Funding Public Transport in Urban areas:
Bangalore, Mumbai, Ahmedabad

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AHMEDABAD, GUJARAT
RAPID URBANISATION
350 MILLION << BILLION

MOTORIZATION LEVELS VS PT SHARE
60-80% to 35%

Source: TOI 8 September, 2018: A study by global consulting firm AT Kearney
Booming sale of cars, bikes slams brake on public transport.
WHAT ARE THE CURRENT ISSUES IN FINANCING BUS TRANSPORT?

NEW DELHI: The government may soon start operating electric buses in partnership with private players as it looks to improve public transport and reduce pollution.

Niti Aayog, the government’s premier think tank, has sought comments from stakeholders on a draft model conceived of introducing electric-bus fleets in cities for public transportation in public-private partnership or PPP mode on operational expenditure (per capita) basis.

ABORT THE SERVICE

If the service runs into losses, the MMRDA was required to bear the losses.

NO DEDICATED FUNDS

Mumbai: BEST seeks money from MMRDA for operating electric buses.

NEW DELHI: Starting the construction of Delhi Metro Phase-IV will take more than six months, Union housing and urban affairs ministry officials said on Monday, blaming it on fresh hurdles put up by Delhi government.

The next phase of expansion has already been delayed by more than two years, primarily on account of the ongoing tussle between the Centre and Delhi government over the sharing of the project cost or operational losses.

Sources said after Delhi government sent its revised proposal saying it would not bear equal sharing of operational losses that the new line might incur and that the city government wouldn’t bear any liability of the loan to be taken from Japan International Cooperation Agency (JICA), the ministry has forwarded the proposal for third party appraisal by Institute for Urban Transport (IUT).

SHORTAGE OF FUNDS

State transport corporations of Bengaluru, Mumbai, Hyderabad, Kolkata and Manali have already introduced electric vehicles into their fleets.

FINANCIAL CRISIS

Ahmedabad: For the next seven years the Gujarat government will bear almost half of the losses made by municipal authorities in running public transport. This strategy is aimed at making public transport the mainstream option said Mukesh Puri, principal secretary, urban development department. Puri was speaking at a seminar on ‘mobility led economic development’ in Ahmedabad.

BEST under Threat of Privatisation

For nine days—from 8 to 17 January 2019—Mumbai’s roads were bereft of one of its last identity markers, the Brihanmumbai Electricity Supply and Transport (BEST) buses. These buses were the backbone of daily commute for lakhs of people, who were put through immense inconvenience and even trauma during this period. Those who live in areas that are not serviced by either e-rickshaws or public transport were particularly affected with students even unable to travel to their examinations. However, there are two aspects that stand out about this strike—Brihanmumbai Electricity Supply and Transport undertaking Workers’ Union. One, even though the longest such agitation in recent times, public and commuter sympathy was nil. Workers, despite the absolute loyalty of the Shiv Sena-affiliated unions, remained estranged from the leadership of the joint action committee. What does this forebode for the future of public transport in Mumbai?
Urban transport is a challenge, the only way forward for sustainable mobility would be to focus on public transport. And financing public transport being one of the major problem cities need to investigate, for the better functioning.

AIM

“This study is an attempt to understand various funding mechanisms that are being utilized by the Public Transport Agencies in different cities and how effective are they in utilizing the same”
Research Questions and Objectives

- Which are the sources of funding the city has utilized for developing and operating bus services?
- To what extent are these sources of funding are exploited by different cities?
- How is the performance of bus systems contributing to maintaining financial sustainability?
- To assess the operational and financial performance of bus systems over the recent past (last 8-10 years) in 3 cities.
- To assess how PTAs are meeting their operating expenses and to what level do they recover from fare-box and non-fare box. If there is a Viability gap, how are they filling it?
- To explore if there are any concessions provided to different groups of the society (culture, income) and how is the revenue shortfall met due to these.
CITY SELECTION CRITERIA

Organisational Structure
- State Undertaking – Parastatal agency
- State parastatal – City
- Municipal Undertaking
- Municipal body- SPV company

Operations Strategy
- Public Operator
- Private Operator – Gross cost model ; Net cost Model

Data Availability
- Last 8-10 years operational and Financial performance data.
- Access to balance sheet P& L account statement

