

# India's Road towards EV Adoption...



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When it comes to Electric Vehicles (EVs), India would certainly seem to be playing catch up with the rest of the world. Consider the fact that in China, they have already started worrying about a mini-bust in the sector, thanks to the huge number of startups and major players who have jumped in. Thus, even as EV's have moved to grow rapidly, the rest of the auto market has been slumping for almost 10 months now. Tesla, a global poster firm for EV's, has no serious plans for India. Our own established auto sector has been extremely conservative in making a commitment to EV's, fearful as they are of protecting their existing assets, market shares, and profitability.

The government keen on not to be left behind this time, has done its bit, with regular policy rejigs on the subsidy front, and now, going beyond EV subsidies to focus on supporting infrastructure too. While all this was happening, the country's informal economy has already voted for EV's. Depending on the source of data, close to 4 million EV's already ply on Indian roads today, with over 90% being the e-rickshaws that have bloomed across cities in the country today. The reality of this market, and the push to make India conform to global standards in terms of battery quality and more, could decide the success of the official target of 30% market share for EV's by 2030. Within this, the

two-wheeler sector is actually expected to lead the charge, despite few challenges such as higher cost etc. Solar does play a key role in this mix, as an EV is not really going to be completely green unless powered by renewable energy. Thus, it becomes even more critical to ensure that the EV charging policy creates space and opportunities to make them renewables powered.

EV Sales Globally		
2017 (actual) Million	2025 (projected) Million	2030 (projected) Million
1.1	11	30

(As per BNEF report)

To get a more clearer picture, we spoke to a few industry veterans from the companies who are already working quite passionately in this sector in India – Venkatesh Dwivedi, Director (Projects), Energy Efficiency Services Ltd (EESL); Maxson Lewis, Managing Director, Magenta Power; Tata Power Company; Abhijeet Gupta, Director, Radite Group; Ravneet Phokela, Chief Business Officer, Ather Energy; and Prashant Kumar, Managing Director/Business Development Manager (Solar & EV Infra), Future Generation Technology LLP; They spoke frankly about the current state of electric vehicles in the country. Here's their perspective...

**On the policy front, what are the major challenges an Electric Vehicles (EVs) sector is currently facing in India?**

### Venkatesh Dwivedi

Electric Mobility brings immense benefits to a country like India. Considering India's commitment to sustainable development, EVs present an opportunity for the country to be at the forefront of this new technology. India has been making progress towards achieving the target of 30 percent EV sales by 2030. To ensure that the nation swiftly and smoothly achieves this target, it is important for the EV ecosystem, including OEMs and related service providers, to actively collaborate and create new and sustainable business models that enable India's leadership in e-mobility.

The recent policy developments from the central and state level have provided a lot of clarity for the stakeholders while establishing that the future of mobility is electric.

### Maxson Lewis

There are two challenges the EV industry is facing on the policy level in India.

1. The translation from policy to on ground implementation is far from real. While steps have been taken at FAME levels, the actual implementation has hit hurdles.
2. There have been some flip flops in terms of the policies. Case in point is the FAME 2 follow up clarifications on the implementations which were clearly divergent with the overall FAME 2 announcements. These tend to reduce the confidence of the private companies and investors to step

into an industry which is capital intensive to begin with.

### Tata Power

EV is a composite subject that has several sides to it, just like the rest of automotive industry. So far, Indians have only been witness to large interventions on the demand side of the market. Through the launch of FAME(Faster Adoption and Manufacturing of Electric Vehicles)scheme in 2015, the government is specifically incentivizing the use of EVs as public transport which has just come into force now, its second phase.The new specifications and clarifications issued in March regarding size and price, practically keeps every EV made in India out of the scheme. EVs can be pushed more on the Indian roads if designed with ground realities in mind however, they cannot be a long term solution.

In 2013, when government announced its National Electric Mobility Mission Plan (NEMMP) 2020, the expectation was to achieve year-on-year sales of 6-7 million EVs (including hybrids) starting 2020. However, in 2017-18, barely 56,000 EVs were sold, 98% of which comprised of two-wheelers and balance passenger cars. On the other hand, we are also adding 25 million vehicles a year, out of which around 20 million are two wheelers and around 3.3 million are passenger vehicles. The original target to get 30% EV vehicles on the road by 2030, has now been revised to 15% in the next five years. However, going by the current rate at which we are adopting EVs,achieving this target will pose to be a major challenge. Another big challenge is how we deal with range anxiety of EV owners. Creating a national network of charging infrastructure comes with its own set of challenges in terms of financial viability (given the low volumes of EVs on the road today), space for setting up charging stations and the heavy investments needed, mainly for real estate.

