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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

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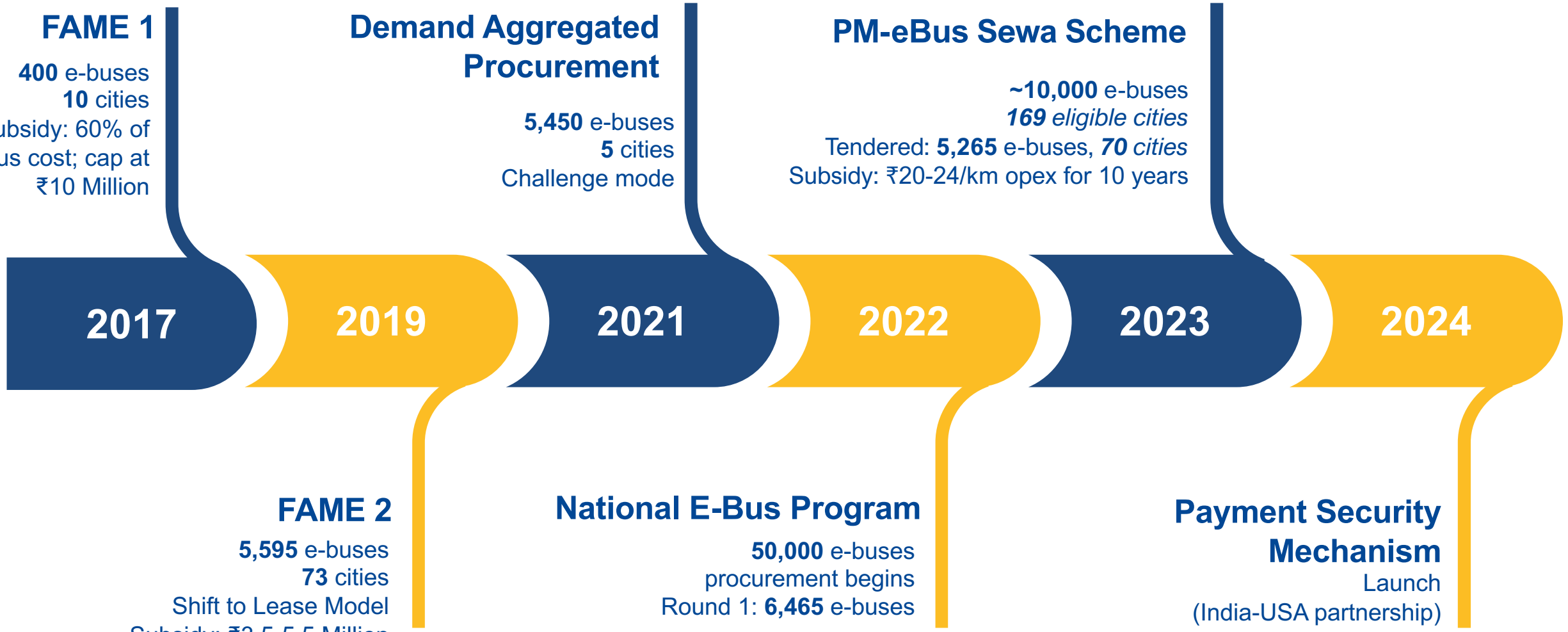
Policy Initiatives for e-buses in India



Learnings – FAME I & II

Variation in lot size

Volume of buses procured per city varying between 25 to 300 buses

Variation in operational parameters

Assured km varied city to city (~ 140 -170 km); opportunity charging options also varied

Lack of standardized technical and financial clauses

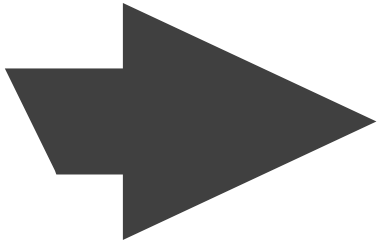
Technical specification of e-buses varied, led to limited bidder participation.

Differential monitoring and evaluation methods

Key performance indicators specified as per cities tender varied significantly.

PTA Creditworthiness

Significant variance in creditworthiness of cities posing varying levels of credit risks to the bidders.