<table>
<thead>
<tr>
<th>Cities</th>
<th>Bangalore- BMTC</th>
<th>Mumbai- BEST</th>
<th>Ahmedabad-AMTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Established under</td>
<td>State</td>
<td>Municipal</td>
<td>Municipal</td>
</tr>
<tr>
<td>Contracting Model</td>
<td>State – Parastatal</td>
<td>Municipal</td>
<td>Municipal-Gross cost</td>
</tr>
</tbody>
</table>
**Indicators**

**REVENUE SOURCES**
- Traditional Sources
- Own sources
- Transfers – Centre/State schemes
- Loan Amount
- Fare box
- Non-Fare box

**CAPITAL SOURCES**
- Advertisement, Scrap sold, Pay & park, Rent from commercial outlets
- Loan Amount

**FINANCIAL INDICATORS**
- Fuel cost
- Staff cost
- Tyre & other spare parts
- Interests
- Depreciation
- Taxes
- Other costs

**OPERATIONAL SOURCES**
- Advertisement, Scrap sold, Pay & park, Rent from commercial outlets

**OPERATIONAL INDICATORS**
- Fleet Utilisation
- Age of bus
- Staff Productivity
- Vehicular Productivity
- Staff bus ratio
- Fuel Efficiency
- Occupancy ratio
State undertakes major PT operations and its’s finances in Bangalore. BMTC undertakes bus services- capital and operational
The ridership and fleet size has shown gradual decline in past 4-5 years. Speed, price hike major reasons for fall in ridership. No dedicated funds for fleet purchase.
The productivity of the system has gone down in past 4-5 years. It indicates poor fuel efficiency. The increasing vehicular traffic in Bangalore has affected the speeds of buses – from 20km/hr it has come down to 10km/hr. This hampers the mileage of the vehicles, systems efficiency and increases the cost of operations.
• With the increasing investment, fleet purchase is decreasing. Only because no addition in fleet nos. after 2013-14

• For fleet augmentation and capital infrastructure it is dependant on government grants/schemes. They are neither rule based nor predictable.

• From all the sources majorly Reserves are changing each year based on the recovery for revenue deficit operations.
Staff wages and fuel cost.
Staff salary as per the DA from government.
With increasing fuel price, cost of maintaining other spare parts also increases, has led to fare price increase (AC buses, monthly passes)

Opex Components share in %

- **50%**

- **30%**
Operating Revenue: FARE & NON-FARE BOX

- **85%** Fare box
- **12%** Non-fare box

**Hike in fare prices ~ Fall in ridership ~ Revenue declined**
- Stage distance < 2 km – charging higher ticket fare
- 15%

**Drop in Speeds ~ 22kmph to 10kmph**
- Metro, Shared taxi in demand ~ high price for bus riders ~ led to decrease in bus ridership
- 18%

2018 proposal
**Increase in sale of CONCESSION PASS**

Sale of these passes increased from 1.5 to 2.9 lakhs pa. Therefore, contributes 35% revenue from the non-fare box.
**Operating Ratio**

**Per km Cost & Revenue**

BREAKEVEN after running 3 years in loss: purchased bulk diesel at cheap rates, swapped loans for lower interest, cancelled unproductive routes, improved maintenance of buses (with no more breakdowns)
MUMBAI

AREA (km. sq.) 4354
POPULATION (2011) 228.04 lakhs
POPULATION DENSITY-2011 19652 (p/km. sq.)
PT SERVICES
City Bus (BEST), Sub urban rail, Metro, Mono Rail
BEST Network coverage 215 kms
Metro Network Length 11.6 kms
Suburban rail 376 route kms

Source: Census 2011, BEST official (CY. Traffic Eng. P. Shetty), MMRDA officials

Various stakeholders play their role in dealing with Public transport. In the city limits **BMC undertakes** services of city bus service- with parastatal agency **(BEST)**

Trends in Public Transport system: BEST

Ridership/ day

The ridership and fleet size has shown drastic decline in past 4-5 years after the electric subsidy terminated.

Fleet Size

Fleet added under JNNURM/MUTP

NO electric cross subsidy to transport

Scrapped buses and routes

The ridernship and fleet size has shown drastic decline in past 4-5 years after the electric subsidy terminated.
Growth and Productivity of the bus system

Vehicle productivity

Trodden speeds 20kmph to 8 kmph in peak hours due to congestion, high age of buses

Fuel Efficiency

Growth and productivity of the system is going adverse due to lack of dedicated funds for operating PT after the electric subsidy got terminated.

