

# Public Private Partnerships In Bus Operations In Indian Cities

Engaging private sector in improving public transport

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## SUMMARY

Public Private Partnerships (PPPs) in city bus operations in India gained momentum after 2005, even though cities like Delhi and Hyderabad are operating a part of their services on PPP basis since 1970s and 1990s, respectively. The renewed adoption of PPPs started in the last two decades when several small and medium sized cities that lacked technical and financial resources started implementing dedicated city bus services for the first time.

These cities adopted PPPs with the objective of benefiting from public sector's technical expertise in bus planning and management and private sector's ability to easily access finance. It was also believed that private sector, driven by its profit-making nature, will bring in cost effectiveness in bus operations and maintenance (O&M). Some of these cities also received financial support from Jawaharlal Nehru National Urban Renewal Mission (JNNURM) to operationalize bus services.

Cities conducted PPP through either a Net Cost Contract (NCC) or a Gross Cost Contract (GCC) or their hybrids. In all these contracts, the responsibility of bus service planning and management is with the public sector and bus O&M is with the private sector. The difference lies in the distribution of fare collection responsibilities. As passenger fare is the main source of income in bus operations, this responsibility introduces risk for the stakeholders. In NCC, the risk is borne by the private operators as they are responsible for collecting fare and using it to cover costs involved in bus O&M. In GCC, the public agency assumes the risk as it retains the responsibility of collecting fare revenue and uses it to pay the operators.

Over the last two decades, PPPs have helped several cities with no services to deploy fleet and several others to scale their services. But deficit in provision of bus services continue to exist. Collectively, at the national level, there are around 46,000 buses in 127 cities - operated by public-owned State Transport Undertakings (STUs) and Special Purpose Vehicles (SPVs) either themselves or using PPP models. This bus availability is far less than the actual requirement. There is an estimated deficit of around 1.3 lakh buses in urban areas which is estimated to rise to a demand of 2.2 lakh buses by 2031.

Given the historic lack of investments by the public sector in bus transport, PPPs hold the potential to meet the investment needs and ramp up bus services. Use of PPPs in augmentation of urban bus services is also envisioned in the upcoming scheme announced by the Government of India.

However, going forward it is necessary to consider evidences from cities on deployment of PPP and their effectiveness in providing a quality bus service. As discussed in this report, past experiences indicate that some cities have used PPPs to start organized bus services for the first time, but others have faced challenges and failures in utilizing its benefits. Due to issues inherent in bus service planning (that are witnessed in all bus services irrespective of the operating model) and in execution of PPP contracts, bus service quality and reliability are often compromised, discouraging commuters from using buses. There are also lapses in achieving the objectives for which PPPs were adopted in the first place i.e. improving access to finance and achieving cost effectiveness in bus O&M.

This report details these challenges by examining the evolution of PPP in city bus services in India over the last two decades, the two type of contracts, potential benefits and drawback of each and their use to implement city bus services. The report suggests that by focussing on adopting a data-driven technical approach for service planning, securing financial support from governments,



generating revenue from non-farebox sources, ensuring timely delivery of depot infrastructure, using technology to monitor services, introducing performance based penalties and incentives in contracts and building technical capacity, cities can implement robust PPPs and help develop efficient public bus transport services.

**Note:** *This report evaluates the existing PPP models and the experiences of Indian cities in using them. The challenges and solutions identified in the report are focused on making the existing PPP models work better, while informing future projects on the pitfalls to avoid. The report does not delve into comparative analysis of merits and demerits between PPP and public (STU) run bus operations.*

## CONTENTS

SUMMARY .....	1
Abbreviations .....	3
1. Introduction.....	4
2. Need for Private Sector Engagement.....	4
3. Private Sector in Bus Operations .....	5
a) PPP models: Types.....	5
b) PPPs in City Bus Services: Evolution in the last two decades .....	7
c) Policies and Schemes to foster PPPs.....	9
d) Case Studies.....	9
e) Challenges in PPPs.....	14
4. Way Forward .....	19
5. Conclusion.....	21
References .....	22

## ABBREVIATIONS

- BMTC: Bangalore Metropolitan Transport Corporation
- MTC: Metropolitan Transport Corporation
- TSRTC: Telangana State Road Transport Corporation
- AMTS: Ahmedabad Municipal Transport Service
- CRUT: Capital Region Urban Transport
- GMBCL: Gurugram Metropolitan City Bus Limited
- DIMTS: Delhi Integrated Multi-Modal Transit System Limited
- KBSL: Kota Bus Services Limited
- AICTSL: Atal Indore City Transport Services Limited
- BCLL: Bhopal City Link Limited
- JCTSL: Jabalpur City Transport City Services Limited

## 1. INTRODUCTION

City bus services in India are provided by public-owned State Transport Undertakings (STUs) or Special Purpose Vehicles (SPVs). These agencies either operate the services themselves or use Public Private Partnership (PPP) models that bring together the public and private sector for bus operations. Today, cities like Bangalore, Chennai, Chandigarh have STU operated services, while cities like Indore, Ahmedabad, Delhi are using PPPs for bus operations.

PPPs in bus operations are not new to Indian cities. Delhi and Hyderabad are operating a part of their fleet on PPP basis since the 1970s and 1990s, respectively. But adoption of PPPs has gained momentum in the last two decades. Beginning 2005, several small and medium sized cities that lacked technical experience and financial resources started using PPPs to implement bus services for the first time. These cities had a demand for dedicated bus service because the state-wide STUs (responsible for intercity and intracity operations) neglected the intracity segment as it generated more financial losses.

These cities adopted PPPs with the objective of benefitting from public sector's technical expertise in bus planning and management and private sector's ability to access finance and meet upfront investment needs. The adopted PPP models distributed the responsibility of service planning and management to the public sector and bus operations and maintenance (O&M) to the private sector. It was also believed that private sector's inherent nature of profit making will introduce cost effectiveness in bus O&M<sup>1</sup>. PPPs also avoided creation of investment heavy legacy systems and institutions with direct and indirect liabilities for the Government<sup>2</sup>.

Additionally, during this time, cities received financial support from the Jawaharlal Nehru National Urban Renewal Mission (JNNURM) to introduce city bus services. The guidelines of the 'bus funding scheme' under the Mission suggested prioritized sanctioning of buses to agencies that adopted PPP for operations. Subsequent urban development schemes - Smart Cities Mission (2015), Atal Mission for Rejuvenation and Urban Transformation (AMRUT-2015) and Faster Adoption and Manufacturing of Electric (&Hybrid) Vehicles (FAME) Scheme (2015) - have encouraged PPPs. The 2021 Union Budget announcement to launch a scheme for augmentation of bus services in urban areas also mentions deployment of PPP models to finance, acquire, operate and maintain over 20,000 buses.

## 2. NEED FOR PRIVATE SECTOR ENGAGEMENT

From around 20 cities with dedicated and organized city bus services before 2000, today more than 127 cities have a bus service. Collectively, at the national level, there are around 46,000 buses operated by STUs and SPVs either themselves or using PPP models. But gaps in provision of bus services continue to exist. There is an estimated deficit of around 1.3 lakh buses in urban areas which is estimated to rise to a demand of 2.2 lakh buses by 2031<sup>a</sup>.

