Event Report

Exploring the Transition to Electric Mobility in Jaipur City

Jaipur, May 25, 2019

Introduction

CUTS International along with Bask Research Foundation and World Resources Institute India (WRI India) organised a one-day roundtable on 'Exploring the Transition to Electricity Mobility in Jaipur City' at Jaipur on May 25, 2019. The initiative is supported by Friedrich Ebert Stiftung India (FES India) as part of Grow-GET (Green Growth and Energy Transformation) project. The initiative is aimed at developing a 'Low Carbon Mobility Framework' for Jaipur city.

The objective of the roundtable was to identify relevant stakeholders and their role in EV adoption in Jaipur city and, challenges and opportunities surrounding this transition. The event saw participation from various corners providing critical insights. Public sector participation was anchored by representation from Jaipur Municipal Corporation (JMC), Rajasthan State Road Transport Corporation (RSRTC), Jaipur City Transport Services Limited (JCTSL), Regional Transport Office (RTO) and Jaipur Vidyut Vitran Nigam Limited (JVVNL). The roundtable also received participation from experts belonging to industry, academia, financial bodies and institutions active in mobility space. An auto union representative was also present to provide driver's perspective pertaining to electric mobility.

The opening remarks during the session were provided by Bipul Chatterjee, Executive Director, CUTS International. He highlighted the issue of air pollution and its relation with transport sector due to heavy use of carbon intensive fuels. He pointed out that electric vehicles could have an instrument role in alleviating issue of air pollution in Indian cities and also contributing to Sustainable Development Goals at bigger scale. The discussion during the conference was divided into four sessions covering wide ranging issues related to mobility planning and trends in Jaipur, experiences from EV adoption in other cities of country, challenges related to EV adoption and identification of stakeholders for such adoption. The challenges and issues highlighted during the roundtable are provided in subsequent sections.

Session on Mobility Planning, Key Drivers and Trends in Jaipur

- **Holistic Demand Assessment:** Any planning of transport infrastructure in a city should be preceded by a rigorous exercise to understand the demand patterns. A convenient framework could be assessing the mobility demand along four parameters – whom (user types), what (Mode of transportation), where (corridors of movement), when (time of movement). Later on, after mapping the demand, the mobility needs to be planned out based on resources, taking into account affordability, safety and sustainability.
- **Revisiting the statutory framework:** The seventh schedule of the Constitution provides states responsibility for planning of transport infrastructure. Additionally, the 74th Amendment in the constitution, make municipal bodies accountable for urban planning in the city. Nevertheless, the cities have shown lukewarm response towards framing an urban mobility plan due to lack of capacity and accountability. Enough modification in statutory framework is required to make transport planning integral part of urban planning and also implementable.
- **Land use planning as integral part of transport policies:** Given than, transport infrastructure is planned on evolving city and its land resources; land use planning should be made integral part of state transport policies.
- **Capitalising the resilience of cities in transport planning:** Various cities in India are different in itself. City mobility infrastructure is required to be planned around key USPs that could be leveraged and used as pivot to spread other infrastructure around. The objective during this exercise should be not to lose the identity and heritage of the city. It was suggested that in Jaipur, old wall city could be developed as model town for next phase of mobility planning for the city.
- **Stakeholder convergence and role of regulators:** The transport sector is a multi-stakeholder subject and often, the co-ordination between various governments departments have been missing. It has been observed that certain vehicles modes such as e-rickshaws have been plying unregulated leading to road congestion and parking issues in Jaipur. Due to unclear demarcation of roles of various departments, city level transport infrastructure has been mostly under looked. It was suggested that perhaps, a SPV between various departments could be a possible solution for faster implementation of transport initiatives in a city.
- **Convergence with goals of productivity and well-being:** The past approach has been of planning of transport infrastructure without any linkage with productivity and well-being needs of citizens. However, it has been realised that the consumer show preference to different transport modes based on its impact on their productivity and well-being, therefore future planning needs to be undertaken with the objective to achieve overarching goals of productivity and well-being.
- **Identifying national level policy change-makers:** Given the challenges associated with implementation of transport policies in the states, it was suggested that policy-

influencers across various parts of India should be recognised and leveraged to make current initiative impactful.

- **Generating government-buy in:** Generating government buy-in will require persistent effort and a multi-stakeholder approach. State-level policy-influencers need to be recognised who will be functioning as a seed community to impact the policymaking and implementation of city level plans.