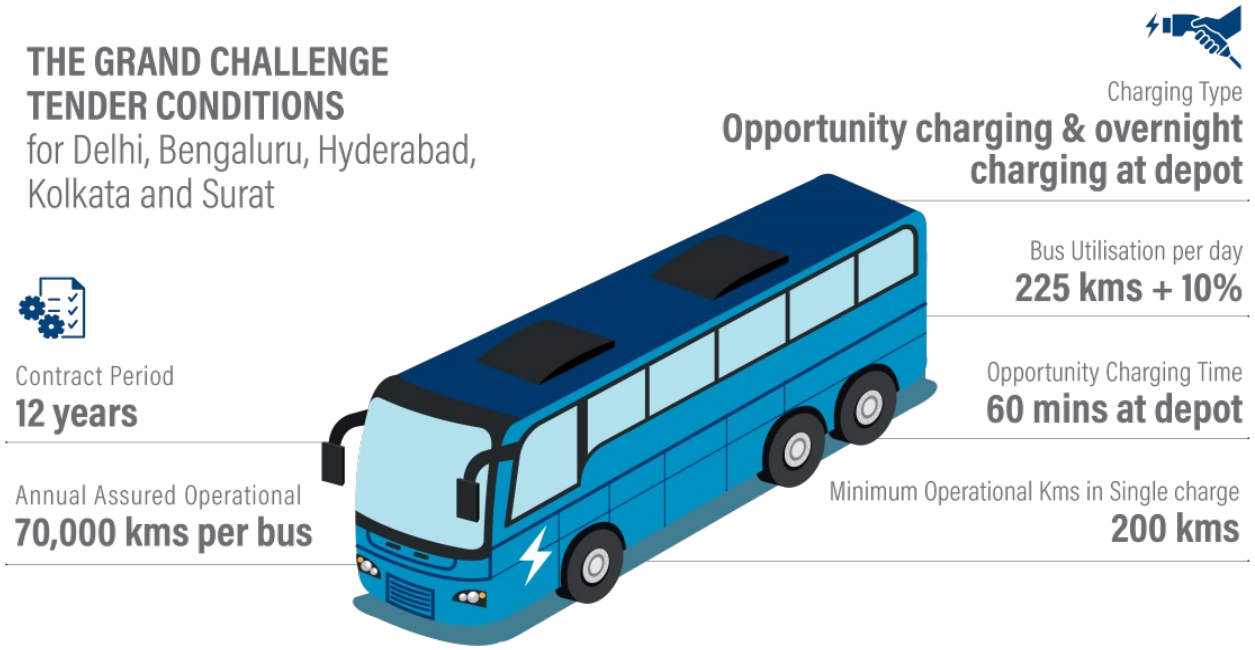


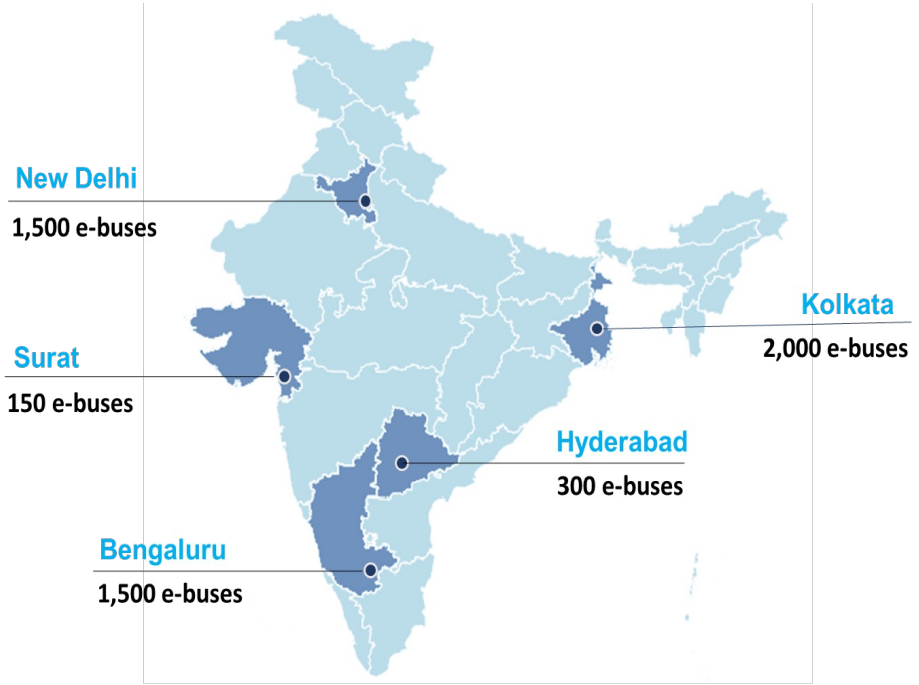
Hence the prices discovered varied widely between Cities (*between 65 and 90 Rs/km)*

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

Demand Aggregation In Grand Challenge

- 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.