The investment needs of this growth will be massive and are unlikely to be met by the public sector alone considering the historic investment trends. Over the years, STUs have incurred huge financial losses limiting their capacity to invest in service improvement<sup>b</sup>. In 2016-17, STUs reported a

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<sup>a</sup> This estimate is based on standards proposed by Ministry of Housing and Urban Affairs (MoHUA) that suggest providing between 30-60 buses per lakh population in cities as per their size.

<sup>b</sup> STUs incur losses because they are unable to recover the periodically increasing operational costs (price of diesel and consumables and salary increments) from the passenger fare - their main source of income. STUs operating in urban areas recover only 47% of their operating costs from passenger fare.

combined loss of INR 16,409 crores<sup>3</sup>. The sector also does not get priority investment from the Central and State Governments. Between 2015-2020, less than 1% of the Central Governments' budget reserved for road transport and highways was allocated towards strengthening public transport<sup>4</sup>. Even in the budget allocated for urban transport, metro rail systems receive much higher allocation, even though buses cater to a higher mode share<sup>5</sup>.

As such, involvement of private sector through PPP in bus service provision holds the potential to meet the investment needs of the sector. This was the reason to introduce PPPs in the first place. Use of PPPs is also suggested in Central Government's announcement of introducing a scheme for augmentation of bus services in urban areas.

### 3. PRIVATE SECTOR IN BUS OPERATIONS

#### a) PPP models: Types

PPPs in bus operations are conducted through either a Net Cost Contract (NCC) or a Gross Cost Contract (GCC) or their hybrids<sup>6</sup>. In all contract types, the public authority retains the responsibility of planning, regulating and managing the bus service and providing bus depots. The private operators are responsible for bus O&M. Either stakeholder can procure and own buses as per the terms of the contract.

The difference between NCC and GCC lies in the distribution of risk introduced by the responsibility of passenger fare collection as the main source of income. In NCC, the private operators bear the risk as they are responsible for fare collection in lieu of bus O&M. The operators either pay a premium or receive a payment to/from the public authority based on financial feasibility of bus routes. In GCC, the risk is borne by the public authority as they collect fare revenue and use it to pay a fixed fee to operators based on their performance on pre-decided parameters. In a hybrid GCC, operators are offered incentives for performing beyond the agreed parameters.

This risk distribution has shaped the adoption of PPPs and the way bus services are operated and managed. In NCC, to reduce their risk and increase profits operators often modify routes, cancel services or compromise quality. The resulting gaps in service quality inconvenience passengers and discourages them from using buses. The public authority is also less involved in monitoring services as they have limited financial commitment. It is also important to note that with experience in operating buses on NCC, the trend of premium payments to public agencies from operators has either declined or stopped. Cities are now adopting hybrid NCC where they pay the operator a fixed fee for routes that are financially unviable.

In GCC the public authority is more vested in route planning and service monitoring to improve ridership and earnings. They also have a greater control over service quality as payments to operators are linked to performance of the service. But this model increases the technical and financial resource commitment from the public authority. It is also observed that operators suspend services when payments are delayed, causing inconvenience to passengers.



<b>Public owned and operated</b>	<b>Public sector</b> plans, owns, operates and manages bus services <i>e.g.: Bangalore (BMTCL), Chennai (MTC), Chandigarh (CTU)</i>
<b>Public Private Partnerships (PPP)</b>	<b>Public sector</b> plans, regulates, monitors bus services. <b>Private sector</b> operates and maintains fleet. <i>Either partner can procure and own buses.</i>
→	<b>GCC:</b> Public bus agency collects farebox revenue and pays a fixed O&M fee on pre-decided performance parameters to the operators <i>e.g.: Ahmedabad (AMTS), Bhubaneshwar (CRUT), Gurugram (GMCBL)</i>
→	<b>GCC hybrid:</b> Terms of GCC + operators receive additional incentives for improvement in performance beyond the agreed parameters <i>e.g.: Delhi Cluster Bus Services (DIMTS)</i>
→	<b>NCC hybrid:</b> Terms of NCC + operators receive fixed payment on select routes as per feasibility <i>e.g.: Kota (KBSL), Indore Cluster bus services (AICTSL)</i>
→	<b>NCC:</b> Operators retain farebox revenue and pay a premium or receive a grant to/from the public agency <i>e.g.: Indore (AICTSL), Bhopal (BCLL), Jabalpur (JCTSL)</i>
<b>Private owned and operated</b>	Private sector owns and operates buses as per their permit <i>e.g.: Kochi, Kozhikode, Kannur</i>
<b>New alternate model</b>	
<b>Public-Public Partnership</b>	One public sector undertaking partners with another public sector undertaking through a GCC model for service delivery <i>e.g.: Aurangabad (ASCDCL)</i>

Figure 1: Types of bus operation models in Indian cities<sup>7</sup>

Type of Responsibility →		Type of Service ↓						
		Bus procurement	Bus Operations	Bus Maintenance	Route Planning	Monitoring	Fare Collection	Provision of Infrastructure
Public owned and operated		G	G	G	G	G	G	G
PPP	GCC	P or G	P	P	G	G	G	G
	NCC	P or G	P	P	P and G	G	P	G
Private owned and operated		P	P	P	P	P	P	P

Index: G: Public Authority; P: Private Operator

Figure 2: Distribution of responsibilities between public and private parties in PPP<sup>8</sup>

## b) PPPs in City Bus Services: Evolution in the last two decades

Use of PPP models to operate buses gained momentum in the last two decades when several small and medium sized cities, that lacked technical experience and financial resources, started implementing bus services for the first time. In 2006, Indore Municipal Corporation established a SPV to start its bus services on PPP<sup>9</sup>. It adopted NCC and bid out routes to private operators in exchange for a fixed premium. Private partners collected fare and advertising revenue as income for bus O&M. Within a year, the city upgraded its skeletal services to 110 buses.

Indore's rapid bus deployment and the established assurance of receiving a payment from operators, prompted other similar sized cities such as Amritsar, Jalandhar, Jodhpur, Kota, Surat etc. to adopt the same model - often referred as 'Indore Model' - for initiating bus services. These were the cities that received funds from JNNURM to procure buses but lacked funding and technical know-how to operate those buses. However, several of these newly formed SPVs failed to contextualize the model to local needs, lacked technical capacity, adopted poor route planning, lacked adequate depots, had inadequate monitoring and missed contract compliance. As a result, after initial success, bus services in some cities like Amritsar<sup>10</sup>, Kota<sup>1</sup> and Aurangabad<sup>11</sup> were terminated.

In other cities, including Indore, operators compromised service quality and reliability by modifying routes, cancelling services, overloading buses and skipping bus maintenance to meet their costs or to generate profits. This is a typical eventuality in NCC as revenue from passenger fares - the main source of income for operators - does not cover the costs of operating buses. At the same time, fares are kept affordable to ensure mobility for all commuter categories.