Age of the bus

No new addition of fleet – more no of buses scrapped

Staff-bus ratio

Long hours of shifts, typology of bus- double decker
Capital Investment & Sources

**Investment**

- Sudden peak in investment is due to the increase in building works – depot repair, techno facilities for staff.
- Major capital works includes: maintenance and repair works, workshop repair works, fleet repair.
- Till 2013-14 BEST relied on their own sources, grants, MUTP scheme for capital investment.
- After Electricity subsidy got terminated, no significant investments done by BEST.

**Sources of funds**

- **Internal Resources**
  - Property insurance fund
  - Passenger insurance
  - Financial assistance from State/Central gov

- **Dedicated funds**
  - Electric supply reserve funds, staff benefit fund, BEST group insurance fund

**Graphs**

- Graph showing investment for years 2012-13 to 2015-16 with categories like Land, Buildings, Fleet, Plant & Machinery, Deptt vehicles, Tools & Equipments, Furniture & office equipments.
- Graph showing sources of funds for years 2012-13 to 2014-15 with categories like Internal funds, Dedicated funds, Loan amount.
Operational Expenditure & Revenue

Opex Components share in %

- **Staff wages and fuel cost.**
  - Staff salary as per the DA from government.
- With increasing fuel price, cost of maintaining other spare parts also increases, has led to fare price increase

**60%**

**20%**

*Reduced speed of buses, more fuel consumption*

*Electric subsidy stopped*

*Increasing Avg age of buses*

*High staff bus ratio*
Continuous Hikes in fare prices to recover the operational loss

- 25% in 2011-12
- 20% in 2012-13
- 16% in 2013-14
- 33% in 2014-15

Metro in demand ~ low speed for bus riders ~ led to decrease in bus ridership

- 2013-14: 25%
- 2014-15: 33%

Twice in same year February to April 2015

2017 Proposed Drop in fare prices ~ 50% drop in AC buses

Non-fare components share in %

- General Admin
- Grant from MCGM
- Other income
- Scrap sold
- Rent from commercial outlets
Operating Ratio

Per km Cost & Revenue

- **Cost per km (Rs.)**
- **Revenue per km (Rs.)**

- **Limited revenue sources ~ low ridership, less fare income**
- **Electric subsidy stopped**
- **Maintenance of old fleet**
- **High staff bus ratio**
- **Insignificant non-fare sources**

**Graph Notes:**
- Yearly data from 2010-11 to 2015-16
- Costs and revenues measured in Rs. per km
- Key factors impacting costs and revenue over the years.
Ahmedabad Municipal Corporation undertakes major financing for public transportation operational services. Bus services run by AMTS on gross cost model.
Ridership and fleet are drastically declining since past 7 years.

Insignificant addition of fleet due to lack of external funding sources.
Growth and Productivity of the bus system

**Vehicle productivity**
Increasing breakdowns, speeds decreased from 21 kmph to 18kmph

**Fuel Efficiency**
Average age of buses ranging from 7.8 years to 6 years

Growth and productivity of the system is declining due to poor fuel efficiency, vehicle km/day/bus, increasing breakdowns.

No new addition of fleet
Capital Investment and Sources

**Investment**

- **70%** investment in building works – depots, workshops

- For capital works AMTS rely on external funding grants – SWARNIM and AMC loan
- Only includes maintenance works under capital expenditure - road improvement, depot and workshop maintenance

**Sources**

<table>
<thead>
<tr>
<th>Assured</th>
<th>Unassured</th>
</tr>
</thead>
<tbody>
<tr>
<td>AMC loan</td>
<td>✓</td>
</tr>
<tr>
<td>SWARNIM grant</td>
<td>✓</td>
</tr>
</tbody>
</table>
Operational Expenditure & Revenue

Fuel cost reduced, 2016-17 staff cost increased (DA)

Opex Components share in %

High Salary cost and hired bus rent cost

50%
### Operating Revenue: FARE & NON-FARE BOX

**40% Fare box**

**4% Non-fare box**

Fare box recovery ~ gradual decline in ridership levels

Too many concessions given (Students, Senior citizen, differently able people, freedom fighter etc. But these are not recovered by the government/ULB