Data Source: Convergence Energy Services Limited (CESL), designed by WRI India

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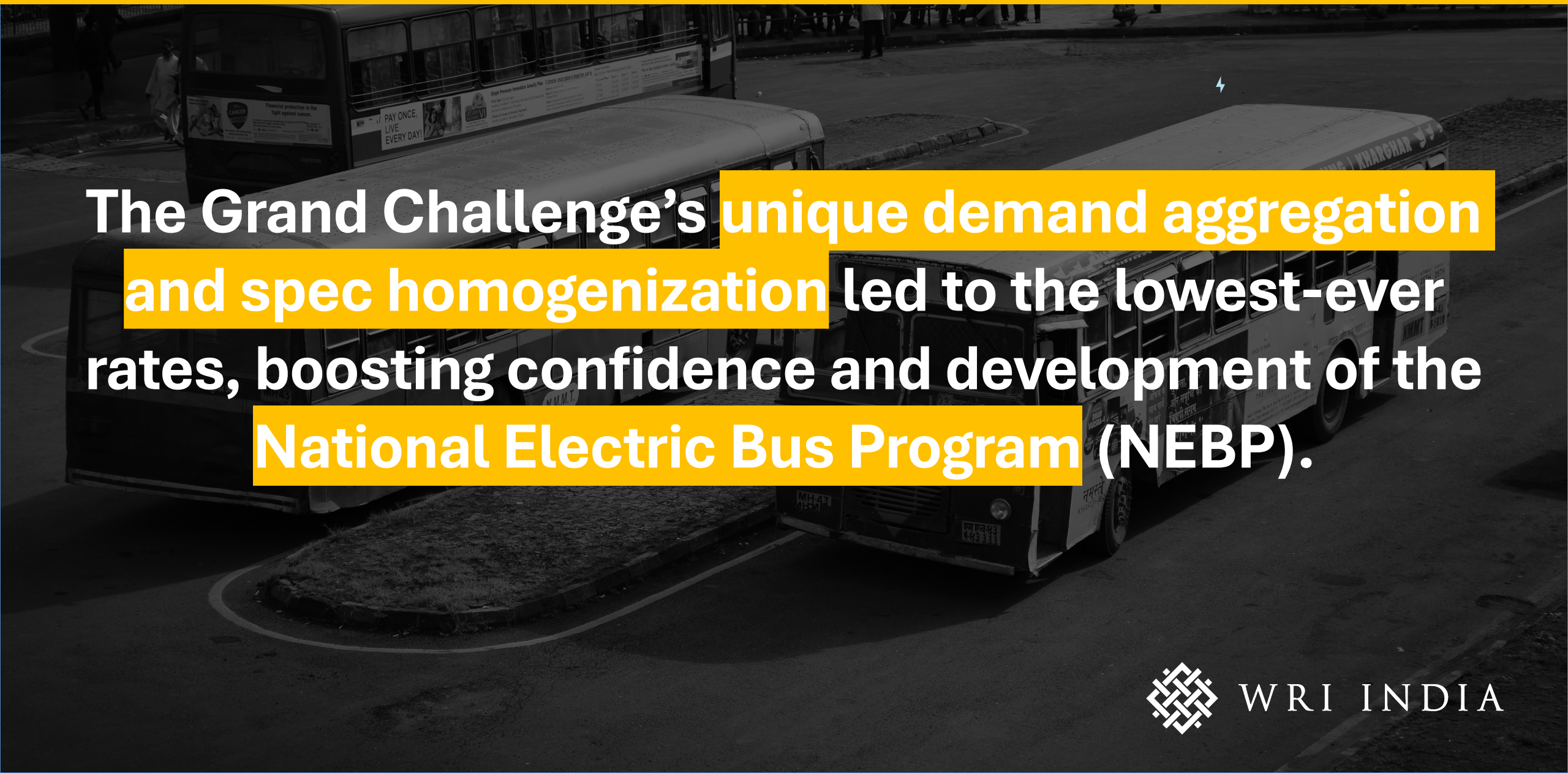
National Electric Bus Program (NEBP)



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).