Currently, we miss a policy which addresses mechanisms like demand, supply, technology, manufacturing, R&D, large and complex components of the ecosystem holistically. At the end of the day, EVs like other consumer product will need to deliver on their own merit in terms of the value it delivers, much like what we see in the mobile telephone market (where crash in data prices created a massive market for smartphones).

### Prashant Kumar

On Policy front, the major challenges an Electric Vehicles (EVs) sector is facing are as under:

- Policy makers have not provided any kind of subsidies/ relaxation to EV charging infrastructure developers/ manufacturers. Since, it's a quite expensive investment initially there is no sure short term tool to mitigate risks associated with it.
- No awareness programmes/ T.V commercials have been made to publicize this new technology.
- There is no GST/TAX relaxation on EV components, which makes it more expensive.
- The sector is highly regulated. So, its growth depends on the speed at which associated government organisations work. In my opinion, this sector should be semi-regulated i.e., the

approval and all other necessary requirements/processes should be government controlled and implementation, installation should be left on private organizations.

- Electricity is not cheap and charged as per commercial rates.
- Energy Storage components adaptation is lagging behind.

### Abhijeet Gupta

The policy for the Electric Vehicle and its charging infrastructure is still having many challenges. The major challenge is on the technology front and mixing of charging with battery swapping. Government of India has great push towards the EV sector, however, the selection of technology will be the key to it. Secondly, the regulation for power sale to EV's by way of charging also need to be formed which will define the viability of the business in this sector.

### Ravneet Phokela

With FAME II, the central government has truly driven home the agenda of electric mobility. Linking battery capacity to the incentives availed is a great move to ensure that only high-quality products qualify. Encouragement given to local sourcing and manufacturing, and the incremental import duty on li-on cells from 5% - 15% to be levied at the end of 2022 has nudged serious auto players to start investing in building a sustainable product ecosystem now.

In terms of the charging infrastructure, we are glad that the government is encouraging setting-up of an expansive network equipped to meet the charging requirements of both private and public modes of transportation.

Several state governments have been investing heavily in supporting the manufacturing and sales of EVs as well. With the kind of holistic support the industry is receiving today, we can expect it to grow rapidly in the years to come.

#### China Growth Between 2017 and 2018

In 2018, 1.1 million EVs were sold in China (4.1% of total vehicle sales). Projected 2 million sales in 2019.

In 2017, China sold 777,000 new-energy vehicles - electric and plug-in hybrid.

**Do you think India's ambitious target for EVs by 2030 be achievable? What is the reality on ground level?**

### Venkatesh Dwivedi

Electric vehicles are imperative to India's sustainable growth. The Government of India is working towards enabling systematic adoption of EVs in the country. Measures to promote e-mobility in government fleet and public transportation, supported by adequate public charging infrastructure and availability of battery systems, will be conducive to the growth of electric mobility in the country. This will not only help the industry to grow but also enable consumers' greater access to greener transportation and ultimately lead to more significant benefits for the environment.

In line with this, EESL has been working towards removing

various hurdles to facilitate the growth of electric mobility in the country. With our approach of demand aggregation and bulk procurement, we are addressing significant challenges like low demand, high upfront cost of adoption, and lack of charging infrastructure. Our objective is to create universal access to electric mobility, enable more energy savings and emission reduction for a sustainable future. Our target is to replace all 5,00,000 cars in government service with electric variants while ensuring enough supporting infrastructure. Towards this, EESL has procured 10,000 e-cars and 2,125 chargers via the tendering process.

### Maxson Lewis

Yes. I believe the EV 2030 target is achievable. I am not referring to the 100% EV by 2030 but the scaled down target. Infact, I believe in the 6% adoption rule for India. Every seminal change in India has always been slow till it has reached the 6% adoption mark. Once that mark is breached, new technologies tend to take off. I believe by 2021 we will reach that 6% mark and by 2027 and ahead of schedule we would have reached the 30% target set for 2030.

### Tata Power

The government has revised its EV target to 15% over the next five years. As mentioned earlier, there is a lot more that needs to be done to make this happen. Focus on public transport along with increased allocation of subsidies to buyers of EV (around ten-fold INR8600 crore) in the second phase, will help to some extent in achieving this target. But, to witness a major shift in favor of EVs that will sustainable, is going to take a lot more than incentivizing demand through subsidies. Some recent clarifications issued by the government disqualifies every EV available in India today for the tax incentives offered to EV buyers. The cost of batteries has been consistently falling over the years, but it is still not as competitive as vehicles run on fossil fuel (petrol, diesel or gas). So, the effectiveness of FAME is a big question now.

