helped the city to maintain a vibrant mixed land use character throughout, with a large central business district in and around the historic core city, a ring of industrial estates created by the Gujarat Industrial Development Corporation (GIDC) on the periphery of the city and a fairly even mix of all different land uses between the core and the periphery.

As a result, the average trip length in Ahmedabad is less than 5 km, which is less half of the distance traveled by a commuter in Delhi. Despite heavy reliance on two-wheelers (35% of the total trips per day) and non-motorized modes of transport (about 19% of the trips), close to one million passengers were carried per day by Ahmedabad municipal Transport System, AMTS in 2008.

**Political, Governance and Planning Background**

In Ahmedabad, capital city of Gujarat State, the powers and authority of the state government pertaining to the establishment of an urban transport facility are well defined. The state government, under the Chief Minister, is fully empowered under the Constitution to take all the decisions and get them implemented. Almost all the line functions and agencies required for rolling out the project also fall under the command and control of the state government. Traditionally the Ahmedabad Municipal Corporation, the AMC is one of the few city administrations in India authorized to operate a public transport system.
In 2003, the Gujarat Government was considering construction of a Metro rail between Ahmedabad and Gandhinagar. Absent a comprehensive strategic transport plan, the feasibility study prepared by the Delhi Metro Rail Corporation (DMRC) estimated the cost of constructing 43 km at about US$1 billion, with the money to be raised from land equity. It was evident that the Metro would entail extremely high cost – both on account of land as well as financial resources, which the state government / city administration were not prepared to meet. Thus, BRTS was proposed in 2003 by the State as an alternative to a rail-based Metro system. Subsequently, in 2004, a local planning institute invited the former Mayor of Bogotá, Colombia, Mr. Enrique Penelosa, to make a presentation on BRT systems before the state government. Subsequently, in 2005 the state government initiated a feasibility study of BRT for the city.

A local planning institute (CEPT University) was engaged by the State to carry out the feasibility study. In 2006, the Ministry of Urban Development approved construction of the first phase of the BRT system, 12 km in length. The Ministry also committed to finance follow-on phases adding to 58 km of BRT system.

At this stage, the system had full support of the senior most policy makers at the city level and implementation and management of the project was to be undertaken by the city authorities. The trans-vision of Ahmedabad was led by the slogan of ‘Accessible Ahmedabad and aimed at redesigning the city structure and transport systems towards greater accessibility, efficient mobility and lower carbon future.

The BRT plan consisted of development of 217 km of BRT corridors in three phases. The corridors selected as part of Phase 1 were mainly the rings in Ahmedabad, which were not the highest demand corridors where Metro was intended to go. BRT corridors where implementation was thought to be more difficult were included in subsequent phases. The idea was to develop BRT on these critical links, in phase 2, so that optimal utilization of the system is achieved. The strategy was to show-case the mode and then leverage the gains to other corridors.

There were four institutional principles guiding development of BRT in Ahmedabad:

(i) project ownership by the City Government. The ownership, implementation, and operations of the Ahmedabad is the direct responsibility of the city government. This has been legally enabled because Ahmedabad Municipal Transport Service has operated bus services in the city since 1950s.
(ii) local operations control,
(iii) partnership with local institutions, and
(iv) use of the private sector.
With these principals in mind, the AMC set up a wholly owned special purpose vehicle the ‘Ahmedabad Janmarg Limited’ (AJL) to promote, implement, operate and maintain the BRT system for the city, albeit under the control of AMC.

Even though CEPT and the Government of Gujarat jointly developed the Ahmedabad BRT concept and it received institutional guidance, leadership and support from time to time from the Department of Urban Development, Government of Gujarat, the GIDB, AUDA and AMC, the real ‘anchorperson’ who provided the leadership, unstinted support, resources and guidance to the Ahmedabad BRT project was none other than the powerful Chief Minister of the state, a well known national figure. He believed it to be an ideal solution for meeting daily mobility needs of the common man in Gujarat. Small wonder, therefore, he christened the project as ‘Janmarg” – or ‘people’s way’. The Commissioner, AMC and CEPT staff supported the Chief Minister in giving shape to his vision. Planning and implementation of the Ahmedabad system is handled by AMC, all matters of operations and maintenance are with AJL, whereas technical support to the project is provided by CEPT.