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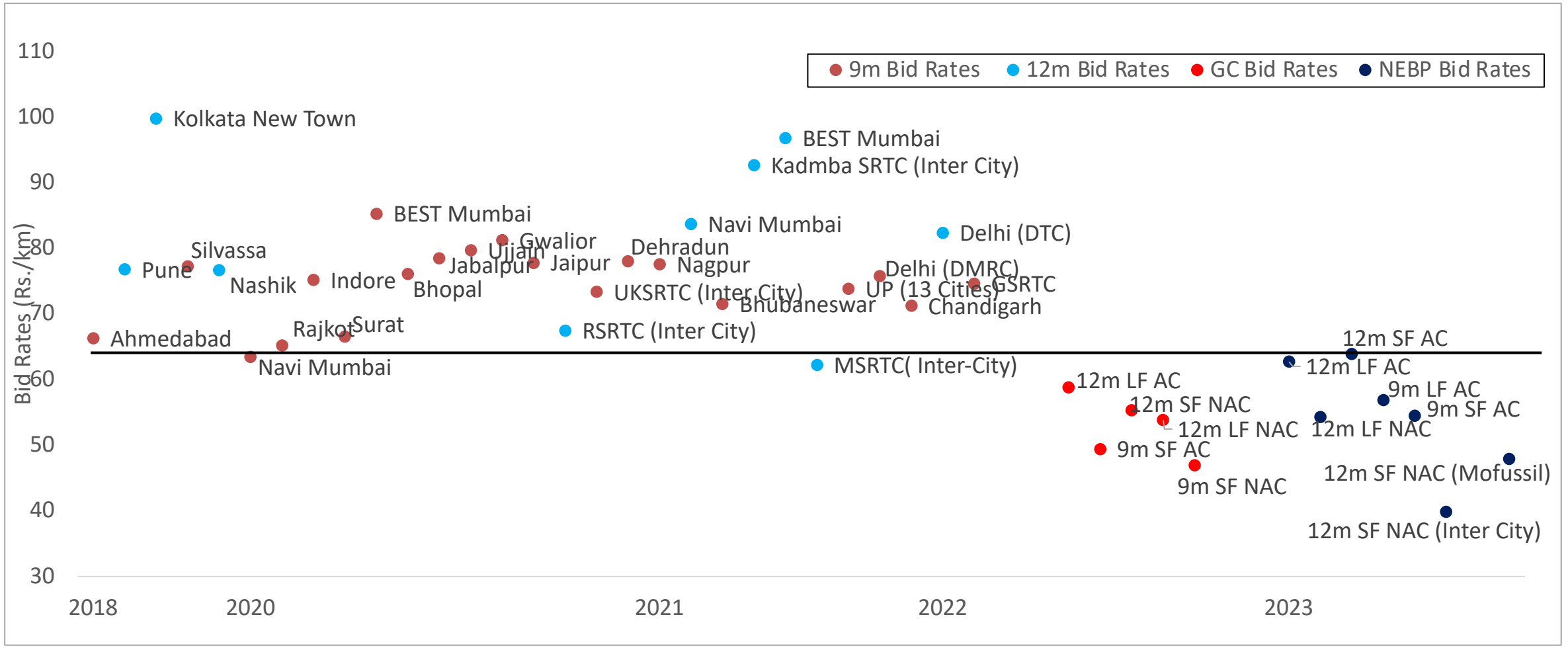
Impact of Demand Aggregation

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.



LF – Low Floor; SF – Standard Floor

Source: Parliamentary Question, Electric Vehicle operational in Medium and Heavy Passenger Vehicle category register an increase published on Aug. 2021 at https://pib.gov.in/PressReleasePage.aspx?PRID=1742666

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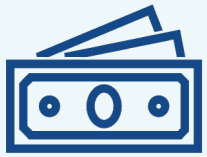
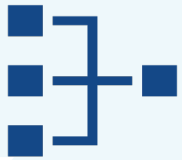
PM e-Bus Sewa Scheme

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.



The scheme costs 6.92 billion USD, with 2.4 billion USD as central financial assistance.

