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Good Practice Case Studies
Bus-based Public Transport Systems

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About Shakti

Shakti Sustainable Energy Foundation seeks to facilitate India's transition to a sustainable energy future by aiding the design and implementation of policies in the following areas: clean power, energy efficiency, sustainable urban transport, climate change mitigation and clean energy finance.

About this report:

This report documents best practices of successful reforms and initiatives adopted by various State Transport Undertakings in India to scale public transport systems. The case studies include:

1. Chief Minister Urban Bus Service Scheme, Government of Gujarat

2. Delhi Route Rationalization Project, Delhi Transport Corporation

3. PPP in City Bus Operations, Aurangabad Smart City Development Corporation Limited

4. 'Mo Bus', Capital Region Urban Transport, Bhubaneshwar

5. Motor Vehicle Tax Exemption, Bengaluru Metropolitan Transport Corporation

6. PPP in bus service improvement, Kochi City Bus System

7. Intelligent Transport System, Bengaluru Metropolitan Transport Corporation

8. On-Demand Transportation Technologies Aggregators Regulations, West Bengal

1. CHIEF MINISTER URBAN BUS SERVICE SCHEME, Government of Gujarat

The Government of Gujarat is supporting bus services in cities of the state through its 'Chief Minister Urban Bus Service Scheme' announced in 2018. Under the flagship program of Government of Gujarat- Swarnim Jayanti Mukhya Mantri Shaheri Vikas Yojna, the scheme is providing Viability Gap Funds (VGF) to Transit Authorities and Urban Local Bodies (ULBs) operating bus services in the state's 8 Municipal Corporations and 22 Class A Municipalities (population more than 1 lakh).

The support through the scheme is strictly limited to buses that are newly procured and are being operated under a Public Private Partnership (PPP) mode. It does not support procurement of buses, operations of the bus by the public agency itself, staff recruitments and salaries and development of support infrastructure. The VGF provided by the State Government is INR 12.50 per km which is to be supplemented in equal value by the transit authority or the ULB. The duration of the scheme is for 7 years. As per the scheme guidelines, the VGF requested by the ULBs/transit authorities is released in four equal installments of 25 percent. First installment is released after issuance of work order to the private operator. The second and third installments are released only after utilization of 70 percent of the previous grant. The bus agencies need to maintain a separate account and books of audited account. During the formulation of the scheme it was envisaged that the scheme will lead to deployment of 2864 new buses in urban areas of the state.

The scheme has now been extended to include support for operation of electric buses in larger cities. The VGF provided for e-buses is INR 25 per km. So far, 12 cities have availed benefits under the scheme and have introduced 846 new buses. Of these, 350 are e-buses that are operational in Ahmedabad.

2. DELHI ROUTE RATIONALIZATION PROJECT, Delhi Transport Corporation

The Government of Delhi launched the 'Connect Delhi' initiative to bring together multiple stakeholders (Delhi Transport Department, Delhi Transport Corporation, Delhi Metro rail Corporation Limited, Delhi Integrated Multi-modal Transport System Limited, technical experts, civil society, etc.) for implementing the 'Route Rationalization project for buses and feeder services in Delhi'. The aim of the project is to optimize the existing bus routes in the city to improve efficiency, reliability, accessibility, connectivity and affordability of the public transport system.

The first phase of the project was implemented in Najafgarh, a suburban area in Delhi that had poor public transport connectivity leading to use of private vehicles and lack of access to education and jobs for marginalized sections. A direction based hierarchical route network has been implemented which consists of 17 routes – 3 trunk routes, 4 primary routes and 10 village connectivity routes. A total of 305 buses were deployed on these routes. The pilot was monitored for 4 months before the launch to reflect on-ground conditions in the planning process.

The project has led to increased connectivity through public transport in villages adjoining Najafgarh. From receiving services once in morning and once in the evening, the villages now have services at every hour. There has also been a substantial increase in ticket sales, two months into the project there were 3.4 lakh additional tickets sold in a month. The bus service providers have also witnessed an increase of 19 percent in their earnings per kilometer.

The State Government will scale this project to other parts of the city to include 285 routes with a requirement of 11,684 buses. The Government also intends to improve feeder services by increasing the existing 72 feeder routes to 189 and operationalizing mini and midi buses. The project will be supplemented by fare integration.

