ELECTRIFICATION OF BUS BASED PUBLIC TRANSPORT IN INDIA.
Opportunities and Challenges

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AGENDA

1. Policy initiatives for e-buses in India
2. Public Transport Scenario in India
3. Challenges in India’s E-bus electrification
4. Recommendations for Scaling up
POLICY INITIATIVES FOR EBUSES IN INDIA
Policy Initiatives for e-buses in India

**FAME 1**
- 400 e-buses
- 10 cities
- Subsidy: 60% of bus cost; cap at ₹10 Million

**2017**

**Demand Aggregated Procurement**
- 5,450 e-buses
- 5 cities
- Challenge mode

**2021**

**PM-eBus Sewa Scheme**
- ~10,000 e-buses
- 169 eligible cities
- Tendered: 5,265 e-buses, 70 cities
- Subsidy: ₹20-24/km opex for 10 years

**2023**

**Payment Security Mechanism**
- Launch
  - (India-USA partnership)

**2024**

**National E-Bus Program**
- 50,000 e-buses
- procurement begins
  - Round 1: 6,465 e-buses

**2019**

**FAME 2**
- 5,595 e-buses
- 73 cities
- Shift to Lease Model
  - Subsidy: ₹3.5-5.5 Million
  - @ ₹20,000 kWh

**2019**

**2022**

**2020**

**2023**

**2024**
The failures impelled the government to re-evaluate alternative options for boosting the e-bus adoption rate.

<table>
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<tr>
<th>Variation in lot size</th>
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<td>Volume of buses procured per city varying between 25 to 300 buses</td>
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<th>Variation in operational parameters</th>
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<td>Assured km varied city to city (~ 140 -170 km); opportunity charging options also varied</td>
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<th>Lack of standardized technical and financial clauses</th>
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<td>Technical specification of e-buses varied, led to limited bidder participation.</td>
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<th>Differential monitoring and evaluation methods</th>
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<td>Key performance indicators specified as per cities tender varied significantly.</td>
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<th>PTA Creditworthiness</th>
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<td>Significant variance in creditworthiness of cities posing varying levels of credit risks to the bidders.</td>
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Hence the prices discovered varied widely between Cities (between 65 and 90 Rs/km)

Learnings – FAME I & II

- Variation in lot size
- Variation in operational parameters
- Lack of standardized technical and financial clauses
- Differential monitoring and evaluation methods
- PTA Creditworthiness

The failures impelled the government to re-evaluate alternative options for boosting the e-bus adoption rate.
The Grand Challenge aggregated demand across 5 cities, homogenized procurement specifications and tendered to procure e-buses on a Gross Cost Contract (GCC) basis or service model. The per-km prices discovered were 23-27% lower than that of diesel/CNG buses without subsidies. Including subsidies offered by the Indian government through FAME II, these prices are 31 to 35% lower and reduced costs will together save $1.3 billion.
The Grand Challenge’s unique demand aggregation and spec homogenization led to the lowest-ever rates, boosting confidence and development of the National Electric Bus Program (NEBP).
Demand aggregation still the way to realize low prices.
Cities are demonstrated better off (price wise) putting their demand into a larger bucket than tendering alone.

Aimed at augmenting city bus operations by deploying **10,000 e-buses on public-private partnership (PPP) model**. Priority will be given to cities having no organized bus services.

A total of **5,262** buses have been tendered across **70 cities** in India thus far.

