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EV transition in India - The road ahead for commercial vehicles

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We're seeing a massive push globally to meet Paris climate agreement, hastening decarbonization efforts across sectors. India is following suit with a series of measures covering energy, carbon footprint, oil import, mobility, and manufacturing to meet its global commitments. The Government of India (GOI) is thus focusing on multilateral agenda for a cleaner environment, including strong encouragement to promoting the uptake of electric vehicles (EVs). To this end, GOI is also promoting clean energy inputs, like electricity from solar/wind/nuclear/hydel sources to replace coal-fired plants to really have a lower carbon footprint.

The intentions of the government are evident and laudable in steering the implementation of public mobility policy initiatives. However, a variety of challenges need to be addressed in securing the energy demands of the country while meeting the commitments for environment protection and carbon footprint reduction. It is necessary to have control measures for clean energy and provide impetus to non-fossil energy usage for the public and personal mobility. This will help reduce the dependence on crude oil, which currently majorly impacts on foreign exchange and our imports bill. Additionally, it is critical to give a fillip to the manufacturing sectors of the country to achieve the GDP growth objectives set forth.

The transition to a new, clean and intelligent mobility cannot take place without the development of competitive, low-carbon energy inputs for the transportation sector. EV battery production, for example, is very power consuming and therefore carbon intensive. This throws up complexities in setting the policy framework to support public mobility and transportation of goods and people across the geographies in the country, powered by non-fossil fuels - and potentially EVs. GOI's new reform measures are laudable with stringent CAFE 2 norms by 2022 and accelerated electric mobility.

For the commercial vehicle transportation segment, these developments seem to be interesting for the research fraternity to draw their theories and debates. Easily said, but the challenges are many with our complex, multi modal, conventional, commercial transportation vehicles using diesel engine technology. This article focuses on the commercial vehicle industry, its concern areas, and the steps required for a smooth transition.

Manufacturing Perspective

There is wider optimism in the government that all commercial vehicles and public buses in India can switch to alternate fuel options and electric mobility in the next couple of years. In that perspective, GOI's intentions are good and these futuristic vehicle technology implementation needs sensible direction among the stakeholders. However, OEMs find the investment necessary for the new policy framework on electric mobility transition to be herculean strain to cover innovations, technology, manufacturing set up, distribution, and operational support services to the consumers.

Alternative propulsion, like electric powertrain systems, are crucial for commercial vehicles to meet the emission control objectives. This needs proper policy directions and supportive regulations to give the industry enough time frame to plan the switch to an emerging technology for the wider spectrum of population and diverse stakeholders. However, Indian local industries are not yet engaged into impactful innovative solutions for EV systems, components design and development, manufacturing capacity and efficiency for competitive business objectives. EV charging points, service support, local manufacturing of parts, systems and components, capacity creation for manufacturing, and distribution setup are still primitive. The industry needs funding to support EV production line, conversion of systems, and downside channels of service and maintenance support.

Against this background, 'Make in India' must play a critical role here. A local manufacturing ecosystem for EV components is needed to realize these targets. For example, there is an urgent need to attract battery manufacturers to set up shop in India, given that a greenfield plant takes ~5 years to setup and scale up even in developed countries. Without local production and scale, EV cost parity will not be achieved. In concert, efforts are necessary upstream on procuring critical materials like Lithium, Nickel, and Cobalt. For this, it is key to work with countries like Indonesia, Malaysia, and Australia to secure

material supply, while developing local processing to make components like cathodes, anodes, separators. This will help reduce costs by moving materials, instead of the much more expensive logistics for shipping battery cells/packs, thereby ensuring a lower cost base. Domestic development and manufacturing of associated components, such as e-motors, e-axles, battery management systems, connectors, and wiring are also necessary. In all these sectors, "Make in India" is essential to mitigate imports and a dependence on countries like China, Korea, and Japan in electric mobility solutions. This is especially critical, given the already widening trade imbalance in China's favor, and avoiding the local market being flooded with cheap commoditized imports.

Deployment and scaling up of EVs greatly depends on the quality and access of charging infrastructure, and facilitation of a supply chain for charging batteries. The need of the hour is charging infrastructure development supporting EV operations. An ecosystem approach to charging is necessary. On one hand, this includes local production of chargers, wall boxes, and high-power charging stations. On the other hand, it is critical to develop business models around the charging infrastructure to ensure economic viability. For example, parked and plugged-in EVs can help grid load balancing, while charging peaks (eg. after office hours at home) need to be balanced to prevent blackouts. Building on these aspects, there is a need to deploy chargers at residences (house owners must allow tenants), on-street, in shopping malls, and offices. This warrants huge investments and efforts to alleviate the charging concerns of potential EV buyers.

Encouraging Uptake

From an implementation perspective, there is a need for a definitive action plans and proactive measures from the government to meet the EV implementation objectives. The higher acquisition costs of EVs will be a huge barrier in the mid-term, be it for individual customers, or for State Transport Corporations. However, electrification of commercial public buses with defined routes in cities, urban delivery vehicles, gated community applications (eg. mines, construction sites, airports, ports, intra-factory logistics) could be easier to implement in a use case specific manner given the surmountable barriers. Even a switch to hybrid/CNG buses or catenary-driven vehicles within cities is feasible and a much more realistic low carbon solution.

Commercial vehicle industry is currently facing the challenges in transition from BS4 to BS6 technology. The switch to BS6 is a big leap mandated for emission control and a cleaner environment, as is the CAFE 2 standard. The higher acquisition costs for BS6 vehicles meanwhile pose barriers for the consumers for switching to lower emission vehicles. With uncertainty over the demand and affordability of BS6, the industry is already perplexed to meet the vehicle roll out by April 2020. To improve affordability, sales volumes will offset the cost impact and ease implementation. GOI should expedite the policy to scrap the aging fleet of BS1 to BS3 commercial vehicles and take the lead in switching to BS6, focusing on the vehicles held in Government departments, public sector undertakings, airports, and seaports, infusing the funding necessity with budgetary support. Public transport corporations under the state governments, holding majorly old BS2 and BS3 buses, need subsidy and funding support for new vehicle procurements. Taking such initiatives will accelerate the mass production of BS6 technology vehicles and give the Indian industry the much-needed sales volumes at this juncture, enabling key investments in BS6 roll out.

On a practical perspective, for metros and city buses itself, roughly 100,000 new buses are required for public transportation purposes. GOI should focus efforts in this direction to select metropolitan cities as pilots for implementation. These measures will propel the automobile industry with demands for commercial buses, over the next few years, thus creating an enabling atmosphere of investments and infrastructure developments. This will create significant potential for commercial vehicles with newer technology. As things stand, this could take next few years for this transition in metros, while suburban, intercity, rural areas are still farther off.

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