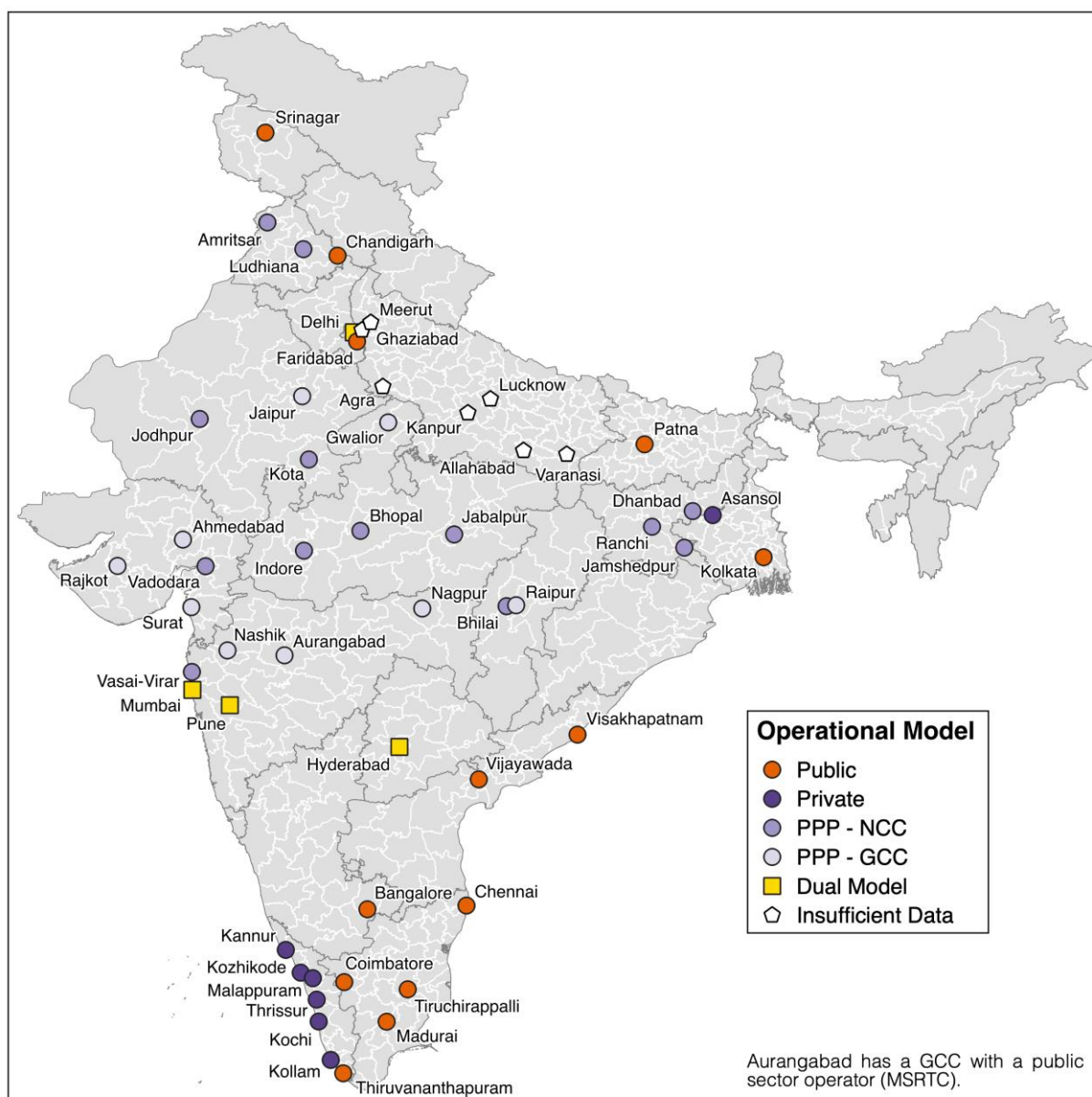
With the realisation of limitations of NCC in ensuring service quality, cities started to opt for GCC. Even Indore adopted GCC for implementation of its Bus Rapid Transit System (BRTS) in 2013, followed by other cities like Nagpur (2017)<sup>12</sup>, Bhubaneshwar (2018)<sup>13</sup>, Gwalior (2019)<sup>14</sup>, etc. for starting/restarting/scaling their bus services. Today, GCCs are a preferred choice as they allow bus agencies to monitor and control service quality by introducing performance measurement which is linked to operators' payments. This was not possible in NCCs.

The 'Working Group on Urban Transport' for the 12<sup>th</sup> five-year plan (2012-17) also suggested GCC for city bus services. It pointed that GCC will enable cities to have greater control over bus service quality by linking payments with performance of service<sup>15</sup>. Cities are adopting GCC for introducing electric buses with support from FAME scheme<sup>16</sup>. Cities like Aurangabad (2018)<sup>17</sup> and Pune (2019)<sup>18</sup> have utilized funds from the Smart Cities Mission to initiate bus services on GCC models. Gujarat Government through its Chief Minister's Urban Bus Service (CMUBS) Scheme<sup>19</sup> is providing Viability Gap Funding (VGF) to its urban local bodies for operating operator-owned buses on PPP.

However, even in GCC operators often suspend services over delays in payments from the public authority<sup>20</sup>. Delays occur because of limited funds with the SPVs, which in turn is attributable to the dependence on the variable farebox revenue. SPVs, due to lack of capacity, are also unable to measure performance and define and implement penalties and incentives related to performance.

Till date, several cities have started bus services on PPP basis. However, irrespective of the adopted model, almost all cities have faced challenges in achieving desired service quality levels to make it ubiquitous. The next section examines city bus services in four cities to understand the challenges faced in bus operations on PPP basis.

**Bus operation models in cities with population of more than 10 lakh:** Of the 53 cities in this category, 22 cities operate a total of around 4,600 buses on PPP. Four cities - Delhi, Ahmedabad, Pune and Hyderabad - operate a part of their fleet on PPP.



Operation Type	No of buses	No and List of cities
Public operated	~14,100	13: Bangalore, Chandigarh, Chennai, Coimbatore, Faridabad, Kolkata, Madurai, Patna, Srinagar, Tiruchirappalli, Thiruvananthapuram, Vijayawada, Vishakhapatnam
PPP (NCC and GCC)	~4,600	22: Ahmedabad, Amritsar, Aurangabad, Bhopal, Bhubaneswar, Dhanbad, Durg-Bhilai, Gwalior, Indore, Jabalpur, Jaipur, Jamshedpur, Jodhpur, Kota, Ludhiana, Nagpur, Nashik, Raipur, Ranchi, Rajkot, Surat, Vadodara, Vasai-Virar
Private operated	N/A	7: Asansol, Kannur, Kochi, Kollam, Kozhikode, Malappuram, Thrissur
Dual (Public operated + PPP)	~14,400	4: Delhi, Pune, Hyderabad, Mumbai

Due to data limitations, this report could not determine the type of bus operations in 7 cities - Allahabad, Agra, Kanpur, Lucknow, Meerut, Varanasi, Ghaziabad. Together these cities own around 960 buses.

