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THE EV EVOLUTION

Relevant for: Indian Economy | Topic: Infrastructure: Roads

India offers the world's largest untapped EV market, especially in the two-wheeler segment. With several automakers rolling out EV vehicles at a rapid pace, the penetration of these vehicles has increased significantly in the past few years. As per a recent study, electric vehicles (EVs) market is expected to be worth around at least 475 billion by 2025. The penetration of electric two-wheelers is projected to reach up to 15% by 2025 from 1% currently.

As business activities gain pace and the Indian economy rebounds its way in 2022, the auto industry is set to enter a new phase of growth, innovation and investment. However, the road to the future of EV is battling various challenges. While the government is aggressively promoting EV adoption in India, the inadequate infrastructure, lack of high performing EVs and high upfront cost is causing a major hindrance for its mass adoption.

Capital cost has always been a major factor in the EV purchase decision, with 63% of consumers believing that an EV is beyond their budget. The lack of adequate charging infrastructure in our country is a huge barrier to increased EV penetration. Compared to traditional petrol stations, charging stations are harder to find, normally limited by investment costs and difficult infrastructure development enabling people to charge where they usually park, at home or at work, which presents its own challenges, such as dealing with multi-tenant buildings, grid-connection management, and charging slot availability. It is anticipated that there will be a shortage of nickel, and scaling up lithium production would be a challenge, leading to supply shortage that may cause manufacturers to use lower-quality mineral inputs, adversely affecting battery performance.

India recorded a power supply shortage of 1,201 million units in October 2021 — the highest in 5.5 years due to a crunch in coal stocks available with thermal plants. To have revolutionary switch to electric vehicles, our country needs to address the basic issue of power shortage. Lack of constant power supply in villages and smaller towns and metros like Delhi and NCR having major breakdowns for hours at a stretch. Summers is likely to affect the EV switch on a large scale, maximum EV users will be two and three wheelers and this consumer does not get power supply 24/7.

EV revolution is presently focused on metros where the consumer has range anxiety because of a daily travel of 100km, whereas the actual consumer is in tier-II and tier-III, where the travel radius is 15-20km; here a consumer can ride 150-180km after electrification without the worry of a recharge or looking for a swapping station.

There are a range of potential market barriers that limit the ability of EV industry to rising demand an underdeveloped charging ecosystem continue to impede a higher penetration in the two-wheeler consumer segment. The absence of robust manufacturing ecosystem for the materials associated with the EV revolution, coupled with the concentration of the supply chain in certain regions, is likely to draw these issues into still sharper focus in the coming years.

The government introduced a slew of measures in line with 'Make in India' campaign to incentivise manufacturers to produce components locally and build a structured policy framework as India is heavily dependent on China for lithium supply chains constraining the widespread deployment of EVs. Recent policies that were introduced, including battery swapping policy, aimed at an encouraging move towards green energy generation and decentralisation of energy distribution is likely to create a well-established EV infrastructure

across the country, while instilling customer confidence in riding EVs on Indian roads. The battery swapping model for supplying power has side-stepped the lack of charging infrastructure but the future is likely to see a mix of both models.

However, India does not have infrastructure or technology to manufacture chips or Lithium-Ion Cells; until we have the basic infrastructure in place it is a challenging road ahead, with increase in dollar prices and volatile import situation due to rising tensions.

Currently, the EV market is fragmented with independent dealerships which make it difficult to create proper infrastructure for second-hand sales. Moreover, warranties, quality and strength of the vehicle vary significantly. Vehicles many times lose form because of rough use, or the battery degrades. At present there is hardly any formal infrastructure for sale of used vehicles. Shortage of global semiconductors further creates supply chain issues and promote localisation of commodities for automotive OEMs (Original Equipment Manufacturer).

However, large OEMs are making initiative to venture into EV components market to reduce reliance on imports and meet the 50% localisation criteria to access government subsidies.

A substantial infrastructure that is affordable, accessible and serves all consumer groups coupled with strong financing ecosystem, policy incentives, and technological advancements is likely to poise the EV market for significant growth in the coming decade.

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