### Prashant Kumar

- This is an ambitious plan. And, YES it is achievable. Since, India is a developing country and we have already seen that in solar we have achieved the ambitious targets. So, if private sector is involved in it then it is possible.
- This technology is already getting traction among people.

### Abhijeet Gupta

The target is achievable looking into the current push from government and shift of people and businesses towards that. The key will be more participation of private sector in this industry and encouragement to new ventures by government into this sector. Also participation of local public will help to achieve this target, hence policies should be formed to attract common people participation and incentives to use and operate EV and its infrastructure.

## Ravneet Phokela

Today, India is well-directed in terms of its focus on building the ecosystem to ensure a swift transition to electric mobility. Two wheelers will drive the shift to electric mobility in India and the ecosystem is well poised to make it a reality. Two of the biggest challenges to adoption are the initial high cost of electric vehicles and lack of choice of near-equal performance products. At Ather, we are tackling the two by setting up a fast charging network across the country that all EVs can use and by offering various purchase options like lease that make our vehicles easy to afford.

**What are the various difficulties the companies are currently facing while setting up an EV charging station in India?**

## Venkatesh Dwivedi

It is being acknowledged that there is a long way to go in terms of infrastructure for faster and wider adoption of e-mobility in the country. However, the Government of India, along with few state governments, is gradually addressing the challenges of the Indian EV ecosystem.

There is more clarity and confidence among the stakeholders after the government's focused efforts towards initiating a process to define standards and guidelines for electric charging stations. Further, with FAME-II, which aims to establish 2,700 Public Charging Systems (PSCs) in metros and cities with a population of over 1 million people, as well as hilly areas where ecosystem conservation is vital, any kind of uncertainty has subsided putting EVs in the fast lane. In alignment with this, EESL is undertaking a pilot project to set up close to 200 charging stations in the NCR including 100 fast-charging stations for electric vehicles in the New Delhi Municipal Council area. These fast-charging stations would comply with the international standards and would be set up at public parking spaces and high-visibility areas such as Khan Market, Yashwant Place and other locations on the lands owned by Delhi municipalities (New Delhi Municipal Council, North DMC, SDMC, EDMC).

## Maxson Lewis

Plenty is an understatement. Cost of real estate and the lack of business case undermine the ability to go for full scale roll out of charging stations. The lack of support from the state DisComs is a huge deterrent as well. Add to it the 'Heat, Humidity, Human and Murphy' constraints. Of this the first two are simple to understand. Human refers to the way we as a country treat or rather mistreat public infrastructure. Murphy or local uncertainties (be it availability or quality of power) in common parlance is a big factor.

## Tata Power

Financing is the biggest challenge faced in setting up a nation-wide network of EV charging stations. This is mainly due to the low volume of EVs on the road. We are expecting

the demand for EVs to pick up in future without creating a significant network of charging stations.

Tata Power, for example, is currently working with three large players in the energy distribution business -- HPCL, IOC and more recently IGL in Delhi. Creating an EV charging station within fuel stations is one way of achieving larger EVs demand quickly.

Another challenge lies in the cost charged to the consumers, since, at the current ratemaking EV charging a sustainable business will be quite expensive. Real estate to create a nation-wide network is equally challenging. If charging stations have to be within the reach of consumers, the prospective locations will make the whole proposition expensive in terms of land, whether owned or leased.

But in the long run, we are hopeful that when demand for EVs start to gain momentum and reach a certain critical volume, the financial challenges around charging stations will be eased considerably.

## Prashant Kumar

- Too many approvals required and there is no arrangement of one window application process.
- Upfront cost is high & there is no confirmation on returns in current situation. Since, the number of EVs on the road is less.

Abhijeet Gupta

Most important point is the regulation and policies for price of EV charging in India which remain unclear, especially in terms of any possible price caps.

Secondly, the selection of technology by EV manufacturers and its compatibility with the chargers. Manufacturers from different countries are providing different charging points in their Electric Vehicles which is creating confusion for the charging station operators. Standardisation of the same will be the foremost requirement.

Government of India has come up with the guidelines but we have to check how the manufacturers are responding on it.

## Ravneet Phokela

The charging infrastructure and EVs are running into the classic chicken and egg problem. The absence of one is fueling the lack of another. Companies aren't setting up the EV infrastructure at scale because there aren't enough vehicles to use the infrastructure, and in turn, a lack of infrastructure is an impediment to more vehicles adopted.

Besides, most buildings in Bengaluru don't have enough power capacity to support the requirements of EV charging points and we are working with the authorities and owners to improve this where we can.

Ather plans to set up Charging Points across workplaces at no cost to the companies. With the government also encouraging setting up of charging points to promote electric mobility, tech parks across the country are also looking to play their part in the building of an electric future for the country.