### c) Policies and Schemes to foster PPPs

Various policies and schemes by the Central and State Governments have played a role in fostering PPP in operations of city bus service. The key policies and schemes are discussed below:

<b>2006:</b> <i>National Urban Transport Policy</i>	NUTP suggests scaling and modernization of public transport through well-structured procurement contracts with the private sector. To foster this, the policy states that Centre would provide 50% of the cost of projects taken up through PPPs.
<b>2006-14:</b> <i>Jawaharlal Nehru National Urban Renewal Program (JNNURM)</i>	JNNURM, the flagship program of Government of India for urban development, through its 'Bus Funding Scheme' provided support to states and cities for bus procurement and initiation of bus services. The guidelines of the scheme suggested preference in sanctioning of buses to cities that would adopt PPP for operations. Additionally, cities had to establish SPVs for operation of these buses.
<b>2015 - ongoing</b> <i>AMRUT and Smart Cities Mission</i>	AMRUT and Smart Cities Mission provide support to cities for all civic amenities including public transport. While AMRUT, till 2017, continued to disburse funding for buses sanctioned under Phase II of JNNURM, Smart Cities Mission does not have a dedicated fund for bus transport. However, cities have used the funding for pan-city projects to implement city bus systems.
<b>2015- ongoing</b> <i>Faster Adoption and Manufacturing of Hybrid &amp; Electric Vehicles Scheme (FAME I &amp; II)</i>	Department of Heavy industries, through the FAME Scheme, is providing financial support to cities to deploy electric fleet on PPP basis. In phase I, 9 cities received incentives to deploy 495 buses. In phase II, 5595 e-buses were sanctioned to 64 cities. NITI Aayog has prepared a Model Concession Agreement (MCA) to facilitate cities in procuring e-buses. As per the MCA, operators will procure, operate and maintain buses and in return will receive a per-km fee (to be revised every 6 months).
<b>2018 - ongoing</b> <i>Chief Minister Urban Bus Service Gujarat (CMUBS)</i>	Government of Gujarat initiated the CMUBS to provide VGF to transit agencies in urban areas of the state to cover the gap between operation costs and revenue. It is applicable in 8 Municipal Corporations and 22 Class A Municipalities that are operating buses on PPP. The scheme does not support bus procurement, staff recruitments, salaries and development of infrastructure. The scheme has now been extended to include support for electric buses in larger cities. So far, 12 cities have availed benefits to introduce 846 new buses, of which 350 are e-buses in Ahmedabad.

### d) Case Studies

This section examines four Indian cities that have introduced bus services using PPPs and have adapted their systems to changing conditions, while addressing various challenges. The case studies are based on stakeholder interviews and secondary literature. Primary data collection was limited due to the COVID-19 pandemic, which overlapped with the duration of this study.

## 1. Indore: Variations of NCC model

Population (2011)	19.60 lakh
Fleet strength (2020)	230
Daily ridership	2.28 lakh
Bus agency	AICTSL
Starting year of current model	2006
Number of operators	12
ITS	Functional



Bus services in Indore, until mid-2000s, were provided by the Madhya Pradesh State Road Transport Corporation (MPSRTC)<sup>21</sup>. After it was shut down, in 2006, the Indore Municipal Corporation and the Indore Development Authority formed an SPV – Atal Indore City Transport Services Limited (AICTSL) – to provide city bus services. AICTSL adopted a PPP model for bus operations with the vision to operate services on business lines and minimize investments from the government<sup>9</sup>. The agency hired minimal staff and adopted NCC - retaining the responsibility of planning, regulating and monitoring bus services and providing space for depots. Private operators were responsible for bus O&M and collected farebox revenue, 80% of pass revenue and 60% of advertisement revenue<sup>9</sup> as their income. In return, they were liable to either pay a premium to AICTSL or receive VGF, based on the bid submitted during selection process. The city operationalized 110 buses on 24 routes, monitored through vehicle tracking devices.

After success in the initial years, private operators started witnessing losses as ridership stagnated and maintenance costs increased. This forced operators to deviate from or modify routes from low demand areas to profitable routes, impacting service coverage in parts of the city. This happened even though AICTSL had planned routes as per travel demand assessed through primary surveys. This could be due to lack of revision of bus routes as per the changing travel patterns in the city. Furthermore, as the number of buses increased beyond 110, the limited technical capacity of the SPV made it difficult to monitor and use data from vehicles tracking devices<sup>21</sup>.

Lower service levels achieved through NCC paved way for adoption of GCC for operating city's BRTS in 2013 with support from JNNURM. GCC helped in ensuring service delivery and coverage but required more financial resources for monitoring. Following this, in 2016 the city reverted to NCC for scaling its city bus service. Currently, AICTSL has tendered clusters of loss-making intracity and profit-making intercity routes in a 50:50 ratio. AICTSL is staffed by 12 full-time employees and more than 100 employees on contract basis who manage 230 buses operated by 12 different operators.

Over the last 15 years, Indore has utilized schemes like JNNURM and AMRUT to scale its services. The SPV also uses funds from the Urban Transport Fund (UTF) and generated advertising revenue. With support from leadership at AICTSL that is keen to provide a quality public transport, the agency has evolved its PPP engagement models to use available resources and constraints to their advantage.



## 2. Bhubaneswar: Switch from NCC to GCC model

Population (2011)	8.37 lakh
Fleet strength (2020)	200
Daily ridership	1.3 lakh
Bus agency	CRUT
Starting year of current model	2018
Number of operators	2
ITS	Functional



Bhubaneswar started a dedicated city bus service in 2010 with 100 buses introduced through support from JNNURM. The buses were managed by Bhubaneswar-Puri Transport Services (BPTS) and operated on NCC for 8 years. However, the operators provided inadequate services and buses lacked maintenance. The service was shut down in 2018 with the ending of the contract as operators had stopped paying premium to BPTS citing losses. Following this, the Housing and Urban Development (HUD) Department of the state reconstituted BPTS as Capital Region Urban Transport (CRUT). The new SPV was appointed as the sole provider of public transport in the city by granting them exclusive area permits for operating buses. The bus services by CRUT extend to two neighboring cities - Puri and Cuttack.

As part of its planning process for the new city bus service, CRUT analyzed the public transport needs and adopted GCC model for engaging operators. The operations started in 2018 with a fleet of 200 buses - split equally into regular and midi buses and each group operated by a different operator. It is important to note that operators procured buses through a soft loan from CRUT. The agency also expanded its workforce from 4 full-time employees in BPTS to 12 full time employees in 4 divisions - engineering, operations, finance and Intelligent Transport Systems (ITS) - within CRUT. Additionally, they have hired more than 50 employees on contract basis. CRUT has reduced its expenses by keeping the workforce minimal and outsourcing revenue collection to two revenue collection agencies. It has appointed an external revenue assurance team to prevent leakages and technical inspectors to perform physical quality checks on fleet as per service level benchmarks.

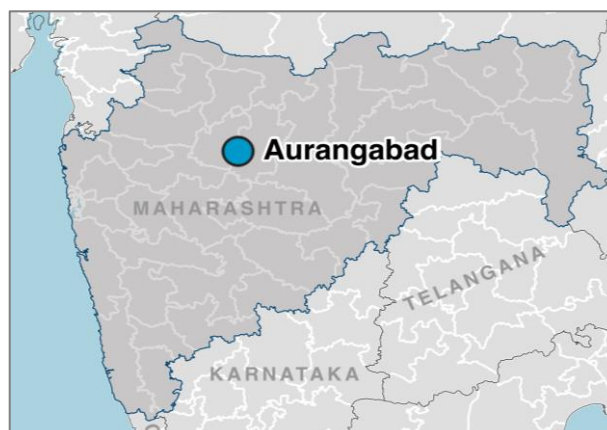
These initiatives, combined with annual grants from the HUD department, have enabled CRUT to adhere to the contract in terms of service monitoring and payments. The agency periodically revises the payments to operators based on fuel and labor cost increases. However, outsourcing functions to third parties has led to difficulty in employee coordination which is exacerbated by technical capacity bottlenecks. CRUT is finding it difficult to hire key managerial and transport planning roles due to a prolonged hiring process, poor pay scales and lack of technically qualified candidates applying for the jobs.

