



ECVs: Growth and Challenges

The Electric Commercial Vehicle market in India is expected to grow by a CAGR of 70% over the next three years. As the industry shifts towards the newer technologies, the concerns that come with it also increase. **Siddharth Jalan** takes a look at how the industry is planning on getting there.



India has set ambitious goals when it comes to the Electric Vehicle market. This is predominantly driven by the pollution levels across the country, making us rank in the top 5 most polluted countries in the world. It was estimated that in 2017, air pollution caused about 1.1 million premature deaths. It might be the catalyst, but the economic benefits are what can make us accelerate the shift to electric.

To give a snapshot of the current scenario, according to Crisil Research, we have seen a decline in the sale of commercial vehicles over the past 2 fiscal years - 29% in 2020 and 21% in 2021. Freight rates have also fallen in the corresponding period. A lot had to do with the pandemic, but the revised rates show an expected growth of about 23 to 28% in this fiscal year. This includes MHCV and LCV, but will be predominantly increased by buses.

A part of this will be inhabited by Electric Commercial Vehicles (ECV). It is estimated that the global ECV market will double by 2025 to about \$121 billion. Global players are looking at India as a component of this growth story and are investing heavily in its future. With the new Scrapage policy coming into effect, it is estimated that 1.7 million medium and heavy commercial vehicles will go off the roads, opening up the market to future technologies.

What are we seeing right now?

The major focus for most companies is being given to 3-wheelers. The market for intra-city transport seems more robust with the expectation that the charging networks will be better spread. This is fuelled by the Fame II scheme which has set goals for 5 lakh

electric 3-wheelers, 55,000 electric 4-wheelers and 7000 electric buses. EESL has already given intimation to procure 3 lakh e-rickshaws under the scheme.

This has spurred massive development on the LCV side, where start-ups are going up against long established players to capture the market. E-commerce giants have also got into the fray. Earlier this year, Flipkart committed to have 25,000 EVs in their fleet by 2030. Amazon, which has committed to be net carbon zero by 2040, has tied up with Mahindra to have 10,000 EVs in India by 2025. When you have the two largest e-commerce companies investing in ECV's you can expect the market to grow accordingly.

Maresh Babu, CEO of Mahindra Electric Mobility says, "Going forward, we expect electric vehicles in the L5 category to expand into the market share of traditional small commercial vehicles. This is largely because of its higher earning potential, ease of operation and the ability to offer the same volume, value proposition as compared with its ICE counterparts in this category. We expect about 40-45% of vehicles sold in this category to be electric before 2025."

Although the Fame II scheme does not reflect a large number with Electric Buses, various state governments and transport departments are floating tenders to purchase e-buses. A diesel-powered bus costs about Rs. 90 per km to run, while the new electric buses cost around Rs. 70 to 75 per km. Despite the high initial costs, governments are recognising the long-term benefits of integrating electric buses into their existing architecture. They have fixed routes and the bus depots can turn into charging or battery swapping stations.



We strongly believe that electric three-wheelers in both the passenger and commercial segment are leading India's switch towards e-mobility."

Mahesh Babu, CEO of Mahindra Electric Mobility



What is stopping us from getting there?

The concerns when it comes to electric mobility, and specifically ECV, are numerous. But we'll touch upon the main ones:

Charging networks and Range anxiety have always been, and will remain to be, one of the largest concerns when it comes to adoption of ECV. As of March 2021, India has 1800 charging stations across the country. It is estimated that for full adoption, we would need about 400,000 charging stations by 2026. Under Fame II we're looking at adding around 2700 more charging stations, which is a step in the right direction but might not be adequate.

Charging speeds will also become a point of contention. At the moment, you can drive in and out of a petrol pump within 5 minutes. EV chargers can try to aim for this, but the technology has not yet reached a level for it to be price competitive. The ultra-fast chargers have also not reached Indian shores.