Communications

- Though no formal communications program plan was developed early on in Ahmedabad, there were serious, ongoing communications activities with very positive effects. This included:
  - Outreach activities – continuous stakeholders’ consultations, meetings, workshops
  - Seminars during planning, construction and even into operations
  - Continuous sharing of documents, presentations, open website and newsletters
  - Sponsorship of visits by key officials and the media to countries / cities where BRT systems were
- Showcasing the system - development and display of proto-types and free trial over an extended period of time
- Creation of a brand identity and promoting it
- Responsive feedback to media and citizens

All of these activities served to communicate to all stakeholders, from elected and appointed officers to the general public what BRT was and what it could do.

Two classes of activities stand out as particularly successful. The first was branding, including the adoption of an evocative brand name and identity first proposed by the elected Chief Minister of Gujarat.

The name, “Janmarg” meaning people’s way was an instant hit and set the tone for the entire communications and branding program to follow. The “Janmarg” brand was
pervasive throughout the entire system, from station icons to vehicle livery and all graphics. Other branding measures included standardized uniforms for staff, distribution of printed material like brochures, booklets and newsletters etc.

The second important activity was “showcasing” the system - development and display of proto-types and free trials over an extended period of time. People became familiar with the system and how to use it, and problems solved before customers had to pay.

**Concept, Performance and Integration**

Key physical and operational features of **Ahmedabad BRT:**

- Total planned length of BRT is 217 km, to be constructed in three phases
- Phase 1 is 53 km long, of which 34 km was constructed as of October 2010; the selection of phase 1 was based on ease of implementation and availability of the right-of-way while other corridors with higher travel demand but more difficult implementation were to be included in subsequent phases; the central idea was to demonstrate the BRT technology and then expand to other corridors
- Bus lane is a closed system, with trunk routes along the central median, with 51 stops
- High floor (900 mm) buses with a total capacity of 80 passengers (Euro III diesel)
- Fare collection system is off board, electronic paper ticketing
- All fixed infrastructure (roads, lanes, bus stops, terminals, depots) are owned and operated by AMC
- Bus frequency is 2-4 minutes (during peak) and 6-8 minutes (off peak), with a commercial speed of 25km/hr in the BRT corridor
- Fare graduated by distance; average fare for a 6km trip is US10 cents

“Feeder” services are provided by AMTS bus routes that intersect BRT stations and terminals. Plans are being implemented to integrate AMTS and BRTS fares using an IC card fare collection system, and extensions of the system will serve intercity bus and rail terminals.
As of late 2011, approximately 120,000 trips used the 53 Km long BRT system each day. Over 20% of those trips were previously in/on two, three or four wheeled private vehicles, about 50% if shared ride auto rickshaws are included. Public transport speeds have gone from 12 Km/hr. (previous local bus services) to about 24 Km./Hr. for BRT. Significant new land developments have been attracted to areas in walking distance of BRT stations and many more are under consideration.

**Operating Arrangements**

The supply, operations and maintenance of buses for Janmarg are being done by Charter Speed Private Limited under the supervision of Ahmedabad Janmarg Limited which sets fares and service policies under municipal direction. Charter Speed Private Limited has a gross cost contract for a period of seven (7) years that and includes buses and drivers of specifications prescribed by AJL.
Some important features of the service agreement are:

- The initial contract was for 70 buses for seven years
- Traffic risk has been retained by the municipal body
- Bus providers are to be paid on a per km basis with a minimum annual guarantee of 200 km per day per bus at the rate of Rs. 34 per bus km
- Penalties have been prescribed for non-performance on account of availability, punctuality, cleanliness of buses and their maintenance
- The contract was awarded initially for 50 buses to a local operator who was trained exclusively for BRT operations.
- Payment to the contractor is done in two parts:
  - for each bus through a fixed installment every month
  - running cost is paid per kilometer service provided
- Minimum guarantee on annual basis
- Rate per kilometer was fixed based on a formula indexed to fuel cost and inflation
- Service quality is closely monitored

A bus depot cum workshop was built by the Ahmedabad Municipal Corporation and given to the operator for its exclusive use during the contract period. All maintenance equipment was procured by the operator.

