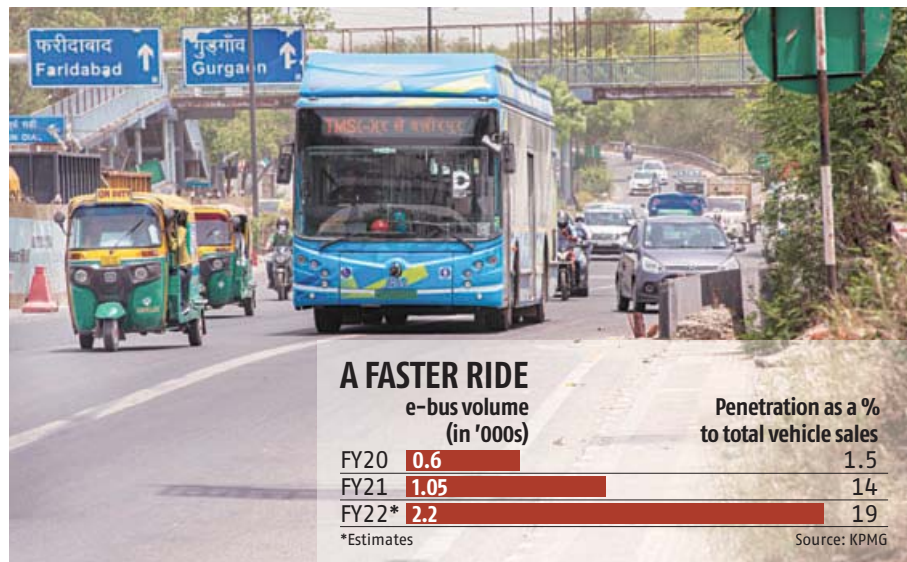


# An electric charge for e-buses

As cities seek to reduce tailpipe emissions, the move towards electrifying intra-city transport is gathering speed



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The spectacle of jaded, wobbly and crowded buses dotting India's urban landscape may soon be a thing of the past if the current pace of "green recovery" of the pandemic-dented bus market continues.

As India seeks to cut down on tailpipe emissions, public transport is "up for a paradigm shift with electric buses catching up at a very fast pace", according to a recent report by Bank of America (BofA) Global Research.

Led by government orders (both central and state), India's electric bus market is set to triple — from just over 2,000 units in 2022 to 6,000 by the end of 2023. To be sure, the electrification of intra-city transportation is easily feasible given predictable routes, ease of creating charging at depots and running cost of sub-₹10 per km vs. ₹25-35 per km for CNG/diesel bus variants. Given the favourable dynamics, consulting firm KPMG estimates electrification in the bus segment to reach 19 per cent or 2,200 units in FY22, up from 14 per cent or 1,050 units in FY21.

Battery-powered buses are likely to account for half the total bus market over the next seven to eight years, according to bus manufacturers' estimates.

The overall bus fleet on India's roads is around 1.8 million units. Demand is growing at a rapid pace given the under-penetration of buses in India — at around one per 1,000 people against more than 2x in mature markets. "The opportunity size

for electric buses is large given the scope for sizable replacement demand backed by supportive EV policies," wrote Gunjan Prithyani and Anuja Chauhan, research analysts at BofA.

From legacy manufacturers such as Tata Motors and Ashok Leyland to start-ups like Olectra Greentech, JBM Auto and Pinnacle Industries — everyone is looking to hitch a ride on the electric bandwagon.

Tata Motors, for instance, has been leading the charge for large-scale adoption of electric buses. "With outreach in multiple cities we have deployed more than 715 e-buses, which have cumulatively clocked more than 40 million km, with 95 per cent of higher uptime," said Rohit Srivastava, vice-president and head, bus product line, Tata Motors.

Convergence Energy Services Ltd (CESL), the government's nodal agency for the electro-mobility push in public transport, has been acting as programme manager aggregating demand for state governments for electric buses.

Around 1,200 e-buses were sold in FY22 and some 10,000 orders are in the pipeline. The industry expects penetration to reach over 20 per cent by FY25 with the private user segment — which accounts for 20 per cent of industry — also starting to participate in the shift, wrote the BofA analysts.

The market potential is huge. To put it in perspective, 50,000 e-buses are expected to

be awarded over the next five to seven years, they wrote. These orders are expected either from CESL or state governments.

Recently, the Tata Group flagship was declared the lowest bidder for the largest global tender of 5,450 e-buses with CESL leading to an entitled allotment of 5,000 e-buses. The value of the order is pegged at \$1 billion.

Under this larger tender, Tata Motors has won an order of 3,600 electric buses including 1,500 electric buses from Delhi Transport Corporation, 1,180 electric buses from West Bengal Transport Corporation and 921 electric buses from Bengaluru Metropolitan Transport Corporation. These buses will be delivered in phases, according to the contracts, said Srivastava.

Similarly, Switch Mobility, the electric bus-making subsidiary of Ashok Leyland, has joined hands with transport-technology start-up Chalo for deploying 5,000 e-buses. Switch will execute the order over the next three years.

"As an industry we have just scratched the surface," said Mahesh Babu, chief executive, Switch Mobility.

Srivastava believes India can have a sizable penetration of e-buses to meet the demands of growing urban centres. "In the next seven to eight years, we expect that more than 50 per cent of buses could be electric."

Others, too, have been reaping the benefits. JBM Auto, which has close to 1,000 e-buses

running a cumulative 50 million km in the last three years, is in the process of executing supplies to the Delhi government. "We have already deployed 150 buses and shall soon be delivering more. Going ahead, we will be supplying to various customers in regions such as Goa and Telangana," said Nishant Arya, vice-chairman, JBM Group.

As of now, Olectra Greentech and PMI Electro — that have Chinese firms BYD and Foton respectively as technology and joint venture partners — account for two thirds of India's small e-bus market.

Olectra has over 600 buses plying on roads across nine states and has an order book of more than 1,500 buses. This is against less than 300 buses sold in FY22. The company is looking to add capacity of 10,000 units in Telangana and plans to expand beyond to include inter-city and staff transport solutions and electric trucks as well.

JBM, with a 19 per cent share, has tied up with Poland's Solaris. Pune-based Pinnacle Industries that has a tie-up with VDL Groep (the Netherlands), too, has ambitious plans.

In addition to attractive subsidies under the FAME-II scheme for nine-metre and 12-metre buses and the asset-light pay-as-you-use clause under the Gross Cost Contract (GCC, which takes into account per km service costs versus direct ownership) model have been key enablers as it helps bring down upfront cost for state transport undertakings.

Under the GCC model, the agreement is tripartite, between the bus maker, operator and state transport organisation. The ownership, operations, maintenance and charging optimisation for e-buses are borne by the private company, which could be the bus manufacturer or the service company. The operational aspects around routes/fares etc. are handled by the transit agencies.

Bus makers have floated separate service companies, which buy the e-buses, and are getting into collaborations with mobility service providers. These firms intend to bring specific focus to its EV segment as a service offering. Tata Motors' TML Smart City Mobility Solutions and Switch's OHM Mobility Services are working with tech mobility firms such as Chalo and Cityflo.

Tata Motors' Srivastava pointed out that while the uniqueness of the GCC or own-operate-maintain model benefits all stakeholders, there are two key challenges for large scalability. The first is the project financing, which is in its nascent stage and needs to evolve to enable true scalability. The second is the necessity of a mature payment security mechanism for sustained operations in accordance with contracts, which will also ease the financing challenge.