- **Bus services**
- **Green Mobility**
- 169 Cities
- ~ 181 Cities
- The scheme costs 6.92 billion USD, with 2.4 billion USD as central financial assistance.
- The scheme will generate 45,000 to 55,000 direct jobs.
PUBLIC TRANSPORT SCENARIO IN INDIA
1 IN 10 PEOPLE IN INDIA USE BUSES*

129 million passengers travel on 2.91 lakh stage carriage permit buses daily

* considering average ridership of 442 passengers per bus per day

Source: Performance of State Road Transport Undertakings (SRTUs), MoRTH Annual Reports, MoRTH & Vahan Dashboard
THE NUMBER OF BUSES HAS RISEN, WITH SIGNIFICANT GROWTH IN PRIVATE BUSES
India’s electric bus journey

Current Status of Electric Buses in India

8K Registered
22K Under Procurement
50K Committed under NEBP* (by 2027)
800K India’s Ambition in the next 10 years
CHALLENGES IN INDIA’S EBUS ELECTRIFICATION
Lack of Sustainable Funding

Cost Recovered by PTA for Urban Buses in FY20

- **Deficit; 56%**
- **Traffic Revenue; 32%**
- **13%, Non-Traffic Revenue**
- **4%, Subsidy**
- **2%, Reimbursement of Concession**

$1.15 Billion deficit of funds to sustain urban bus operations

$2.05 Billion expenditure in FY20 by the urban PTAs

Data Source: STUs Profile and Performance 2019 – 2020 Report
**Funding Patterns through Government Policies**

**BUSES**

**JNURM**
- 10,000 buses
- 65 cities
- Subsidy: 35% - 50% - 80% for small, medium and big cities

**FAME I**
- 400 e-buses
- 10 cities
- Subsidy: 60% of bus cost; cap at 1 crore

**FAME II**
- 5,595 e-buses
- 73 cities
- Subsidy: 55L - 45L - 35L; based on battery size @20,000 kWh

**PM- e-BUS Sewa Scheme**
- ~10,000 e-buses
- 169 eligible cities
- Subsidy: ₹24/km - ₹22/km - ₹20/km for standard, midi, minibus (10 years of operations)
Challenges in Scaling up Buses

**Consistent Public Sector Funding**

- **Insufficient Farebox Revenue**
  - In 2020, urban PTAs were operating with a gap of 50%

- **Support to PTAs not institutionalized**
  - Gap met by State/ULB, however usually on an annual basis or ad-hoc manner.

- **Payment Delays**
  - PTAs face liquidity issue leading to payment delays for private contracts.

**Attract Private Sector Financing**

- **Recourse based Corporate Financing**
  - Commercial lending in the form of corporate debt taken on balance sheet of OEM/operator. Limitation to raise financing at feasible terms hampered as debt levels increase.

- **No Access to Low-Cost Long-Term Financing**
  - Infrastructure financing against project revenues for long term unavailable to the sector.

- **Lack of Credit History of PTAs**
  - Most PTAs lack credit ratings and are unable to extend rating to the projects. Lenders take comfort in corporate guarantees in its absence.
What do we need for powering up transition to electric buses?

1. Consistent Public Sector Funding
2. Private Sector Financing

We need to leverage Public-Private Partnership / Private Sector Financing.

This can help:
- Distribute upfront capital expenditure over operational period
- Encourage private sector expertise for transit operations
Recommendations for Scaling up Electrification of PT

Banking and Regulatory Reforms

- Inclusion of e-bus and charging infrastructure under infrastructure sub-sector to ease access to longer debt financing and retail financing instruments.

- Priority Sector Lending (PSL) status to e-mobility for lowering cost of borrowing funds (by up to 200 bps).

- Unbundling the contract components and opening the market to private capital investment.

Enabling data and transparency in the sector

- Adopting Digital Public Infrastructure approach for Public Transport

- Enabling data management and sharing for e-bus performance for improving efficiencies and boosting investor confidence.

- Publishing financial data including credit ratings of PTAs like that of DISCOMs published by PFC.

Strengthening PTA finances and capacity

- Reforms to capitalize PTAs and sustained funding support. PSM support needs to extend beyond PM-e Bus Sewa scheme.

- Digitized contract management and improving institutional capacity to manage bus contracts.

- Exploring alternative business models such as leasing, quality incentive service contracts, for bus operations.
"An advanced city is not one where even the poor use cars, but rather one where even the rich use public transport."

- Enrique Peñalosa, the former mayor of Bogotá, Colombia

LETS TALK

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