According to **Maxson Lewis**, Managing Director of **Magenta Power**, "We have signed agreements for the deployment of 4000 chargers, across India in 34 cities and certain rural areas, which will be a combination of DC

and AC chargers. But we cannot consider a 30 mins charging stop as a replacement to our current fuel dispensing model. It requires a change in the way we think about charging.

Technology and Battery development is a major concern for manufacturers. India imports most of its batteries and battery components, thus increasing the costs that the consumer has to bear. This makes it uncompetitive without subsidies as India imports a 100% of Lithium and Cobalt, the two major components in all electric batteries these days. Research and Development is being pursued by certain large companies, but it is more economical at the moment to import and optimise, irrespective

of any disruptions in supply due to external factors.

Consumer perception about Electric Vehicles is a factor in the growth of the market. There are concerns regarding safety, resale value, and most importantly the price difference between ICE vehicles. There is a lack of standardisation which is confusing for the average customer. Most fleet operators run a small number of vehicles and it is not cost effective for them to switch from an ICE vehicle, without a solid charging network to offset those costs.



The future isn't going to be about huge isolated charging stations similar to fuel pumps. These have to be combined with aspects like restaurants, hotels, or other elements while charging."

Maxson Lewis, Managing Director of Magenta Power

Rohit Srivastava, Vice President – Buses at **Tata Motors** says, "Within India, the overall acceptance of electric vehicles is progressing sluggishly, mainly due to acquisition costs and a lack of infrastructure readiness. The average cost of electric buses is 3-4 times higher than its diesel counterpart. Additionally, the advent of the COVID pandemic has created a slight hesitance among people in using public transport."

Impact of the pandemic

Nobody can claim that the

pandemic hasn't affected the market or their plans for electric offerings. The biggest impact has been on passenger buses, as they service industries that have been most affected by the lockdowns – State transport, Schools, Offices, Private contractors and the Tourism industry. State departments are still purchasing electric buses under the Fame II scheme, although it has slowed down considerably due to market requirements.

The pricing has also had an impact, as capital for purchases has reduced, forcing vehicle manufacturers to offer lines of support to their customers. Daimler and Ashok Leyland just announced

outreach initiatives for their dealer and fleet network. But as we come out of this pandemic, the ECV market is projected to grow steadily as the long-term cost benefits are more attractive than that of the ICE vehicles.

"We were expecting the whole EV market to take off by this Dusshera, but the entire automotive industry has been hit. Because of the pandemic the market has slowed down, as the adoption of EV was being driven by Fleet owners. As employee transport had come down to zero, the fleet system was severely impacted. But with every state government launching their own EV policy and an upturn in EV



Within India, the overall acceptance of electric vehicles is progressing sluggishly, mainly due to acquisition costs and a lack of infrastructure readiness.”

Rohit Srivastava, Vice President – Buses at Tata Motors

sales, it is evident from the writing on the wall that the future is EV”, said Maxson Lewis.

Government help

The Indian Government has realised that its dependence on imported crude oil is unsustainable. A report by the Council on Energy, Environment and Water stated that if we transition to just 30% of Electric Vehicles by 2030, we will save oil imports by \$14 billion or 1 lakh crore rupees. Thus, the Fame II scheme was also brought in, which is expected to be extended up to 2024.

The Fame II intends on creating a charging station network in a grid of 3km x 3km, with highways have one every 25km. There is also testing underway by the NHEV on the Delhi-Agra highway to transform it into an e-highway. This would have 18 charging stations comprised of multiple fast chargers over a stretch of 500km, along with enhanced breakdown support for electric vehicles.

In addition, state governments are coming out with their own policies to give an impetus to electric mobility. The Delhi government, which came out with its Electric Vehicle Policy last year, has created a single clearance

window for EV chargers for faster integration. The ₹30,000 subsidy that they offer on e-rickshaws and e-goods carriers intends on making it competitive against ICE vehicles. Similarly, various state governments like Maharashtra, Karnataka and Gujarat are coming out with state EV adoption schemes that can supplement the national policies.