Session on Sharing the Experience of City Level E-Mobility Projects

Three presentations were made during this session sharing experiences of Electric Vehicle (EV) initiatives in various cities of India. Ola Mobility Institute shared its learning from implementation of EV project in Nagpur, whereas WRI India team presented its Bengaluru experience. Mahindra and Mahindra shared its learnings from EV initiatives in various parts of India. Significant points highlighted during the discussion are provided below:

- **Cost sensitivity of EV adoption:** EV operators consider the total cost of ownership (TCO) profile of an EV, compared to ICE vehicles to take purchase decisions. As per the Nagpur experience, the tipping point for EVs in India is supposed to be reached by 2026. A TCO analysis for Jaipur is also required keeping in mind various factors such as electricity tariff, cost of maintenance and subsidies provided by the government. For the current stage, financial support is required for EVs to make their TCO comparable with ICE vehicles, so that they reach a critical stage of adoption.
- **Sequential adoption:** The TCO analysis suggests that the cost differential with respect to an ICE vehicle increases from 2-W to 4-W with 3-W having intermediate cost differential. Therefore, a sequential adoption of EVs is suggested starting from 2W to 3W and 4W at a later stage. The investment in various vehicle modes also need to planned accordingly.
- **Shared mobility as a support mechanism:** Due to benefits of reducing the upfront cost and payback time, EV should be promoted with shared mobility.
- **Incentives on usage:** To enshrine early adoption, the usage of electric vehicle should be incentivised rather than vehicle purchase. Additionally, incentives should also be targeted towards batteries.
- **Leveraging existing green corridors:** To improve visibility, existing tourism pockets such as vehicles deployed for eco-tourism in safaris in wildlife/national parks and for city tours could be replaced with full-electric fleet. This remains a low hanging fruit given that it has been experimented in various places in India with success, such as inside Tajmahal buffer zone.
- **Smart sustainable mobility solution:** Technology could be leveraged to develop a smart mobility network with electric vehicles. Technologies, such as geo-fencing will help in ensuring regulatory compliance with such vehicles.

Session on Technical & Infrastructure Challenges Related to EV Adoption

- **Conscious approach while EV adoption:** In the current context of mobility revolution, EVs are considered to be elixir for issues surrounding the transition to sustainable mobility infrastructure. The issues related to mobility within cities, however, primarily relates to planning and investment of resources. EVs should be only seen as one of technologies to build higher sustainability in the sector, however the issues with transport sector in India is deep-routed with inadequacies of past policies and regulations in developing efficient network, that should be addressed with long-term systematic interventions.
- **Right-sizing of fleets to improve economics:** Given the higher upfront cost, electric vehicles will make economic sense, if they are deployed in right capacity and battery size. Given the current Opex model proposed by the Central Government, it will improve economics of operation by enhancing efficiency and performance of vehicles. This requires route and demand mapping of urban areas for deployment. For example, for peri-urban areas, small size buses with diurnal availability can make sense.
- **Charging infrastructure:** Wide ranging debate emanated on necessary charging infrastructure to support EV adoption. It was suggested that for 2-W, 3-W and 4-W, slow charging infrastructure would be adequate to generate user confidence, however a counterargument was that user confidence will be hampered if fast charging infrastructure is not ensured. However, it was commonly pointed out that, for 3-W segment, it would be wise to integrate slow charging infrastructure with parking space that could be utilised while these vehicles are parked. Innovative suggestions also emanated, such as, using business spaces for charging, or using solar roof-top integrated with storage at household level to charge vehicles.
- **Grid readiness:** It was suggested that even with very high share of electric vehicles in overall vehicular population, their share of electricity demand would be very low compared to overall electricity demand in the country. For example, with government meeting its 30 percent target of EV adoption by 2030, it will be only 10 percent (100 BU) of current electricity demand at 1000 BU. Hence, the challenge do not lie in terms of bulk of demand due to EVs but the drastic rise in demand due to EV charging during night time. Enough grid management protocols are required in this respect.
- **Role with sustainability initiatives:** Given the share of coal based power and its share in generation in India, EVs will have limited role in supporting climate change mitigation efforts compared to their obvious benefits related to ambient air pollution. Therefore, for adoption of EVs, co-benefits framework is required that should be in-built with penalties for unwanted externalities.