Selection of bus provider was through a transparent two stage bidding process. The qualifying criteria was fixed at ownership of 40 buses or 200 taxis (included since not many bus operators had enough experience in buses alone). However a Rs. 30 million turnover criteria was fixed in order to restrict participation of contractors of adequate financial standing.

Housekeeping services for stations were competitively procured on a monthly fee basis with two year contracts. The scope of work includes cleaning and maintaining the BRT stations and other facilities.

**Finance**

The 88 km long BRT network, consisting of two phases of construction, was sanctioned for Rs.9814.5 million (US$210 million). The agreed to funding allocation was:

- JNURM (Government of India) – 35%
- Government of Gujarat – 15%
- Ahmedabad Municipal Corporation – 50%
Even though there is a commitment from the Ahmedabad Municipal Corporation to fund operating deficits, there has been sufficient enough direct fare and advertising revenue to cover all costs of Ahmedabad JanMarg limited including bus service contractors, maintenance of stations and other facilities and infrastructure, security personnel and administrative overhead. Buses themselves are provided by the respective bus contractor with the cost recovered from the gross cost contract rate.

**Delhi**

It should be noted here that strictly speaking, Delhi does not have a BRT system or even the first phase of one. Under the moniker of “High Capacity Bus System,” Delhi has a short section of a median busway and some un-enforced curb bus lanes in operation. Neither constitutes BRT, as is generally known, but it has been included to show how leadership, institutional and other issues have prevented even that from being as successful as they might have been.

**Geography, Economy, Demographics and Transport Context**

The city of Delhi, which is the national capital and the seat of the federal government of India, is spread over an area of 1500 sq km and has a population of over 15 million. There is industry in the suburbs and some corporate headquarters spread throughout the City, but Delhi is primarily a government, administrative and education center. The lack of natural growth barriers and a height limitation in the central core of the city has resulted in Delhi being poly-nucleated, spread across a wide area with several activity hubs.

In fact, the current Master Plan envisages a city structure of three CBDs (central business districts) and a polycentric distribution of residential development focused around ‘district centers’ as commercial hubs. The concentric and polycentric development has not been able to progress in a structured manner, leading to spatial imbalances and resultant anomalies in the use of road space. The Master Plan also designates specific ‘land use’ for all sites in Delhi, and this segregated land use forces the citizens to travel long distances between their housing areas and places of their other daily needs like work, education, health care, entertainment, social and commercial activities.

Though a significant share of land in the city is devoted to roads and streets, the city has only a few trunk roads that function as spinal corridors, which makes it difficult to address traffic. It has by far, the highest number of motor vehicles, compared to any other city in the country. The total number of registered vehicles was six million, well o
Political, Governance and Planning Background

The idea of an improved system for Delhi had been in the planning stage since 1995, when the idea of a High-Capacity Bus System (HCBS) first surfaced. In their State of the Environment Report of 2001, the Central Pollution Control Board (CPCB) of GoI had argued that there was an urgent need to address the quickly growing number of road traffic injuries, fatalities and pollution in the city. In the same year, an international workshop was organized by the Delhi Transport Corporation (DTC), a public sector undertaking of the GNCTD, and IDFC, a private company, to enable discussions on this subject among international experts and stakeholders.

The vision for something like BRTS (buses operating on busways and dedicated lanes) in Delhi was later promoted in a study titled ‘Integrated Transport and Traffic Management: Future Directions’ commissioned by the GNCTD and the Ministry of Environment (GoI) in 2001. This study suggested:

• Urban Transport Infrastructure that encompasses a well programmed & integrated walk, bicycle & public transit system

• A Financial & Institutional Framework that leverages public/private funds and enables implementation and sustained operation of the envisioned urban transport infrastructure

• Introduction of low floor buses & phased construction of exclusive bus ways

In 2003, GNCTD set up a Committee on Sustainable Transport chaired by the Chief Secretary of Delhi, which recommended preparation of a detailed feasibility report and plans for implementing a high capacity bus system in Delhi on five selected corridors. Two corridors were selected for a Pilot project, and it was finally decided to take up only a part of the corridor from Dr. Ambedkar Nagar to ISBT (Inter-State Bus Terminus) in the Pilot phase.