3. PPP IN CITY BUS OPERATIONS, Aurangabad Smart City Development Corporation Limited

Aurangabad, between 1990s and mid-2000s, was serviced by Maharashtra State Road Transport Corporation (MSRTC). However, with rising costs and reducing ridership, MSRTC scrapped the city services. In 2005, the city adopted an NCC model for bus services. However, the operator struggled in operating the buses due to high expenditure and inadequate provision of infrastructure from AMC and within 4 years the services were suspended as they defaulted on loans taken for bus purchase. After that, the city was served by a skeletal service operated by MSRTC. The remaining demand was met by autorickshaws and private vehicles.

In 2018, Aurangabad tested a new model of providing city bus service by engaging MSRTC - a public sector undertaking - under a GCC model. It utilized the funds received under the Smart Cities Mission to establish a dedicated cell within Aurangabad Smart City Development Corporation Limited (ASCDCL) to start a city bus service. This arrangement brought a host of advantages for ASCDSL and MSRTC. ASCDCL was able to use depots and terminals owned by MSRTC within the city limits and employ the retired staff from MSRTC to plan and manage operations. It also got easy access to MSRTC's existing standard operating procedures (SOPs) on bus service planning, management, operations, maintenance, accident policy, industrial and labor codes etc. Lastly, they can work with a partner whose primary goal is not to maximize profit margins. MSRTC in return was able to absorb its excess workforce for city bus operations. It receives a higher payment for operating bus services from ASCDCL than it would have earned by operating services on its own.

The business model of this arrangement is also interesting. For a period of 5 years, the city is utilizing grants worth INR 200 cr under the Smart Cities Mission for operations. The fare revenue is deposited in a bank account and will be used to sustain operations once the mission grants are over. The contract allows both parties to negotiate on extension after 5 years. The SPV in future can engage private operators for expansion while protecting MSRTC from competition. ASCDCL aims to build trust in the bus system and curb the growth of private vehicles, after failed attempts in the last two decades. The system in its first year of operation observed a daily ridership of 35,000 on 80 buses. The success is based largely on planned, reliable services and fares that are cheaper than other options.

4. 'MO BUS', Capital Region Urban Transport, Bhubaneshwar

'Mo Bus', the city bus service for Bhubaneshwar and adjoining cities of Puri and Cuttack was launched in 2018 with support from the Government of Odisha. 'Mo Bus' is a revival of the

previous bus service in the area provided by the Bhubaneshwar Public Transport Service Limited which was witnessing a decline in ridership and revenue.

The Housing and Urban Development Department of the State Government created a Special Purpose Vehicle (SPV) called Capital Region Urban Transport (CRUT) to operationalize 'Mo Bus' on a Gross Cost Contract (GCC) model. The share of public and private stakeholder in the SPV is 75:25. The key government stakeholders are Bhubaneshwar Development Authority, Cuttack Development Authority, Puri-Konark Development Authority and Bhubaneshwar Smart City Limited and these retain the responsibility of managing the SPV and taking decisions on planning and implementation. The private partners are responsible for operating the buses. CRUT pays the private operators on a per kilometer rate and ensures that they maintain the pre-decided performance standards. Profits and losses incurred in revenue collection are absorbed by CRUT. The SPV has also hired a Revenue Collection Agency, on a daily wage rate, for revenue collection and monitoring revenue leakages.

After formation of CRUT, the public transport service and coverage has increased with successive increase in ridership. CRUT is currently operating 200 buses on 21 routes and has recorded a daily ridership of one lakh commuters in October 2019.

5. MOTOR VEHICLE TAX EXEMPTION, Bengaluru Metropolitan Transport Corporation

The Government of Karnataka, in 2017, waived the Motor Vehicle (MV) Tax levied on Bengaluru Metropolitan Transport Corporation (BMTC) which provides public bus services in Bengaluru to boost public transport in the city. The State Government, as a one-time measure, exempted the Corporation from a payment of INR 120 crore as MV Tax. The exemption was based on a proposal submitted by BMTC that highlighted the increase in its operational costs due to external factors such as fuel costs and congestion in the city and how this had made it difficult for BMTC to fund its operations entirely from its revenue collections. The exemption helped BMTC bridge the losses and debt it has incurred in the previous year. The debt was incurred to procure buses and construct bus terminals called Traffic and Transit Management Centers (TTMCs).

Even though this was a one-time exemption, it has set precedence where the four bus corporations in the State are actively pursuing support from the Government to improve their viability while maintaining desired service levels. It has also generated interest from the State Government for improvement of bus based public transport in the State.