## 3. Aurangabad: GCC with a public sector undertaking

Until mid-2000s, bus services in Aurangabad were provided by Maharashtra State Road Transport Corporation (MSRTC), which were scrapped due to rising costs and reducing ridership. Following this, in 2006, the Aurangabad Municipal Corporation (AMC) started a city bus service by engaging private operators on NCC for operating 100 buses on 24 routes with provision of a single depot for

10 years. Private operators retained revenue from ticket sales, passes and advertising and paid a royalty to AMC on a per kilometer basis.

Population (2011)	11.71 lakh
Fleet strength (2020)	100
Daily ridership	0.35 lakh
Bus agency	ASCDCL
Starting year of current model	2018
Number of operators	1
ITS	Functional



In the initial years, the operators recovered their costs and brought in efficiency improvements<sup>11</sup>. But as revenue stabilized and O&M costs increased, they started witnessing losses. AMC also failed to provide depot space which further increased O&M costs. Eventually, the bus service was terminated 4 years after starting, as operators defaulted on loans taken for bus purchase. Additionally, AMC had no mechanism in place to measure the service performance or penalize operators for non-performance. For example, AMC was not able to hold operators accountable or rectify non-delivery when they deployed only 74 of the 100 buses specified in the agreement. Operators also under-reported the number of kilometers performed by buses to reduce the amount of premium payments to AMC. This happened because buses lacked vehicle tracking devices and manual methods of data entry were undertaken. Operators also lacked support from AMC and other civic agencies to reduce competition from autorickshaws who operated parallel services on bus routes.

In 2018, Aurangabad Smart City Development Corporation Limited (ASCDCL) used the grants received under the Smart Cities Mission to reintroduce the city bus service. ASCDCL entered a GCC with MSRTC as their operating partner for 100 buses. ASCDCL is responsible for bus procurement, implementation, setting fares and revenue collection from ticket sales and advertising. MSRTC is responsible for O&M, hiring crew and staff for operations, ticketing and allocation of space for city buses within its existing depots in Aurangabad. Both partners collaborate on deciding routes and schedules but ASCDCL makes the final decision. MSRTC receives payments on actual expenses upon producing invoices that detail cost of O&M of buses and cost of using MSRTC's depot space for city buses. Through this arrangement, ASCDCL can use depots owned by MSRTC on payment of charges without having to invest in creating new infrastructure. It also has access to MSRTC's detailed standard operating procedures (SOPs) on bus service planning, management, operations, maintenance, accident policy, industrial and labor codes etc. Lastly, it is working with a partner whose primary goal is not to maximize profits. MSRTC has been able to absorb its excess workforce for Aurangabad's city bus operations and is receiving the actual cost of operations.

ASCDCL is utilizing INR 200 crore received through the Smart Cities Mission for first five years of bus operations. As such, it deposits the farebox revenue in a bank account which will be used to sustain operations post the utilization of mission grant. The existing agreement allows both parties to negotiate an extension. The public agency in future can engage private operations for scaling services while protecting MSRTC from competition. ASDCSL has also taken care to address the

issues faced in the NCC arrangement adopted in 2006. The current agreement identifies the responsibilities of the partners on tax payments and establishes the mechanisms for measuring the performance of MSRTC. As payments are linked to the number of kilometers operated by MSRTC, ASCDCL has installed GPS devices on all buses. In case of a malfunction, both teams cross-check the manual reporting of data. The agreement also penalizes ASCDCL for delays in payments and MSRTC for defaults in service provision. However, it does not detail the indicators for measuring performance, course correction and service improvement. Additionally, since payments are made on actuals, the operator has lesser incentives to reduce the cost of operations brought in by measures like improved driving and reducing dead kilometers.

#### 4. Pune Pimpri-Chinchwad: GCC model for e-bus service

Population (2011)	48.44 lakh
Fleet strength (2020)	1550 + 150 e-buses
Daily ridership	10.4 lakh
Bus agency	PMPML
Starting year for e-buses	2019
Number of operators	1
ITS	Functional



Pune Pimpri-Chinchwad is one of the first urban agglomerations in India to induct electric buses in its fleet. The Pune Mahanagar Parivahan Mahamandal Limited (PMPML), which provides city bus services in Pune and Pimpri-Chinchwad region, inducted 150 e-buses through a GCC model for an operational period of 10 years. The e-bus services were started with financial support from the Pune Smart City Development Corporation Limited (PSCDCL) under the Smart Cities Mission. Under the contract terms, PMPML is responsible for preparing bus schedules, monitoring electricity consumption and fare collection. The private partner owns, operates and maintains the buses and hires the drivers. PMPML has provided land to the operators with high electrical voltage connection for depot development- civil works and charging infrastructure installation.

The GCC model allows PMPML to transfer the risk associated with a new technology to the operator who themselves view this as an opportunity to demonstrate their solution. The services have been well received by passengers as e-buses offer a comfortable journey - smoother ride, air conditioning and reduced noise pollution - at the same fare. However, the tendency of passengers to opt for e-buses over diesel services is causing overloading in buses reducing the range covered on a single charge. The benefit, however, is more earnings per km due to greater occupancy. The increased revenue combined with lower operational costs has been beneficial for the operator and the agency. But PMPML often delays payments to the operator as it does not receive its own funding from the city in a timely manner. Further the penalties for the operators do not consider external factors such as traffic congestion related delays in on-time trip completion. It emphasizes the need for clearer terms in contracts regarding penalties. With this experience, PMPML and the operator have been instrumental in providing inputs to the FAME II scheme implementation.

## e) Challenges in PPPs

Past experiences indicate that some cities have used PPPs to start organized bus services for the first time, but others have faced challenges and failures in utilizing its benefits. It is observed that the performance of PPP projects is impacted by the inherent challenges in bus service planning and implementation - similar to those witnessed in STU-operated services - such as inefficiencies in route planning, dependence on fare revenue as the main income source and lack of technical capacity. Additionally, in PPPs there are challenges in contract execution such as lack of clarity on provision of support infrastructure, undefined penalties and incentives and inadequate monitoring mechanisms. These challenges are discussed in detail below:

### 1. Inefficient bus service planning

The current route planning practices in cities lack a data centric technical approach. Bus agencies implement isolated routes which are not integrated at network level and with other public transport modes like metro rail, intermediate public transport, etc. Once services are operational, operators also fail to adhere to the planned bus schedules and frequency.

This leads to unreliable services, uneasy journeys and poor service coverage discouraging passengers from using buses leading to cyclic reduction in ridership/revenue. Overlaps with other public transport modes lead to competition for ridership. The result is decrease in ridership/revenue which diminishes the financial viability. Amritsar, which started a city bus service in 2014 with support from JNNURM on NCC basis, had to shut down the service within 3 years as operators reneged on contracts citing losses due to ridership competition from IPT modes<sup>10</sup>.