The idea of implementing a high capacity bus system gained momentum during 2005-06, and acceptance of the idea from the MoUD came following evaluation of the proposed designs for the proposed Delhi rapid bus system concept and its discussion at a workshop in December 2005 comprised of senior government officials and international experts.

The proposed first phase was part of an ambitious comprehensive public transport network, 583 km in length and comprising of 148 km of metro, 40 km monorail and 395 km of rapid bus.

Construction of the high capacity bus network was planned to be constructed in several phases. The first consisted of a 14.5 km section from Delhi Gate to Ambedkar Nagar Chowk. The chosen corridor was divided into two sections, the first from Ambedkar
Nagar Chowk to Moolchand Hospital (5.8 km) and the second section from Moolchand to Delhi Gate (8.7 km).

Construction of the first segment commenced in September 2006 and the corridor became operational in April 2008. The second section of the “pilot” corridor, 8.7 km of curb bus lanes from Moolchand to Delhi Gate, was completed but is not operated exclusively for buses. Instead, mixed traffic has been allowed on this section of the road because of strong public protests against the first 5.8 km section of median transitway.

Delhi, as the National Capital Territory of the country, enjoys a special status under the Indian Constitution – it is neither a full-fledged state nor a centrally administered Union Territory. There is an elected council and Chief Minister, but it enjoys only limited powers of a state government. The elected government of Delhi, for instance, is responsible for the planning, implementation and operations of a high capacity bus system, Delhi Police (including the Delhi Traffic Police) – which is the key agency for enforcing discipline on the corridor, maintenance of law and order and advising / resolving traffic and engineering issues at and around the corridor and maintaining discipline on it – is under the control of the national government.

This causes serious problems of coordination at the operational levels, as witnessed in the reluctance shown by Delhi Police in the enforcement of discipline among various users of the initial HCBS corridor in the early stages of its operations, because they had expressed some reservations against dedicated busways.

Delhi faces another administrative issue in the form of multiplicity of authorities planning and providing basic urban infrastructure and services. Institutions and agencies of the Union Government, the Government of National Capital Territory of Delhi (GNCTD) and of the local bodies, are providing the same services – be it in physical infrastructure like construction of roads, and shelter for the poor and needy, or in social infrastructure like health care, education and child welfare, or for meeting other daily needs of the people.

These functions overlap and sometimes two or more agencies even end up working at cross-purposes, e.g., different stretches of Delhi city roads could be owned by the Union Government (Public Works Department), the Delhi Development Authority, DDA, the GNCTD and any one of three urban bodies – Municipal Corporation of Delhi, New Delhi Municipal Committee, Cantonment Board. A plethora of authorities with overlapping jurisdictions constrains the decision-making ability of GNCTD and causing operational problems in securing effective coordination between various agencies.
It is significant that one of the key factors responsible for the selection of the Pilot corridor in Delhi was single agency ownership of the road on which the corridor was to be constructed.

The Chief Minister, Sheila Dikshit, the Chief Secretary and Transport Commissioner of the GNCTD became primary advocates for rapid bus program. In 2004, GNCTD appointed RITES (Rail India Technical and Economic Services) as Project Management Consultants and the Indian Institute of Technology’s Transportation Research and Injury Prevention Program (TRIPP) as Technical and Conceptual Advisors. The Feasibility Study and a Detailed Project Report were prepared by RITES while TRIPP prepared detailed engineering design and specifications.

In 2006, the Delhi Integrated Multi-Modal Transit System, Limited, DIMTS was set up and appointed as Advisor / Consultant for operation and management of the HCB system. Later it was also made responsible for planning and implementation of the rest of the plan for the city of Delhi. None of the involved groups had previous BRT experience.