Bus services
169 Cities



Green Mobility
~ 181 Cities

The scheme will generate 45,000 to 55,000 direct jobs

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PUBLIC TRANSPORT SCENARIO IN INDIA

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1 IN 10
PEOPLE IN INDIA USE BUSES*

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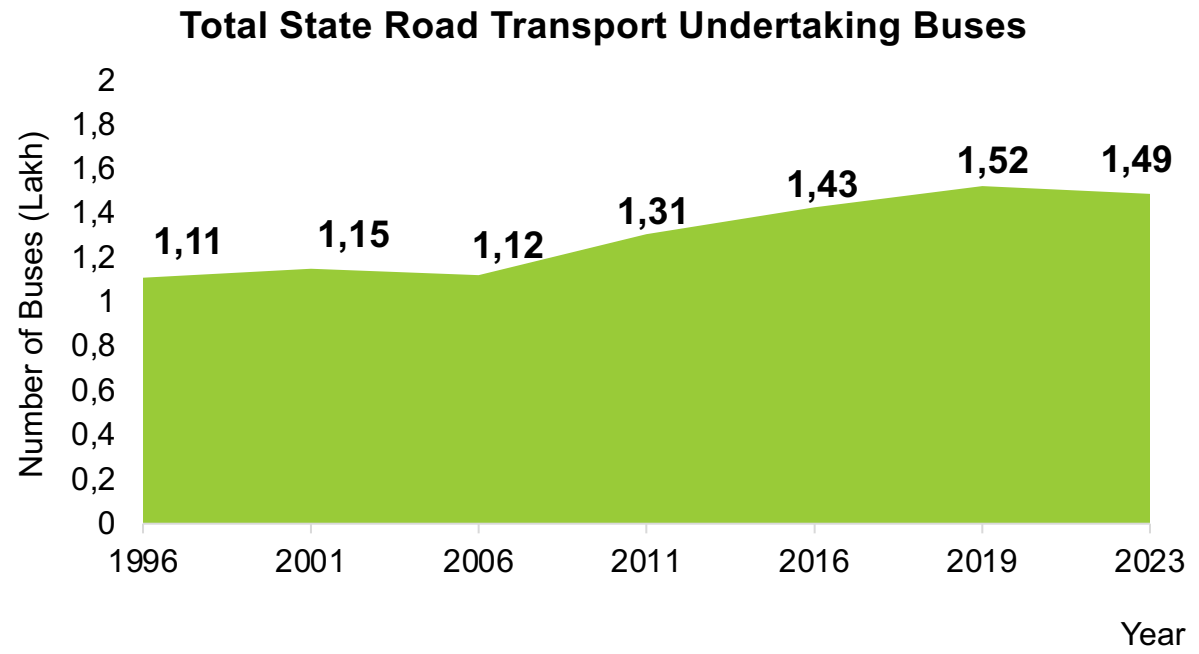
129 million

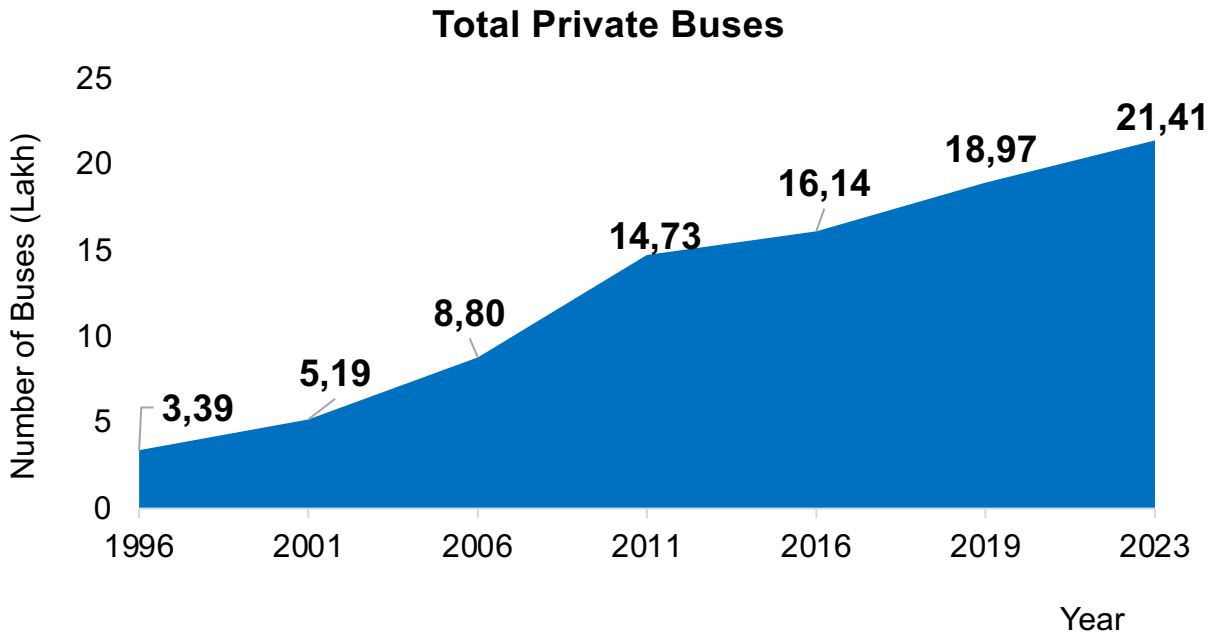
passengers travel on
2.91 lakh stage carriage
permit buses daily