- **Innovation in tariff structure:** The onset of EVs has made innovation in tariff structure more so important. Enough incentive signals and flexible tariff structures are required to enhance adoption of EVs in India. Future programmes based on smart meters will help in assisting development of charging infrastructure at household levels. In addition, features, such as Time of Day (ToD) and Time of Use (ToU) tariff should be built within the electricity framework. Vehicles to grid (V2G) support for EVs also require innovations in tariff design.
- **Battery design and inter-operability:** It was suggested that inter-operability should be a key feature of future EVs in India given that there is wide scope of using battery swapping as efficient business model. However, the same could not be possible in case of electric bus due to excessive weight and dimensions of the batteries. Given the technical complexity involved with battery installation and its impact on vehicles performance, battery swapping would not be a good idea in case of electric buses.
- **Range anxiety:** It was suggested that even with current features, vehicles will be able to provide enough range for both private and commercial usages in India however; there has been an anxiety within consumers due to low awareness and misinformation.
- **Financing:** Financing remains a critical challenge for 3-W adoption in India as drivers in past have used informal mechanism for financing of their vehicles. Enough provision needs to be arranged including availability of financing from formal institutions and appropriate bonds for drivers, charging infrastructure providers and manufactures etc.
- **Incentives:** Though various incentives have been provided for early adoption of EVs, they have made limited impact. Benefits such as tax subsidy for manufacturing will probably have higher impact on EV adoption in future. Various non-fiscal incentives such as dedicated lanes for EVs, dedicated parking spaces etc. can also go a long way in improving visibility of EVs on road.
- **Regulatory push:** The EV adoption in China was purported by enough apposite regulatory provisions, for example, EVs were provided green plates and priority during vehicle registration. Similar mechanisms could also be thought for India, for example, people having more than one car to replace the older of the two with electric vehicle.
- **Readiness framework:** The adoption of EVs requires devising a readiness framework that includes resource planning and readiness of various stakeholders to make such adoption possible.
- **Capacity building:** The experience of Mahindra-EESL rollout of electric vehicles in India suggests that the performance of commercial electric vehicles fleet is significantly impacted by driver's skills and behaviour with the vehicle. Therefore, EV adoption requires significant training of drivers in state road corporations and other fleet owners.
- **Defining clear goals and objectives:** The EV adoption require clear visualisation of objective functions and goals from such adoption. Government stakeholders need to be

onboard to take ownership of these goals. In this context, the pressure surrounding the adoption and sensitivity of these players needs to be identified.

Way Forward

The project team plans to formulate a systems map identifying direct and indirect goals for low carbon mobility framework and associated stakeholders, as enumerated during the roundtable discussion. A wider stakeholder consultation would be undertaken based on these inputs. Such exercise will feed into the framework for 'low carbon mobility planning in Jaipur' that is intended to be developed during the project duration.

Participants

Sr. No.	Name	Organisation
1	Abhishek Kumar	CUTS International
2	Aditya Ramji	Mahindra and Mahindra Ltd.
3	Ajay Kumar Sharma	
4	Akanksha Sharma	Bask Research Foundation
5	Akshay Sharma	CUTS International
6	Alok Thakur	Mahindra Lifespaces (MLDL)
7	Anmol Soni	Bask Research Foundation
8	Anshuman Gothwal	Bask Research Foundation
9	Anurag Mishra	CUTS International
10	Arnab Ganguly	CUTS International
11	Arun Machya	Jaipur Traffic Police
12	Arun Verma	Malaviya National Institute of Technology
13	Bhaskar Pant	Policy Monks
14	Bipul Chatterjee	CUTS International
15	Chetna Nagpal	Shakti Sustainable Energy Foundation
16	Harsha Meenawat	World Resources Institute
17	Harshita Paliwal	CUTS International

18	Keshav Shrivastava	Jaipur Municipal Corporation
19	Kuldeep Singh	Jaipur Mahanagar Tepaeya Wahanchalak Union
20	M.L. Khatri	Rajasthan State Road Transport Corporation
21	Neha Kumar	Climate Bonds
22	Nikhil Narang	Bask Research Foundation
23	Parveen Kumar	World Resources Institute
24	R. K. Sharma	Jaipur Vidyut Vitran Nigam Limited
25	R. K. Sharma	Doordarshan
26	Rahul Tongia	Brookings India
27	Ram Bharos Prasad	
28	Reji Kumar Pillai	India Smart Grid Forum
29	Rohit Bhakar	Malaviya National Institute of Technology
30	Sahil Jain	Startup Oasis
31	Sandeep Dahiya	Leading Purpose Campaigns
32	Sarthak Shukla	CUTS International
33	Shilpi Samantray	Ola Mobility Institute
34	Sidharth Narayan	CUTS International
35	Simran Grover	Bask Research Foundation
36	Sunil Kurian	Mahindra World Cities
37	Suresh Pareek	AV Production
38	Tirthankar Mandal	World Resources Institute
39	Udai S Mehta	CUTS International
40	Vishal Narula	Bask Research Foundation
41	Vivek M Chandran	Shakti Sustainable Energy Foundation
42	Vividh Badaya	Jaipur Municipal Corporation