### NON-FARE: Components

Components share in %

**Ads and Pay and park**

- Advertisement, pay and park income
- Rent
- Scrap sold
Operating Ratio

Per km Cost & Revenue

<table>
<thead>
<tr>
<th>Year</th>
<th>Cost per km (Rs.)</th>
<th>Revenue per km (Rs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010-11</td>
<td>20.74</td>
<td>0.0</td>
</tr>
<tr>
<td>2011-12</td>
<td>24.43</td>
<td>53.2</td>
</tr>
<tr>
<td>2012-13</td>
<td>26.56</td>
<td>58.4</td>
</tr>
<tr>
<td>2013-14</td>
<td>28.37</td>
<td>65.8</td>
</tr>
<tr>
<td>2014-15</td>
<td>24.46</td>
<td>66.6</td>
</tr>
<tr>
<td>2015-16</td>
<td>21.24</td>
<td>70.1</td>
</tr>
<tr>
<td>2016-17</td>
<td>21.73</td>
<td>78.4</td>
</tr>
<tr>
<td>2017-18</td>
<td>23.52</td>
<td>87.9</td>
</tr>
</tbody>
</table>
### Summary: PT Performance

#### Year (2010-2018)

<table>
<thead>
<tr>
<th></th>
<th>10-11</th>
<th>11-12</th>
<th>12-13</th>
<th>13-14</th>
<th>14-15</th>
<th>15-16</th>
<th>16-17</th>
<th>17-18</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fleet Utilization</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bangalore</td>
<td>92</td>
<td>93</td>
<td>91</td>
<td>91</td>
<td>91</td>
<td>91</td>
<td>89</td>
<td>88</td>
</tr>
<tr>
<td>Mumbai</td>
<td>88</td>
<td>84</td>
<td>85</td>
<td>87</td>
<td>86</td>
<td>85</td>
<td>84</td>
<td>83</td>
</tr>
<tr>
<td>Ahmedabad</td>
<td>71.5</td>
<td>68.1</td>
<td>67</td>
<td>70.3</td>
<td>82.77</td>
<td>81.01</td>
<td>78.3</td>
<td>79.04</td>
</tr>
</tbody>
</table>

#### Remarks

- **Bangalore**: Low
- **Mumbai**: Low
- **Ahmedabad**: Low

#### Vehicle Productivity

- **Bangalore**: Gradual decrease
- **Mumbai**: Low
- **Ahmedabad**: Low

All 3 cities are performing less than the desired level of service.

Thus, questions the sustainability of the PT System: financial and operational

#### Occupancy ratio

- **Bangalore**: Moderate to low
- **Mumbai**: Low
- **Ahmedabad**: Low

#### Fuel Efficiency

- **Bangalore**: Moderate to low
- **Mumbai**: Very low
- **Ahmedabad**: Low

#### Staff-bus ratio

- **Bangalore**: Moderate
- **Mumbai**: High
## Summary: PT Performance

<table>
<thead>
<tr>
<th>Year</th>
<th>10-11</th>
<th>11-12</th>
<th>12-13</th>
<th>13-14</th>
<th>14-15</th>
<th>15-16</th>
<th>16-17</th>
<th>17-18</th>
</tr>
</thead>
<tbody>
<tr>
<td>(2010-2018)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Earnings per km (EPKM)

<table>
<thead>
<tr>
<th>City</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bangalore</td>
<td>29</td>
<td>32</td>
<td>36</td>
<td>42</td>
<td>48</td>
<td>49</td>
<td>50</td>
<td>53</td>
<td>Increasing</td>
</tr>
<tr>
<td>Mumbai</td>
<td>43</td>
<td>51</td>
<td>54</td>
<td>56</td>
<td>62</td>
<td>60</td>
<td>59</td>
<td>55</td>
<td>Decreasing</td>
</tr>
</tbody>
</table>

### Cost per km (CPKM)

<table>
<thead>
<tr>
<th>City</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bangalore</td>
<td>28</td>
<td>31</td>
<td>39</td>
<td>45</td>
<td>49</td>
<td>49</td>
<td>56</td>
<td>59</td>
<td>Increasing</td>
</tr>
<tr>
<td>Mumbai</td>
<td>57</td>
<td>66</td>
<td>78</td>
<td>86</td>
<td>97</td>
<td>107</td>
<td>102</td>
<td>103</td>
<td>Increasing</td>
</tr>
<tr>
<td>Ahmedabad</td>
<td>43.8</td>
<td>53.2</td>
<td>58.4</td>
<td>65.8</td>
<td>66.6</td>
<td>70.1</td>
<td>78.4</td>
<td>87.9</td>
<td>Increasing</td>
</tr>
</tbody>
</table>

### Gap (net profit)

<table>
<thead>
<tr>
<th>City</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bangalore</td>
<td>+1</td>
<td>+2</td>
<td>-3</td>
<td>-3</td>
<td>-1</td>
<td>0</td>
<td>-6</td>
<td>-6</td>
<td>Increasing</td>
</tr>
<tr>
<td>Ahmedabad</td>
<td>-23.1</td>
<td>-28.8</td>
<td>-31.8</td>
<td>-37.4</td>
<td>-42.1</td>
<td>-48.9</td>
<td>-56.7</td>
<td>-64.4</td>
<td>Increasing</td>
</tr>
</tbody>
</table>

Trends show that the cost of expenditure is increasing rapidly in all cities, with an imbalance in the revenue sources. Therefore, the operating gap is increasing each year and there are no assured sources to fill these gaps.