Lack of technical planning approach also results in inaccuracies in estimation of fleet and ridership/revenue which are essential to gauge the viability of the services. The inaccuracies are carried over to tenders and operators, who themselves lack training on service planning, make misinformed bids. This becomes problematic in NCC where risk is borne by the private operators. They tend to modify or surrender routes for profitability leaving under/unserved areas. Operators in cities like Jalandhar and Jodhpur have deviated from contracted routes to ensure viability<sup>1</sup>. In Ludhiana<sup>22</sup>, the operator made only part of the fleet available to stay financially afloat. Even in GCC, reduction in ridership/revenue due to poor planning increases the dependence of public authority on government for financial support to make timely payments to operators. And when payments get delayed due to lack of funds, operators often suspend services.

Once services are started, regular review or revision of route networks as per the changing travel patterns in the city is also missed. Lack of periodic route revisions introduces inefficiencies in operations - a system that performs well in initial years of its implementation may not be viable after a certain period. The NCC adopted by Aurangabad in 2006 witnessed moderate success in initial years but was shut down 4 years later as operators pulled out of their contracts due to losses<sup>11</sup>**Error! Bookmark not defined..**

### 2. Inadequate support infrastructure

Depots are essential for operating bus services as they provide space for bus parking, maintenance and administrative functions like allocation of crew to duty. In PPP projects, the responsibility of providing depots or land for depot development lies with the public authority. Several cities either delay or fail to handover the depots to operators. In either case, it increases the working capital for

private operators<sup>6</sup> - they start incurring expenditure on activities like bus maintenance and staff salaries but have no income.

Additionally, in absence of depots, buses are parked in unsecure locations making them susceptible to vandalism. It also compromises maintenance which impacts passenger comfort and life span of buses. In Ranchi, due to shortage of space in existing depots, city buses introduced in 2010 were parked on roads and lacked maintenance<sup>23</sup>. Aurangabad Municipal Corporation, failed to allocate permanent space for depots for city buses introduced in 2006 (NCC), which along with other reasons led to premature shutting down of bus services<sup>11</sup>. In Bhilai, the buses deployed in 2014 have rapidly degraded due to lack of maintenance infrastructure<sup>24</sup>.

One of the main reasons for delays in allocation of depots or land for depot development is the unavailability of land in cities with SPVs. These agencies have to coordinate with multiple agencies to acquire land which is a time-consuming process. This is more difficult in larger cities like Delhi, where there is a need of 200 acres of land to accommodate buses run by the Delhi Transport Corporation (DTC) and Delhi Integrated Multi-Modal Transit System Limited (DIMTS) - cluster operations on PPP<sup>25</sup>.

### 3. Weak institutional structures

One objective of introducing PPP in bus operations is to maintain a lean workforce in bus agencies and avoid creation of legacy systems. Leaner institutions are able to manage services when scale is small. With increase in fleet size, it is difficult to manage all responsibilities with limited staff<sup>26</sup>. In Indore, the limited staff within the city SPV was unable to regularly monitor services with growth in buses<sup>21</sup>. Moreover, GCC operations require more staff to monitor services and SPVs find it difficult to deliver these functions on leaner institutional capacity.

### 4. Lack of technical capacity

Keeping with the need to maintain a leaner workforce, staff in bus agencies is either on deputation from other civic agencies or is hired on short-term contract basis. As deputed staff have responsibilities from parent organization and short-term hires lack career growth prospects in SPVs, they do not necessarily invest in performing their job responsibilities. These staff also lack necessary skills and trainings for performing multiple and complex functions involved in operating a bus service.

Recently formed SPVs, like CRUT, have overcome this challenge by implementing an organizational structure with key technical positions and outsourcing major functions like fare collection, revenue assurance and quality assurance. However, the SPV is unable to hire technically qualified resources resulting in additional burden on the existing employees. As ridership and fleet will increase, CRUT is likely to face difficulty in maintaining adequate service quality just like other cities.

Private operators also lack training and experience in operating city-wide services as they are more familiar with operations of smaller fleet sizes. They also lack technical capacity to assess the tender for viability and make misinformed bids. Once operations start, this leads to deviations in service provision to ensure profitability. Lastly, the staff retention by private operators is low as they hire crew and staff on lower salaries and benefits. The reduction in hiring costs is negated by the increase in bus maintenance costs and increase in training costs on developing the necessary skills of the crew – soft skills to engage with passengers, driving habits to improve fuel efficiency, etc.



## 5. Unfavorable revenue models

Passenger fare is the main source of income for bus providers. In NCC, the private operators collect farebox revenue as a mode of payment for bus O&M and in GCC, the public authority collects fare and uses it to pay the operators. However, fares must be kept affordable and as such revenue from fares is insufficient to meet the mounting costs of bus operations.

In absence of sufficient revenue - in NCC operators modify routes to serve only profitable areas in the city and in GCC they suspend services if payments are delayed. In Ludhiana, private operators suspended operations in 2015, claiming overdue payments from the city bus agency<sup>20</sup>. Operators also tend to crowd buses, skip maintenance and overwork the crew to generate profits or to cover their costs. This is counterproductive to the image of the service resulting in a cyclic reduction in ridership/revenue.

## 6. Inadequate monitoring and payments

In PPPs it is important to monitor services to ensure that service quality is maintained, and that operators adhere to the performance measurement indicators linked to their payments. Most cities have integrated ITS for this purpose. However, evidences indicate that SPVs have been unable to identify the indicators they want to measure using ITS. At the same time, private sector vendors for ITS have been unable to deliver the requirements specified by SPVs.

In most instances, ITS projects have achieved only deployment of Electronic Ticketing Machines (ETM) which help summarize revenue collection. There are gaps in implementation of Vehicle Tracking Units (VTUs) which are essential to calculate parameters that are linked to operators' payments. VTUs are either absent or faulty. In absence of data from VTUs, manual reporting methods are used which are liable to be reported incorrectly to change payable/receivable amount by either party. Additionally, as the services grow in scale, the limited staff within the SPVs is unable to monitor services using manual methods. Even though ITS has been adopted by most cities, there is lack of technical capacity within the public and private sector to identify indicators that need to be measured using ITS and the appropriate technology to measure those indicators.

## 7. Lack of clarity on performance related penalties and incentives

Almost all PPP contracts are relaxed in defining the penalties for non-performance by operators. Existing penalties are linked to qualitative performance measurement indicators such as cleanliness of buses which are open to interpretation and thereby arbitration. Most tenders and contracts also do not specify caps on penalties even though it is essential for operators to plan their financial outlay and secure funds from financing institutions.

Additionally, most PPP contracts do not specify any incentives for operators to perform beyond the agreed performance benchmarks/indicators. This does not incentivize the operators to improve the service performance, introducing inefficiencies in a system that can benefit from reduced costs or increased revenue. For example, operators have no incentive to achieve the specified schedules for the day or improve bus utilization or increase ridership.

## 8. Access to finance for private sector

Lack of clarity on risk related aspects such as routes, schedules, provision of depot infrastructure and caps on penalties, decreases the private sector's access to finance from financing institutions. Lending institutions also link flow of funds to commencement of bus operations. As such, delays in

starting of bus operations due to changes in bus specifications, depot readiness, most recently the COVID-19 pandemic restrictions, etc., delay the release of funds and increase losses for operators.

