

# Let's hit the road EV rider

- **Amitabh Kant**

A green mobility revolution is knocking on our doors, India's urban population will nearly double in the next decade. As people move to cities to live, work and earn a livelihood, transportation will emerge as our biggest challenge. When America urbanized cities were designed for cars and not for people. American car companies grew and expanded on the back of internal combustion engines. As India urbanizes it must design its urbanization and smart cities for people and not for cars. Our cities must be compact, dense vertical and evolve on the back of transit oriented development with public transportation as its back bone.

The transition to clean mobility has gained momentum due to battery technology evolving rapidly. Prices of battery have fallen more than 90% in last 10 years to & 137/KWH. By 2023 it will go below & 100 / KWA marking the initial cost of EV vehicles cheaper than combustion engine vehicles.

As lithium-ion battery manufacturing is pickup pace globally, it has its own shortcomings. The world's supply of lithium is limited and there is demand for batteries that are safer, last longer and more energy efficient. New uses for batteries are rapidly emerging, including electric vehicles and storage. To meet these needs, the race is on to develop the next generation of batteries. Several companies are working in the technology space to develop sodium-ion batteries, Redox Flow batteries, Nano Wire batteries, metal air and new generation lithium-ion (lithium sulfur, lithium metal, solid-state and semi- solid batteries).

India's advantage is that its per capita vehicle ownership is extremely low with fewer than 20 vehicles per 1000 persons as compared to 900 per 1000 in the USA and 800 per 1000 in Europe. This provides India an opportunity to technologically leapfrog ahead of the legacy model of individually owned Internal Combustion Engine (ICE) vehicles which are utilized for only 5% of the time. India's focus and emphasis must be on shared, connected and electric transportation.

This E-mobility disruption would lead to accessible, affordable, inclusive and safe transportation options for citizens'. The focus should be not merely on moving towards EVs but also on moving people through public transportation and its electrification.

In India's electrification journey two and three wheelers will play a significant role as 80% of the total sales of vehicles are in these two categories. We need to leverage this and target for 100% electrification of these two segments to provide size and scale to manufacturing of these vehicles and their components. This will enable us to emerge as a global champion in this sector.

Robust public transport network is the spine of urbanization. Transportation through electric buses has been a key focus area of public support. Recently, demand for E-buses across five Indian cities was aggregated and the world's largest tender of 5450 E-buses was issued. This has led to record low prices with electric buses being cheaper on an operational cost basis than diesel buses. The aim is now to aggregate demand for 50,000 electric buses with Make in India provisions and make a radical shift towards electric buses in all metro towns and cities.

Another success story is that of E-Rickshaws. With over 20 lakh E-Rickshaws currently plying on Indian roads, we are well placed to go for

full electrification of all rickshaws across India. This will have a massive impact on the lives of our rickshaw pullers. Electric cycles too offer massive potential. Western commuters have seen a huge spike in e-cycle ridership during Covid-19 pandemic. According to a research study in the US the sale of e-cycles grew 145% in 2020 compared to 2019. India has a huge opportunities to transition a sizeable chunk of its annual sale of 2 crore cycles to electric which would transform people's life by making mobility more affordable and accessible.

Central ministries have taken a series of measures to support a clean mobility future. There is a reduced GST on EVs to 5% as compared to 28% on ICE vehicles and an income tax deduction of 1.5 lakh on the interest paid on the loans taken to purchase EVs, States and cities will play a critical role in driving the mobility transformation of the country. Several states have already announced their EV policies providing impetus to rapid EV adoption. Promote entrepreneurs have also taken the lead in manufacturing of EV vehicles. The OLA Future factory in Tamilnadu is today the largest two wheeler plant in the world with a capacity of 10 million scooters. Then there is Ather, TORK, OKINAWA, Revolt, Enflux and many more.

In addition the established two wheeler industry giants like Bajaj and TVS have done extensive R&D and come out with new products in the market. All this shows signs of a market which is waiting to explode.

However, there are several challenges in accelerating the pace of this mobility revolution. Firstly, end users face the challenge of high interest rates, lower loan to value ratios—higher down payments and requirement of collateral and higher insurance costs. These challenges arise due to underlying risks associated with lending for electric vehicles.

There is asset risk, with apprehensions regarding resale value due to lack of a secondary market and in the absence of reliable data on electric vehicles performance this would require multilateral financial institutions to establish risk sharing facilities that will provide loan guarantees to banks and NBFC to cover possible losses. According to a recent report by NITI Aayog entitled “Mobilizing Electric Vehicle Financing in India”, over the next decade India’s EV transition will require cumulative capital investment of Rs. 19.7 lakhs crores on vehicles charging infrastructure and batteries. The market size for financing EVs in India has a huge potential to grow and expand. Secondly, there is a challenge of relying on imported components and parts whereas the FAME-II scheme envisages 50% localization. This would require Indian manufacturers to rapidly shift towards EV component manufacturing and ensure “Make in India” of the entire value chain. Thirdly, there is the challenge of relying on imported batteries which account for almost 40% of the total purchase costs of EV today. Battery manufacturing is a huge opportunity for India. India could represent more than one-third of global EV battery demand by 2030. As India’s battery manufacturing capabilities expands and supply chains are established, India can produce both battery cells and packs while importing only raw materials. In this scenario, India stands to capture almost 80% + of the total economic opportunity.

The Production Linked Incentive scheme (PLI) for manufacturing of Advanced Cell Chemistry (ACC) battery is incentivizing 50 Gwt of domestic Acc manufacturing capacity. This combined with PLI for automobiles and components should catalyze India to become a global leader in both batteries and electric vehicle component manufacturing.

India has the world’s best information technology industry which has a close convergence with the coming electric mobility revolution. This

would be driven by power electronics, artificial intelligence and automation. The electric vehicles would have a much higher level of value addition of electronics and IT component than traditional automobile components. The world's finest IT sector of India could be a vibrant and dynamic incubator for innovation and R&D for the shared, connected and electric mobility revolution of tomorrow and for transforming transportation in India.

---

*\*Author is G20 Sherpa and ex-CEO, NITI Aayog, Govt. of India*