**Communications**

Communications with stakeholders and consultations with them were held in phases with a gap of about three years or so in-between, during which little or no communication with the community took place. The first phase of communication effort almost coincided with planning of the project and was primarily handled by TRIPP. This was followed by a period of lull of about 2/3 years. The second phase of stakeholder consultation began around the time the project was about to become operational. During this phase communication with the community was designed and handled largely by DIMTS supported by the Department of Transport, GNCTD.

TRIPP worked on road re-engineering design for HCBS project since 2004. During this period they made a number of presentations to officials of the transport department, road owning, planning and regulatory agencies; elected members of the Assembly and Municipal Corporation, representatives of the Residents’ Welfare Associations (RWA) of the residential developments adjacent to the bus corridor.

The result of these communications efforts was fairly favorable reporting in the media. During and after the initial operation of the median busway, there was a lot of criticism from all quarters and a public outcry from private vehicle owners, political leaders, opinion makers and other sections of the society. It appeared as if there was a massive campaign launched by the electronic and print media against the system even before its trial. The blame for long queues and traffic violations was also
laid at the door of the HCB system. Everyone started criticizing the project that it will be a negative sum game and all sections of road users will end up losing – including private vehicle owners, bus commuters, pedestrians, cyclists, school children and even the old age people. Opposition political parties, RWAs and others started building pressure on the government to scrap the project.

There were also judicial interventions against some features of the HCBS and at one stage the project authorities did not know how to proceed further.

To deal with this situation, DIMTS, which had by then taken over the role of the O&M services provider and corridor manager, prepared a comprehensive plan for public outreach to explain the system and its advantages to stakeholders and improve its image and community acceptability.

The target groups for the program consisted of private and public transport operators, the management of Delhi Metro, private vehicle owners, cyclists, pedestrians, Delhi Traffic Police, media and non-governmental and community based organizations. For implementation of this communication strategy, DIMTS did not hire a professional agency, nor did it set up a designated in-house team or spokesperson. It decided to engage some key resources within the company to create external awareness about BRT system.

DMTS generally followed a communications strategy which included:

- Familiarization sessions for private bus operators covering all the operational aspects like rules and regulations of plying on the corridor, signage, safety etc. Feedback received from the session was used in rectifying some operational problems in the construction of road infrastructure facilities

- Special efforts to target children as a special outreach group for various reasons – they are more open to new ideas and can carry messages to parents more effectively. Awareness campaigns in schools directed to students, teachers, parents, school transport authorities and bus drivers

- Cycle rallies were organized to showcase the dedicated cycle tracks built along with the newly laid corridor. The idea of these rallies was to promote NMT mode as the healthy and environment-friendly option of mobility.

- New communication tools to relate to the younger generation. A special blog on BRT system was created to discuss various issues related to the project. All the
information on Delhi HCBS was uploaded on various websites like Wikipedia, Slide Share etc. Efforts were also made to address the queries of general public and residential welfare organizations on a one-to-one basis

- An ‘equal road right’ campaign was launched jointly with couple of NGOs to give out a message to anti-HCBS lobbies that each citizen has an equal right of usage of the public roads, a common property resource of the society.

- DIMTS conducted stakeholders’ meeting with bus operators, organized ‘School Outreach Program’ and tied up with various national and international agencies to reach out to the public. On September 19, 2010, in collaboration with Youth for Public Transport, DIMTS organized a Flash Mob.

- Printed material was published that targeted different stakeholders and distributed among them. Services of Road Marshals were also utilized to distribute this material at corridor stations.

The next phase of any designed effort to communicate with the stakeholders came when the project was being rolled out, at a time when public opposition was already furious and widespread. Almost all the sections of the society in the neighborhood of the corridor were up in arms against it.

While DIMTS had not come into existence at the planning stage of the project, TRIPP had nearly completed its corridor engineering design consultancy by the time the second, DMTS second round of communications effort began. During the construction stage of the project, not much communication happened between the project authorities and stakeholders.