** 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

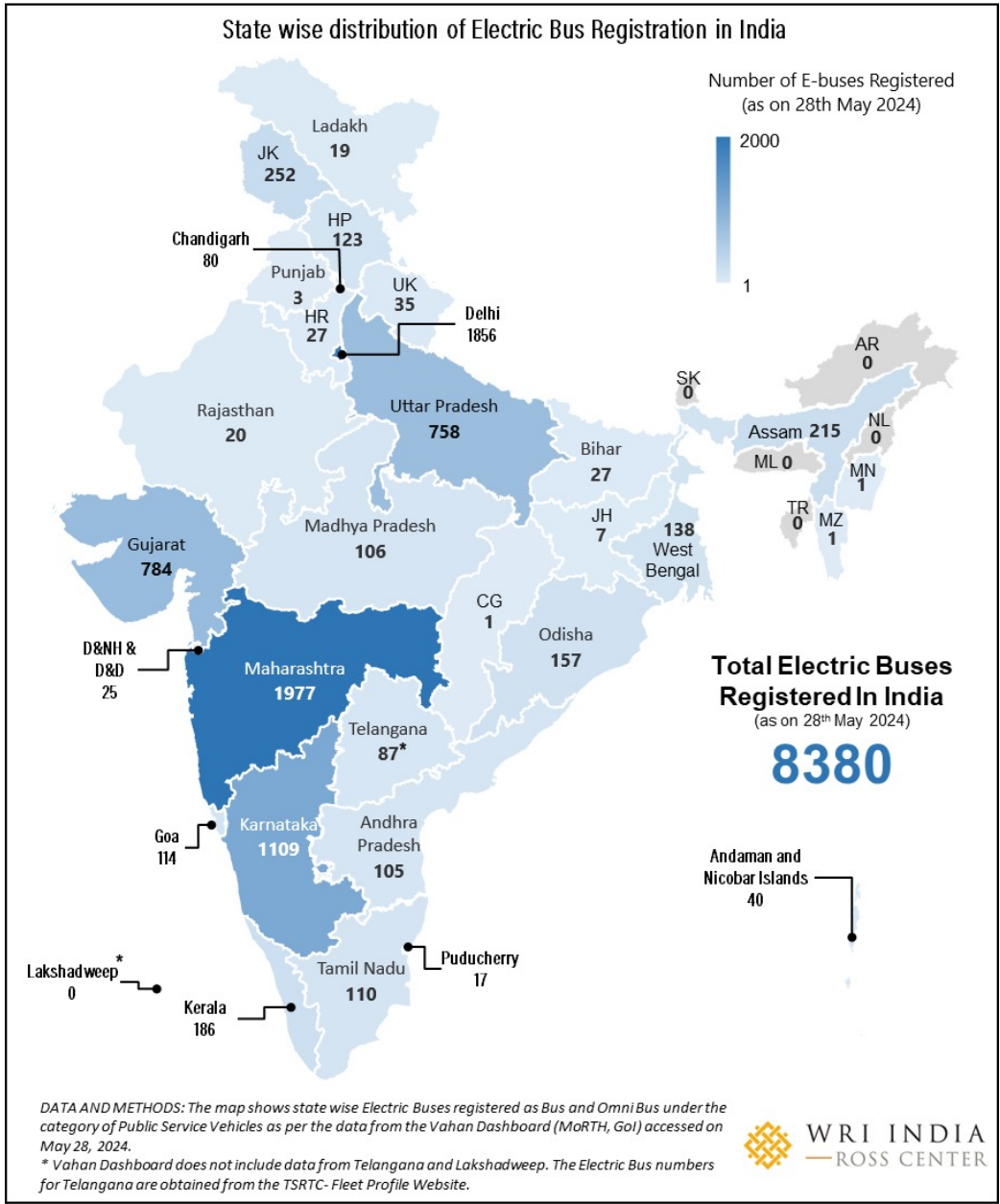
Current Status of Electric Buses in India