Ather is planning to expand the network and set-up Charging Points at more than 70 locations in 3 cities in 2019 and 6500 EV Charging Points in 30 cities by 2023.

**In your view, what should be done by the government on top priority to boost EVs adoption in the country?**

### Venkatesh Dwivedi

As mentioned earlier, e-mobility clearly has many positives. Yet, only 56,000 EVs were sold in FY 2018, according to data by the Society of Manufacturers of Electric Vehicles (SMEV). Clearly, consumers are still doubtful whether they can seamlessly switch to EVs. This indicates that India's goal of 30 percent electric mobility by 2030 requires much more support. Foremost is addressing the lack of awareness about electric vehicles and their benefits; petrol and diesel are the two de-facto options that reign over the market. However, these benefits are still not well defined. Electric vehicles are expensive, which goes against India's conventional preference for low-cost cars. However, when the consumers start realising the long-term benefits of electric cars, both in terms of environment and savings, they will be drawn to EVs.

Another aspect is of Range Anxiety. While EVs in international markets have already benchmarked 250 km per charge and are aspiring even higher, India currently ranges close to 130. India also needs the service and ancillary ecosystem that conventional, internal combustion engine (ICE) cars offer. If India were to launch large-scale EV deployment today, it would result in long queues for charging. Even after sales service, in the form of EVs maintenance, needs to be strengthened. India should offer EV service stations and a five-year annual maintenance contract that mitigates apprehensions.

The Union Cabinet's recent approval of the National Mission on Transformative Mobility and Battery Storage is a positive intervention. The mission encourages setting up large-scale, export-competitive integrated batteries and cell-manufacturing giga-plants in India through a Phased Manufacturing Programme (PMP), thereby enabling holistic and comprehensive growth of the battery manufacturing industry in India. Localisation of production will enable reduction of costs of battery storage, which has till date been a substantial contributor to costs – the affordability discovered can further drive EV adoption.

### Maxson Lewis

The government through FAME 2 has supported the purchase cycle of electric vehicles. But the support for EV charging infrastructure is still open ended and we do not see real focus here except pushing government entities to set up charging stations which are highly unplanned and more to meet station counts. But even this start is a good effort and will push the adoption of EV in India.

### Tata Power

Large scale EV adoption can be implemented only when the issue is addressed more realistically. Unlike China, where the government can mandate all public transport to go EV, a sweeping change like this is difficult to implement in a democratic country and a market-driven economy like India. So, until the unit economics of owning an electric vehicle is

acceptable to consumers, large scale adoption will continue to be a challenge in India. Parameters like total cost of ownership, viability and execution of a nation-wide charging infrastructure, cost of charging for consumers etc. will all decide how we can manage wider adoption of EVs in our country.

### Prashant Kumar

- Subsidies should be provided to an EV infrastructure developer/manufacturer.
  - Goods & Service tax should be subsidised on EV & related products.
  - Consumer awareness programmes should be introduced for the common people which will boost its adoption at fast rate.
- Abhijeet Gupta

According to me following points need to be worked out fast to boost EV adoption in the country:

1. Creation of EV Charging infrastructure is the key for adoption. Government should encourage private people and new start-ups by way of funding, relaxation in tenders for infrastructure etc which will help them to develop the infrastructure fast. Once the infrastructure is there, the people will anyhow move towards cheaper means of commuting.
2. Standardisation of technology will help EV manufacturers and charger manufacturers to finalise the product line and production on fast track.
3. Encourage common people participation towards charging infrastructure.

### Ravneet Phokela

We truly believe that FAME II is a well-honed scheme that focuses on key consumer adoption drivers and encourages serious automakers to create a conducive ecosystem. Regulation mandating players to provide at least 3 years of comprehensive warranty will push for investments in the entire component cycle. The emphasis on local sourcing of li-on cells and support for domestic manufacturing is much needed and will help Indian automakers build vehicles locally. The validity of the "Phased Manufacturing Program" till 2022 along with the significant budget allocation and the incremental scale of import duty from 5% to 15% on li-on batteries at the end of 2022 will drive OEMs to fast-track their investments in the infrastructure and R&D now. The government's emphasis on local sourcing and manufacturing aligns with the "Make in India" agenda and we welcome this move to optimize India's capability as a manufacturing hub.

Aside from the manufacturing support rolled out, the Government needs to support the industry ground up, right from the R&D phase. Indian EVs require a new approach to the design involved in the core components like the motor, li-ion cells & batteries. Incentivizing efforts to build products that perform well under our thermal conditions and the stop and start traffic will lead to better quality products for the end consumer.

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