*Need to strengthen our revenue sources to reduce costs of operations and run the PT system sustainably.*
## Summary: Funding Sources

<table>
<thead>
<tr>
<th>Revenue sources</th>
<th>Robust</th>
<th>Regular</th>
<th>User &amp; Operator</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>State transfers</td>
<td>✓</td>
<td>x</td>
<td>x</td>
<td>% Of the total capital income</td>
</tr>
<tr>
<td>Grants/Schemes</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>Majorly capital exp rely on grants; Not an assured source</td>
</tr>
<tr>
<td>Depreciation reserve</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>Majorly capital exp rely on grants; Not an assured source</td>
</tr>
<tr>
<td>Reserves and Surplus</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>Diminishes over a period of time</td>
</tr>
<tr>
<td>Internal sources</td>
<td>✓</td>
<td>✓</td>
<td>x</td>
<td>Get utilised for covering the operational loss</td>
</tr>
<tr>
<td>Loan amount</td>
<td>✓</td>
<td>x</td>
<td>x</td>
<td>Inclusion of taxes, Congestion pricing</td>
</tr>
<tr>
<td>Fare box revenue</td>
<td>✓</td>
<td>✓</td>
<td>x</td>
<td>Bangalore &amp; Mumbai fares are unaffordable</td>
</tr>
<tr>
<td>Advertisement – NFB</td>
<td>x</td>
<td>✓</td>
<td>x</td>
<td>Insignificant source</td>
</tr>
<tr>
<td>Govt. Reimbursement/Grant – NFB</td>
<td>x</td>
<td>✓</td>
<td>x</td>
<td>Insignificant source</td>
</tr>
<tr>
<td>Land value capture –NGB</td>
<td>✓</td>
<td>✓</td>
<td>x</td>
<td>Developing TTMCs; Bus depot and workshops; ATMs rent; Transit oriented development</td>
</tr>
<tr>
<td>Scrap sold –NFB</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>Insignificant source</td>
</tr>
<tr>
<td>Pay and Park</td>
<td>✓</td>
<td>x</td>
<td>x</td>
<td>Insignificant source</td>
</tr>
</tbody>
</table>

These Cities rely on their own sources for funding capital and fare box for operational expenditure.

The state/centre schemes are not consistent and therefore, cities lack in investing for capital.

Non-fare revenue sources are insignificant and irregular in all the cities.
## Way Forward

<table>
<thead>
<tr>
<th>Cities</th>
<th>Revenue Gap %</th>
<th>Funding source</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bangalore -BMTC</td>
<td>4%</td>
<td>Dependent on Government funds, operating sources</td>
<td>These are not reliable sources, no dedicated fund to meet the gaps</td>
</tr>
<tr>
<td>Mumbai –BEST</td>
<td>34 %</td>
<td>At present no funding for gaps, provision for funding from the corporation</td>
<td>At Present no supporting funds- waiting for approval for clarity in operations or run under PPP model</td>
</tr>
<tr>
<td>Ahmedabad-AMTS</td>
<td>56 %</td>
<td>Corporation “as loan”</td>
<td>No time duration to return the loan amount. SWARNIM grant for capital works</td>
</tr>
</tbody>
</table>

- **Earmarking Local charges to fund Public transport**: local taxes, charges from urban tolls, congestion pricing, parking charges, fuel taxes
- **Building New Partnerships with private investors** – To reduce the burden of operating and capital costs
- **Introduction of Grants and schemes** like – JnNURM, SWARNIM, Smart cities to initiate investment in PT infrastructure and fleet

- **Strengthening non fare revenue strategies**- Advertisement; Pay and park; Land value capture; Concession subsidy from government authority
- **Fare box revision** should not exceed the affordability price index. E.g. In Bangalore, too many revisions have affected the ridership in last 4-5 years.
- **Reducing the cost components**- like the maintenance cost; discarding the old buses to maintain the financial sustainability.
THANK YOU