

# Accelerating Electric Vehicle Adoption in Rajasthan

## Project Advisory Committee Meeting

June 17, 2021

### Synthesis Report

#### Introduction to the Project

The evolution of transportation, just like the evolution of humankind, has gone through trials and tribulations as it has evolved through time. Many modes of transport have evolved and many more have gone extinct. Over the last century or so, humans have become increasingly reliant on their Internal Combustion Engine. Unfortunately, given that most vehicles run on fossil fuels, this reliance is damaging our climate. The more we drive combustion engine vehicles, the more carbon and tailpipe pollution is emitted into the atmosphere.

According to the World Health Organisation, India is home to nine out of the ten most polluted cities in the world. A significant contributor to air pollution is the transport sector, in which road transport is the main sub-sector accounting for over 95 percent of the entire transport sector's emissions.

During the COP21 Summit held in Paris, the Government of India committed to reducing emission intensity to 33-35 percent by 2030 from 2005 levels. Hence, it is pertinent to introduce alternative means in the transport sector, coupled with India's rapid economic growth, rising urbanisation, travel demand, and country's energy security. Electric vehicles, also called Zero-Emission Vehicles (ZEVs), can potentially be a game-changer for the environmental challenges posed by conventional vehicles.

In recent years, an increasing number of states have committed themselves to promote EVs within their strategic mobility planning. State Electric Vehicle (EV) policies have restricted a range of supporting incentives which mainly include consumer demand incentives for buyers, charging infrastructure incentives and industry incentives to meet the supply side gap. States with existing EV policies are now beginning the process of revising and implementing these policies. At the same time, more states aim to draft and notify their EV policies. The EV policy of Rajasthan has been overdue for a considerable time now.

This project proposes to inform the state-level policy and plan of action through research, advocacy, networking and capacity-building exercises for accelerating the uptake of EVs in Rajasthan in a sustainable, inclusive and efficient manner.

This Project Advisory Committee meeting aims to seek feedback from the esteemed members on the approach, methodology and other facets of the project. Furthermore, the meeting also envisages garnering insightful feedback about implementing this project given the external challenges of COVID-19 and consequent restrictions on travel.

## Key Discussion Points

### 1. Power Sector Component of E-mobility

E-mobility is not just a matter of transportation. The power sector is a major pillar of it. In the present scenario, the penetration of EVs is significantly less; therefore, there is no stress on the grid. But with increasing adoption in the future, it could be a challenging issue for existing grid management, demand-side management and distribution networks. At the same time, an optimistic approach would imply not obstructing EV promotion because of the fear that it might impact grid stability in the future.

As per Rajasthan Electricity Regulatory Commission's (RERC) concept paper on EV Charging Infrastructure, smart meters should be installed to monitor and regulate electricity consumption. However, their integration with the charging infrastructure is challenging and can make the tariff go higher. The minimum level of current electricity tariff for charging stations is insufficient to operate them economically, thus causing more burden on other electricity consumers.

### 2. Selection of Cities

One way of selecting cities is based on the pollution level. Jodhpur, Jaipur, Kota, Udaipur and Alwar are the non-attainment cities as prescribed by the Central Pollution Control Board under the National Climate Action Plan.

The source of almost 70 percent of industrial output is concentrated in 15 cities of the Indian States. So, another way of selecting cities could be to identify the major industrial clusters that already have a well-established potential for manufacturing. This would also attract investors in the process of accelerating EV manufacturing.

The cities can also be selected based on major economic sectors of the state. For example, tourism is one of the vital economic sectors of Rajasthan; hence the primary focus should be laid on the major tourist spots.

### 3. City-wise Planning

After selecting the priority cities, one should decide which game to play in which city. The planning should be done in a phased manner. The vehicle segment that has a major share in meeting the city's transportation demand can be targeted for electrification first.

The policy also needs to back up the local potential of that city. For example, cities with the availability of green energy and manufacturing ability are better suited for e-mobility related interventions in the immediate future. The proposed intervention should boost their existing capacity and also attract potential investors.