6. PPP IN BUS SERVICE IMPROVEMENT, Kochi City Bus System

The Government of Kerala has initiated the 'Seamless Mobility for Kochi' project to provide integrated multi-modal transport in the city. In addition to services operated by the state-owned agencies, the project enabled integration of bus services provided by the private sector which was highly fragmented (850 owners operating approximately 1000 buses). Additionally, the GoK, as a promoter and facilitator with knowledge support from Kochi Metro Rail Limited, entered a Public Private Partnership (PPP) arrangement with Axis Bank for modernization of the public transport provided by the private players.

The Bank is investing INR 5 crore for creating National Common Mobility Card (NCMC) based ticketing ecosystem and installation of Passenger Information System. Around 200 private buses now have NCMC compatible Electronic Ticketing Machines. The smart card used in Kochi is called Kochi1 which was first introduced by Kochi Metro and can now be used on Kerala State Road Transport Corporation (KSRTC) buses, ferries and other modes. Additionally, Vehicle Location Tracking (VLT) devices have also been installed on almost all buses which help in monitoring and enforcement. The data collected from these devices is also used to provide information to passengers on bus services through a mobile application, again developed by a private company under a PPP arrangement. Axis bank collects 1.25 percent + GST of the total revenue per bus per day and a revenue share from advertisement on PIS to offset the cost of installation of ETM, VLT and PIS (Intelligent Transport System).

This initiative has led to an increase in ridership on public transport and the introduction of NCMC. The private operators are witnessing no revenue leakage and can monitor the performance of their buses in real-time through a monitoring app. Passengers are benefiting from greater reliability of the system and are receiving 5 percent fare discount on use of Kochi1 card.

Figure 1: Elements of Smart Bus System, Kochi

7. INTELLIGENT TRANSPORT SYSTEM, Bengaluru Metropolitan Transport Corporation

Bengaluru Metropolitan Transport Corporation (BMTC), in 2016, implemented Intelligent Transport System (ITS) to modernize its bus service. The system comprised of Electronic Ticketing Machines (ETM), Vehicle Tracking Units (VTU), Passenger Information System (PIS), Command and Control Centre and back-end automation of depot operations.

The ITS started with 6500 VTUs and 10,000 ETMs for operating a fleet of approximately 6500 buses. The ETMs used by BMTC are GPRS enabled which record data on route number, time of travel, number of passengers, fare collected etc. The ETMs are compliant for cashless transaction through contactless smart cards for revenue collection. The smart cards, however, have not been implemented so far. The VTUs installed on buses help in fleet management

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and tracking of buses. The data obtained from the VTUs is used to provide information to passengers on bus services such as estimated time of arrival (ETAs) of buses through PIS. The PIS comprises of digital display boards at 10 major bus stations in the city and a mobile application. The original app that was developed as part of the ITS has now been replaced by a similar app developed by a third-party. The new app uses BMTC's ITS data to provide passenger information on bus stops near a passenger, routes passing those bus stops, ETAs of buses and helps in trip planning.

The Command and Control Centre is a state-of-the-art facility housed in BMTC's head office. It is used by the monitoring staff and decision makers at BMTC to track buses and monitor them for violations and incident management. The system generates reports on over speeding, stop skipping, route deviations etc. which are shared with depot managers for corrective actions. Over the years, BMTC has used and analyzed the data collected through ITS for making strategic decisions on rationalization of its routes based on demand and remove redundancy, optimization of schedules to reflect actual trip times, rationalization of fares and improving safety by identifying drivers who are not performing well.

Figure 2: Command and Control Centre, BMTC

8. ON-DEMAND TRANSPORTATION TECHNOLOGIES AGGREGATORS REGULATIONS, Government of West Bengal

Following the Motor Vehicle Act Amendment in 2019, the Government of West Bengal introduced regulations to regulate the operational activities of on-demand transport technologies aggregators (ODTTA) engaged in operations of contract carriage omnibuses/buses in West Bengal. OTTDA, usually referred to as bus aggregators, provide a mobile application for passengers to reserve a seat on a private bus operating under the aggregator banner on a fixed route and pre-decided fare. These services are gaining popularity in urban areas as they provide premium services in parts of the city that are underserved or unserved by formal city bus services. The ODTTA regulations necessitate all aggregators willing to operate in the state to procure licenses for the same from the Transport Department. The licenses will be issues based on the measures taken by applicants to ensure

passenger safety. It sets minimum requirements for safety, fleet age, and transparency of fares to enable aggregators and private operators in providing quality service. West Bengal's ODTTA Regulations, the first of its kind in the country, recognize the importance of aggregators in meeting the public transport demand.

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