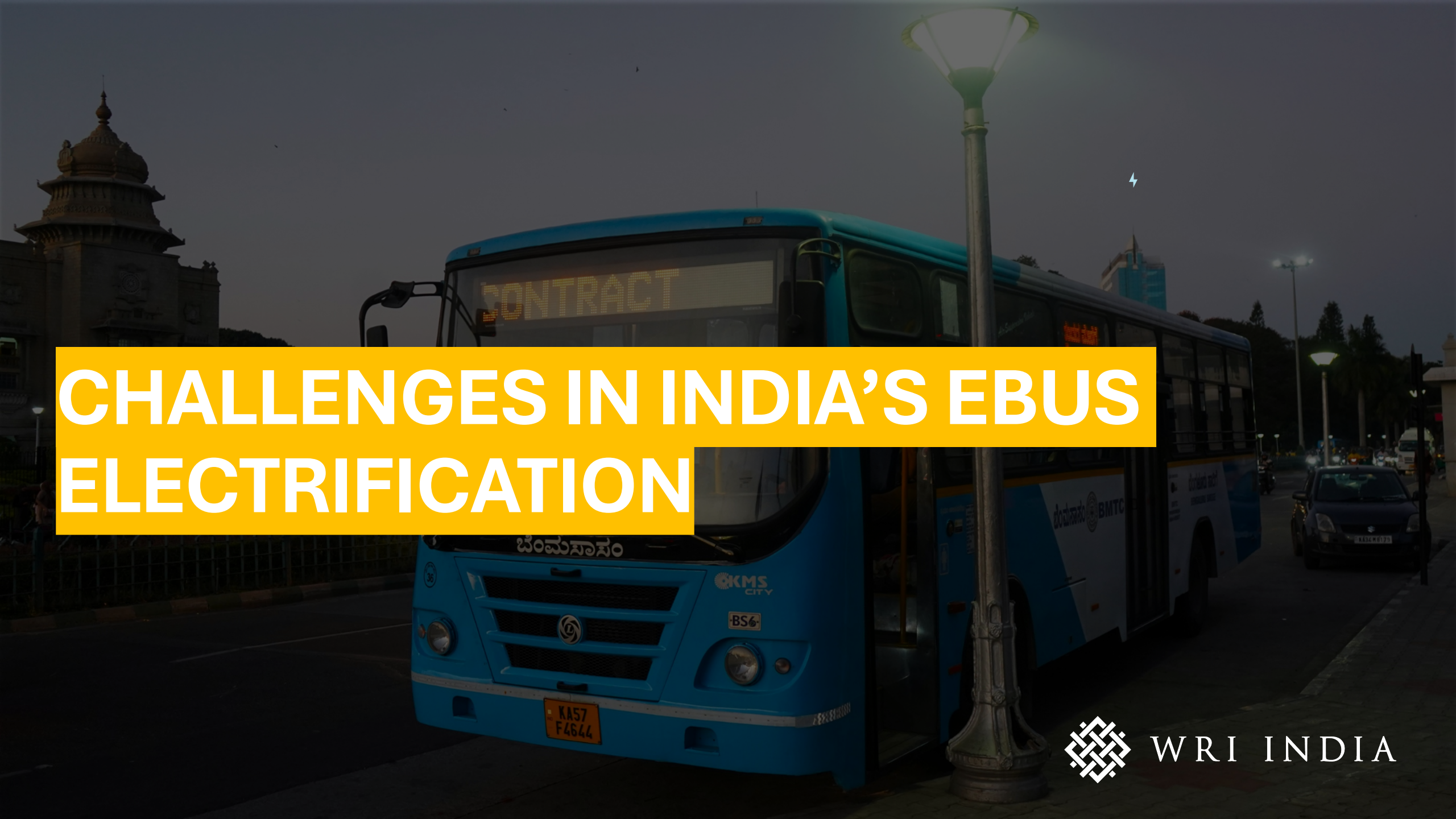
8K Registered

22K Under Procurement

50K Committed under NEBP* (by 2027)