#### **4. 'Green' Aspects of E-mobility**

The roadmap of EV adoption should be framed depending on the drivers of e-mobility in any context. This implies that if reducing vehicular pollution is the criteria, the obvious strategy would be to push for public transportation and shared aggregators or fleets of delivery services where maximum run-km and vehicular pollution in a specified period are happening. Similarly, if the objective is to boost the local economy, manufacturing capacity, industrial competitiveness, or traffic issues, strategies must be devised accordingly to move forward with e-mobility.

Renewable integration for e-mobility needs a careful assessment. Feeding charging stations from the grid is one of the complex processes. The existing grid infrastructure is facing many challenges in supplying electricity to consumers. Adding more demand will cause more challenges to grid. Electricity demand forecasting studies need to be done by accounting for potential demand from EV adoption. Also, Renewable Energy solutions for charging stations need to be explored deeply to reduce grid dependency. For example, the government provides subsidies to install rooftop solar systems for homes that can be utilised to charge the home charging stations, which reduces the electricity cost. Also, the role of life-cycle emissions become an important parameter in this endeavor.

#### **5. Priority Vehicle Segments**

The current pandemic has given a major thrust to urban deliveries like Swiggy and Zomato. Hence, these delivery vehicles, because of their resilience and potential of impact generation, could be targeted for electrification. The target could be two- and three-wheelers as these are the dominating segments of vehicles in Indian cities.

The EV segment can be divided into two parts: one with a comparable upfront cost and the other with a very high upfront cost with respect to conventional vehicles. The subsidies for the latter can be planned while figuring out ways to enhance the demand, acceptability and uptake of the former one.

#### **6. Infrastructure Required for E-mobility Adoption**

It would be difficult for the government only to plan the infrastructure required for e-mobility. Public-Private Partnership (PPP) is required to set up charging stations, service modules of e-mobility with a fair structure of agreement between the public and private. But there are specific issues associated with implementing the PPP model which is evident from the pendency of implementation of various such contracts. Therefore, proper structuring and monitoring are required.

There should be an expansion of service providers in each city to build the confidence of EV users regarding the operation phase of a vehicle. This would be the required pull-factor, apart from the policy and practice induced push-factor for e-mobility adoption.

## 7. Awareness Generation

There should be awareness generation to catalyse the adoption of EVs. With crafting demand for EVs, the simultaneous focus should be on skill development to create new job opportunities and train current employees to adapt to the transitioning mobility scenario.

Policies should encourage first-time vehicle buyers to purchase EVs only. The households were not bothered by adopting appliances, such as geysers and ACs. The awareness programmes should create a mindset of people such that they see EVs as another appliance and not a big, complicated thing.

## 8. Smart Technology and Innovative Business Models

ICE to EV retrofitting is a potential transitional solution to improve the shift towards widespread adoption of EVs. EV retrofitting can potentially increase the adoption pace of EVs, enhance public acceptance of EVs, boost the speed of infrastructure development. It is the best solution for whoever cannot afford to purchase an EV later. They can switch to the EV when the cost is reduced.

Similarly, the potential of opportunities like V2G, G2V technologies and other relevant technologies that enhances consumer experience or cost-effectiveness of the vehicles can be explored through the project.

## Conclusion and the Way Forward

The primary aim should be to leverage the existing policies and initiatives by the government coupled with strategies about how private players can catalyse EV adoption. The project should be seen as a part of a larger and longer-term agenda of catalysing the e-mobility transition in India in the next decade.

As next steps, the following action points are to be considered:

- Share the compendium of existing policy instruments, implementation channels and institutional structures envisaged in EV policies to promote e-mobility, prepared by the research team, with PAC members for their perusal.
- Review of city-level planning and governance documents on city-level climate action plans for identifying the existing solutions to challenges of the transportation sector as envisaged by authorities.
- Prepare for the field inquiries, including identifying stakeholders and drawing the ecosystem map to commence the fieldwork.

## List of Participants

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