“We have signed an agreement with the Telangana State Government to deploy 1000 vehicles with our Charge Grid and EVET integrated plan through July to December. It will be the first large scale deployment of an integrated charging and fleet management system for electric vehicles by a State Government”, says Lewis.



Under Fame II, there have been 77,362 vehicles sold, which amounts to a saving of 53,780 litres of fuel and a reduction in CO2 of 122,391 kg every day. With an expectation of five lakh vehicles, these numbers will spur more purchases.

Mahesh Babu adds, “Various Central and State government policies have not just helped to accelerate the EV adoption but has also enabled for development and manufacturing of globally competitive EV technologies in



the country. Unlike developed countries, India requires a multi modal transportation solution for both people and goods movement, and this will see emergence of many new segments across vehicle categories. Last mile mobility in India offers a huge EV penetration opportunity and is set for a massive transformation.”

The technology that will get us there

We are technically in an early-adopter, exploratory phase when it comes to Electric Vehicles. There is large interest for the future of EVs and it will all depend on which companies can mature into the eventual market. And the transition, which is estimated to require \$266 billion over the next decade, will be led by technology.

Battery development is a major concern with enough being spoken about it, but a solution for depleting batteries is Battery Swapping Stations. Already implemented in China for ECV’s, battery swapping can significantly reduce the range anxiety and the time wasted at a station. In India, battery swapping has been tried for 2-wheelers and e-rickshaws with some success, but the complexity increases along with the payload. To counter this, automated systems can be implemented on a subscription basis, which would incorporate fleet management software to create an efficient structure.

Fleet Management Systems are already employed in our country by certain players, but the scope is constantly expanding. It is estimated that the Indian connected car market will be \$18 to \$22 billion by 2030, which

would include software, hardware and services. As the world shifts towards Internet of Things (IoT), integrated systems will take centre stage in the ECV market.

Srivastava adds, “Tata Motors has been the pioneer in introducing connected vehicle solutions to commercial vehicles in India, introducing Tata FleetMan as early as 2012. Today, more than 2,00,000 vehicles are plying on the road, fitted with this solution. Our more recent connectivity platform, Tata Motors Fleet Edge, has been devised to cater to evolving customer needs, extending beyond basic vehicle data and aggregates information during the vehicle lifecycle, including operational and financial data. It offers a bouquet of features like track and trace, geo-fencing and alerts, driver behaviour monitoring, fuel efficiency monitoring, fuel loss alerts and a digital instrument cluster, which collectively enhances profitability and safety of the vehicle and consignment.”

The benefits of IoT:

- Proactive maintenance and Fault detection alerts
- Driver behaviour and feedback tracking
- Smart GPS tracking based on improving deliveries
- Monitoring of Charge levels and Rerouting to charging stations
- Route optimisation for improved battery lifecycle and efficiency

With cloud-based services and an increased focus on cybersecurity, we might even get to a predictive analysis model that can further save time and costs. Automated screening systems are being tested abroad, which can scan a package

as soon as they leave the back of your transport vehicle.

India is considered to be the home of the Tech industry, and there are various start-ups that are focussing on the different components of ECVs. Etrio is a company that retrofits existing trucks and LCVs with an electric drivetrain and motor. They have now ventured into manufacturing their own products, which would start with 3-wheeler ECVs. This can set a precedent for other players to enter the market with individual components and expand from there.

What’s the conclusion?

Srivastava puts it, “The electric vehicle growth story is expected to receive a major boost in India, backed by government incentives in terms of subsidies and policy framework on one hand, and the rapid development of charging infrastructure on the other.”

India is in the nascent stages of an electric transition and there is a focused interest amongst consumers on being a part of this. With higher fuel costs, low charging costs, low maintenance costs, and improving battery storage capacity, we are on the right path to full electric adoption. Fuels such as Hydrogen, having the same refuelling time as ICE vehicles, are also becoming a popular alternative. But the cost effectiveness of Electric Commercial Vehicles will supersede the pace of alternate fuels. With India’s air quality costing the Indian Economy about \$95 billion a year, there is concern from all parts of the country to make this a faster transition.