800K **India’s Ambition in the next 10 years**





CHALLENGES IN INDIA'S EBUS ELECTRIFICATION

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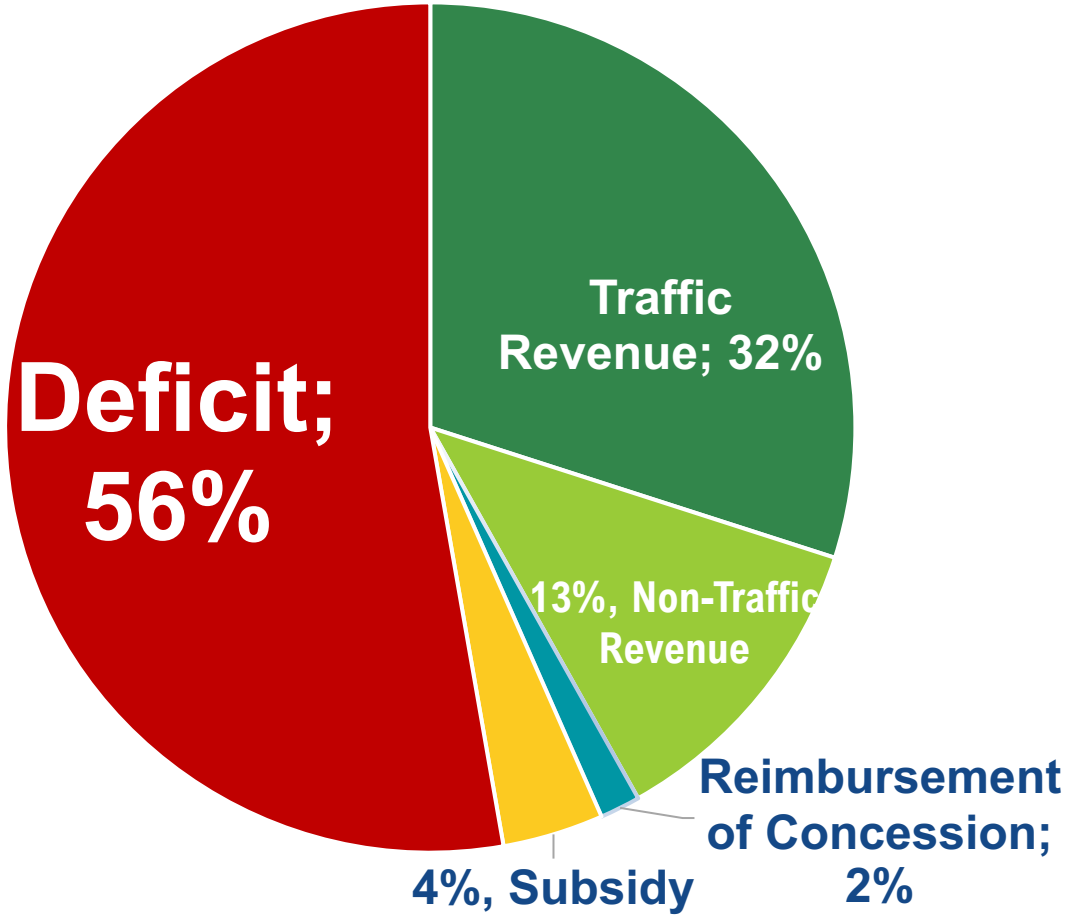
Lack of Sustainable Funding

Cost Recovered by PTA for Urban Buses in FY20



$ 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

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Funding Patterns through Government Policies

BUSES

JNURM

10,000 buses
65 cities

Subsidy: 35% - 50% - 80%
for small, medium and big cities

2013

FAME I

400 e-buses
10 cities

Subsidy: 60% of bus cost; cap at 1 crore

2017

FAME II

5,595 e-buses
73 cities

Subsidy: 55L - 45L- 35L; based on battery size @20,000 kWh

2019

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)

2023

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

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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.

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THANK YOU

"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

LET'S TALK

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