**The Concept, Integration and Performance**

The first stretch of the 14.4 Km HCBS corridor consist of a 5.8 km median transitway (busway). This is a short section of exclusive transitway for buses, and there are no other BRT features and is not considered to be BRT. The second section of 8.7 km has dedicated but un-enforced bus lanes along the curb. The ownership of the road is with the GNCTD Public Works Department while bus lanes and stops are owned by DIMTS; and bus terminals and depots belong to DTC.

There are 66 stations in the middle and 32 stops on the side lanes in the constructed 14.5 km, a very close stop spacing. The bus stops are easily accessible with open approach on either side. Disabled persons, women, children and aged persons can also easily access the bus stations but not the buses whose floors do not match the height of
the station platforms rendering the service inaccessible to the disabled. There are separate cycle tracks on either side of the roadway over the entire 14.4Km corridor.

The public transport buses plying in the corridor belong to DTC and private operators licensed by the Transport Department of GNCTD. No significant changes in either Delhi Transport Corporation (DTC) or privately operated services were made as part of the HCBS project. New ultra low floor buses, some air conditioned and some not were procured by the DTC for use throughout Delhi at the time the HCBS corridor was being implemented, but neither type of vehicle was uniquely configured nor branded for operations in the corridor.

In addition to public transport buses, other vehicles like school buses, security personnel and emergency services also operate in the busway. There are no special fares for transitway routes and, as is the case for the rest of the bus system, there is no fare integration with the Metro system. Tickets are issued manually and fares collected on board DTC and privately operated buses.

Private buses inevitably spend significant amounts of time as possible at stops to maximize their revenue and there is no way to pass around them. This and the large number of buses and distinct routes lead to long queues of buses at stops. Cycle lengths at traffic signals in the transitway corridor, manually enforced by traffic wardens can exceed 12 minutes, creating incentives for jaywalking by pedestrians and causing bus bunching and general traffic congestion.

**Delhi Bus Rapid Transit Plan**

![Map of Delhi Bus Rapid Transit Plan](image-url)
Peak bus passenger flows in the corridor are over 12,000 per hour at the maximum load point. Little or no modal shift from private motorized modes to public transport has been observed, but the number of bicycle users has increased dramatically due to the exclusive, protected bike paths that are part of the project. At the maximum flow point, bike flows exceed 1,200 per hour, the highest such volume in the World outside China.
A survey by the World Resources Institute EMBARQ found that bus operating speeds in the 5.8 Km dedicated transitway corridor had increased from 12 to 18 Km per hour but other observers (Institute of Transport and Development Policy, ITDP) found the increase to be below 10% because of intersection and station delays.

An independent survey carried out by a television channel showed that although 65% car users objected to HCBS’s “the infringement of ‘their’ road space”, 75% of bus riders found it to be a huge improvement. Another survey carried out by the Centre for Science and Environment found that 73% car owners in the Corridor wanted the BRT to continue and 25% car and two wheeler users were willing to shift to BRTS, if the buses were air-conditioned and better integrated with the Metro.

Operating Arrangements

There is no single operator or group of operators dedicated to providing bus service in the HCBS corridors. Bus services in the busway and bus lane corridors are the responsibility of the Delhi Transport Corporation and the private operators plying in the respective corridors. DIMTS’ responsibilities include traffic management, bus operations, public relations, enforcement, recovery of disabled vehicles, station security and cleaning etc. DIMTS sub-contracts various aspects of HCBS operations and maintenance to private parties, while maintaining overall supervision and quality control. DIMTS has engaged third party service providers to serve as “Road Marshals” directing traffic and enforcing traffic rules, security guards at bus stations and wreckers to remove disabled vehicles from the transitway.

Finance

The total cost of infrastructure for the 14.5 Km. Delhi High Capacity Bus System Phase 1 was Rs 2150 million. The entire amount was financed by the Transport Department of the Government of the National Capital Territory of Delhi.

Operating subsidies, including the amortization and depreciation costs of vehicles are either born by the GNCTD through the Delhi Transport Corporation or by the private operators plying in the corridor.