### Comparative analysis of Request for Proposals (RfP) for NCC AND GCC

	Planning		Depots	Revenue Model	Monitoring			Payments	
RfP Clauses City	Routes proposed	Ridership estimate	Clarity on depot space allocation & development	Details on fare and its revision	Details on SLBs or performance parameters	Details on monitoring mechanisms	Details on penalties/incentives linked to performance	Details on payments to operators and vice-versa	Specification on penalties for delay in payments for either party
<b>Indore Cluster bus service (2017):</b> 94 regular + 159 midi buses for 7 years	✓ Details of cluster	X	✓ Lacks clarity on handing over depot space	✓ Specifies fare and revision rates and timeline	✓ Detailed standards of service for bus operations	✓ ITS proposed for monitoring and PIS	✓	✓	✓
<b>Kota city bus service (2020):</b> 34 buses for 3+2 years	✓ Fleet deployment plan	X	✓ One depot and parking space to be handed over to operator before start of project	✓ RfP specifies fare and revision rates and timeline	✓ Qualitative and broadly defined parameters	✓ GPS and in absence, manual methods proposed	✓ Penalties only from deviating from the fleet deployment plan	✓	X
<b>Bhubaneswar city bus service (2018):</b> 100 buses for 8+1 years	N/A	N/A	✓ Depot space identified	N/A	✓	X	X	✓	X
<b>Aurangabad city bus service (2018):</b> 100 buses for 5 years	✓ Fleet Deployment plan - prepared with private party	N/A	✓ MSRTC to use their depots on payment of charges by SPV	N/A Fare and revision to be determined by the public authority	✓ Qualitative and broadly defined parameters	✓ GPS and in absence, manual methods proposed	✓ Penalties only	✓	✓

**NCC in Indore and Kota:** Both RfPs provide details on routes, number of buses, kilometers to be performed, trips, etc. but fail to incorporate estimates on ridership which is essential for operators to gauge the financial viability of the routes/clusters they are bidding for. The RfPs also provide details on fare structure and its revision but Indore's RfP fails to mention the periodicity of revision. It is too early to check implementation of fare revision in Kota but in Indore last revision took place in 2020 after 6 years. While the fare remains static, the payments between the two parties is revised annually based on increase in price of diesel. Even though Indore has incorporated all the details in its contract, the dependence on fare revenue as the main income source is increasing the gaps between cost and revenue and VGF requirements. Both RfPs mention SLBs for performance measurement but in case of Kota these are qualitative and will be difficult to measure. The SLBs are more precise and quantitative in Indore's RfP and are linked to penalties in case of non-performance.

**GCC in Bhubaneswar and Aurangabad:** Both RfPs have clear guidelines on provision of depot space and SLBs to measure performance. However, the SLBs are very qualitative in Aurangabad's RfP and will be difficult to measure. In Bhubaneswar's RfP, there is no mention of mechanisms to measure the performance. This RfP also fails to mention the penalties that the operator will pay to the authority. Also, neither city has provision to incentivize the operators for performance beyond the SLBs.



### LEARNINGS: HAVE PPPs DELIVERED?

PPPs in bus operations are adopted with the objective of reducing financial burden on public sector to start/scale a bus service and bring in cost efficiency. It is based on private sectors' capability to easily access finance for upfront investments. It is also believed that private sector, driven by its profit-making nature, will help achieve cost-effectiveness in bus O&M. Further cost reduction is expected to come from outsourcing workforce from government jobs to private sector. Undoubtedly, several cities have used PPPs to initiate bus services from scratch and several others have scaled their operations. But there are gaps in achieving the objectives for which PPPs were adopted.

1. **Ease in accessing finance:** Initially (mid-2000s), PPPs enabled small and medium sized cities - that have smaller budgets - to begin services with lesser upfront costs going into bus procurement and hiring of staff. Private sector was able to acquire loans from financing institutions based on guarantees provided by SPVs. But, after few years from start of services, operators witnessed losses (due to stagnation in ridership, increasing maintenance costs etc.) and many defaulted on their loan payments resulting in seizure of buses. With these experiences, lending institutions are now careful of the risks associated with public bus operations and link flow of funds to commencement of bus operations. There is also a shift in the trend of obtaining loans from banks - as observed in CRUT Bhubaneswar where the SPV is providing a soft loan to the operators.
2. **Financial liability of the public sector:** In NCC, the private sector is responsible for fare collection and using it to cover the costs of bus O&M. To reduce the risk for operators, previous contracts proposed periodic revision in fares as per changes in costs of labor, fuel and other consumables. However, as discussed in this report, it is not prudent to increase fares as it excludes economically weak commuter categories and causes a mode shift. As a result, operators suffered losses. It led to a decline in service quality or termination, inconveniencing passengers. With experience in operating buses on NCC, cities are now adopting hybrid NCC models where they pay VGF to operators based on route profitability. In GCC also public authority pays a fee to the operators. Delays in payment lead to suspension of services. In absence of sufficient funds, public authorities are dependent on funding support from governments to pay operators in a timely manner.
3. **Cost-efficiency in bus O&M:** Currently, private operators in most cities are responsible for operating around 100-200 buses. At this scale, it is difficult to achieve cost-effectiveness in bus O&M as they are unable to negotiate prices with OEMs on bulk purchase of spare parts and other consumables. They also do not have the technical and financial capacity to develop bus maintenance infrastructure for projects that will last for 8-10 years (average duration of a PPP contract). And lack of adequate depots facilities exacerbates maintenance costs. Private operators also do not receive any benefits that some established STUs have been able to bargain - low cost insurance, lower interest rates on loans and tax exemption - from the Government. These costs form a significant portion in expenses incurred in bus O&M.
4. **Salary expenditure by public sector:** Staff salaries is the biggest expenditures for bus agencies. PPPs allowed outsourcing workforce requirement especially bus crew to private sector and reduce liabilities for SPVs. However, staff retention by private operators is low due to lower salaries and lack of benefits. The frequent changes in bus crew impacts service quality as untrained staff lacks soft skills to engage with passengers and technical skills to maintain buses. Additionally, leaner SPVs are unable to fulfil GCC requirements on monitoring bus services especially when services start to scale. Some agencies have overcome this challenge by outsourcing functions like revenue collection to third party vendors, but they face challenges in coordinating with multiple agencies.

*Currently, there is lack of data and evidences to estimate the actual cost reduction achieved in operating bus services using PPPs while maintaining desired levels of service quality. A quantitative analysis of financial and operational performance metrics of bus services operated on PPP basis needs to be investigated further. Future analysis will benefit from easily available data and information on tender outcomes and their operational and financial performance.*

## 4. WAY FORWARD

With the existing challenges, PPPs fall short in achieving a quality bus services and meeting the objectives for which they were introduced. Going forward there is a need to create conditions that result in implementation of robust PPP and efficient bus systems. These conditions can be achieved by addressing the inherent issues in bus service planning which are witnessed in all bus systems irrespective of the operation model and by improving execution of PPP contracts. Following interventions will help improve implementation of PPP projects in bus operations:

### 1. Funding support to cover operational costs

Passenger fares - the main source of income in bus operations - must be kept affordable to ensure mobility for all commuter categories. As such it is not feasible to cover the costs of bus operations from fare revenue alone. All approaches towards implementing a bus service need to consider that bus operations require external financial support to cover the gaps between operational costs and farebox revenue. Regular financial support from governments in the form of VGF will help overcome this. It is essential to link this support to the performance of the services to foster long term operational and financial improvements in the system.

As mentioned earlier, the State Government in Gujarat is providing VGF to urban local bodies to operate operator-owned buses on PPP basis. The State aims to deploy 2864 new buses through this support. The HUD Department, Odisha also provides annual financial grants to CRUT to support operations of buses in Bhubaneswar.

### 2. Strengthen existing revenue model

The existing revenue model for bus operations - whether on PPP basis or operated by public agencies - is heavily dependent on the amount of passenger fare collected. There is a need to shift from this approach and harness alternate sources for revenue generation such as real estate development, advertisement, parking and branding rights of infrastructure. This will need legislative support from ULBs on the formulation of guidelines related to parking, advertisement, etc. This will also help in reducing dependence of bus agencies on external funding support/VGF. Before the pandemic, London collected up to 20% of its revenue from non-fare income compared to 5% (average) in Indian cities.

### 3. Plan for integrated city bus services

Planning of city bus services needs to be based on technical analysis of travel demand and landuse data in the city. There is a need to implement network-level route plans that are integrated with other public transport modes. This will increase service reliability, ease journeys and improve coverage attracting ridership/revenue. Some cities, such as Aurangabad and Indore, consult operators for planning routes and services. Once implemented, there is a need to periodically revise and rationalize the existing services as per the changing travel patterns in the city. Gurugram, before initiating its bus services in 2018, undertook a technical approach and passenger feedback mechanisms to plan its routes. Technically analysed information for service planning will also help private stakeholders to gauge the risk associated with the projects more accurately. And bus agencies will be able to estimate the amount of funding required for covering operational costs.

### 4. Timely delivery of support infrastructure

PPP contracts place the responsibility of providing depots or land for depots with the public authority. But there is a need to introduce clarity in contracts on roles and responsibilities related to execution



of civil and ancillary works and the manner in which the public authority will support the private operators. Contracts also need to link the delays and evasions in handing over the depots with penalties for the defaulting party. This becomes more important as financing for private sector is linked with assurance on depot availability. Reduction in risk with surety on availability of land for depots will also attract more bidders in the tendering process.

To address the issue of unavailability of land for depots, cities need to earmark land, separate from land allocated for other transport purposes, in the development plans based on future estimation of public transport needs. Land banking techniques are also an effective method to aggregate land parcel for depot development.

#### 5. Build technical capacity for public and private sector

To overcome technical capacity constraints, SPVs need to hire candidates that meet requisite qualifications and trainings for planning, operating and managing bus services. Hiring also needs to ensure long-term employability, career growth and retention of staff. Additionally, as bus operations require specialized skills, technical capacity building training and exercises are required both for the public and private sector. Suggested topics for trainings include - data collection and analysis, bus route network planning, sustainable transport practices, long-term planning, bus procurement, contract management, bus maintenance, operations and monitoring and use of ITS. Trainings can be conducted by the existing centres of excellence established by governments, such as Central Institute of Road Transport (CIRT) or by involving specialized institutions.

For training purposes, stakeholders need to capitalize on the existing procedures and guidelines developed by established STUs. There is a need to develop Standard Operating Procedures (SOPs)/knowledge products that capture the innate knowledge acquired by STUs over several years on various aspects of bus services.

#### 6. Improve service monitoring

Implementation and use of ITS is important for service monitoring and measuring the performance of private operators on various performance benchmarks/indicators in real-time. ITS capabilities will also ease monitoring of bus services with increase in scale, reconciliation of services and computations of payments to either party. This however requires capacity building for both the public and private sector to identify indicators that they need to measure using ITS, select context specific technologies and methods to use the new technologies.

Going forward, one way to minimize the procurements costs for ITS is to establish a centralized system with backend support for data collection and analysis. This will reduce the investments at the SPV level, bring uniformity in data collection and help monitor the performance.

#### 7. Introduce defined penalties and incentives

While cities have ironed out several issues in contracting of bus operations, the contracts still need to be improved in terms of defining penalties and incentives for both stakeholders. Penalties need to be linked to quantitative performance indicators such as bus utilization, bus occupancy, trips completed etc. that are measurable to reduce misinterpretations and thereby arbitrations. Defined and capped penalties will also benefit the operators in deciding their financial outlays. Contracts also need to include incentives for operators to incentivize performance beyond the agreed performance parameters. This will improve service quality, reduce operational costs and increase

revenue. Internationally cities like London and nationally in Delhi cluster bus operations, bus agencies provide incentives to operators for improving ridership.

#### 8. Achieve scale in operations

Envisioning PPP projects at scale with adequate infrastructure will help in achieving cost efficiency in bus O&M. At a capacity of more than 500 buses per operator in a city/region, operators will be able to capitalize on the financial benefits accrued from bulk purchase orders and economies of scale in bus maintenance activities. At the implementation level, cities will benefit from using NCC for operations on the intercity segment as these routes have higher cost recovery compared to urban routes. Some regions in Madhya Pradesh are using NCC to tender clusters of urban routes and intercity routes - as income from intercity routes will cover the losses in urban areas. GCC - which provide income assurance to operators - will be beneficial in implementing or scaling existing city bus services. Cities with existing STU-operated services can explore the role of private sector to scale their systems. This will allow the partners to achieve operational efficiency as private operators will benefit from the exemptions that public agencies have accrued to themselves over the years and use the existing bus depots and bus maintenance practices of STUs.

#### 9. Ease access to finance for private sector

Private sectors' access to finance and loans for capital investments such as bus procurement, depot development and workforce hiring can be made easier by introducing credit guarantee mechanisms. Additionally, SPVs can help reduce the risks for private sector by including information on routes, schedules, depot availability and cap on penalties in the tender documents.

### 5. CONCLUSION

City bus systems in India need augmentation to meet the burgeoning demand for mobility. There is a need to deploy around 2.2 lakh buses in urban areas by 2031. With limitations in public sector investments, involvement of private sector in bus service provision can help in meeting the investment needs of the sector and ramp up bus services.

At the policy level also, there is preference to deploy PPPs to augment bus services. Cities are using PPPs to deploy electric buses through financial support from the ongoing FAME II scheme. The more recent Union Budget 2021 announcement to launch a scheme for augmentation of bus service in urban areas also mentions deployment of PPP models to finance acquire, operate, and maintain over 20,000 buses.

There is, however, a need to learn from past experiences and build an ecosystem that allows cities to implement robust PPP models and develop reliable and efficient public bus transport services. For this, cities need to address the inherent challenges in bus service planning and improve execution of the PPP contracts irrespective of the model - NCC or GCC.

Cities will reap greater benefits from PPP projects by securing regular funding support from governments, increasing the share of non-farebox based revenue, adopting data-driven technical approach for route network planning, ensuring timely delivery of depot infrastructure, using technology for service monitoring and providing clarity on risk related aspects such as penalties, incentives, route plans and fare policy. In addition, cities need to focus on building technical capacity both within the public and private sector.

There are also emerging examples where cities have re-thought the manner in which they are providing bus services. Aurangabad has chosen to partner with another public sector undertaking which is adept in nuances of operating bus services. In doing so, the city is also incurring only the actual expenses in operations and does not have to pay the profit margins involved in partnering with private sector operators.

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