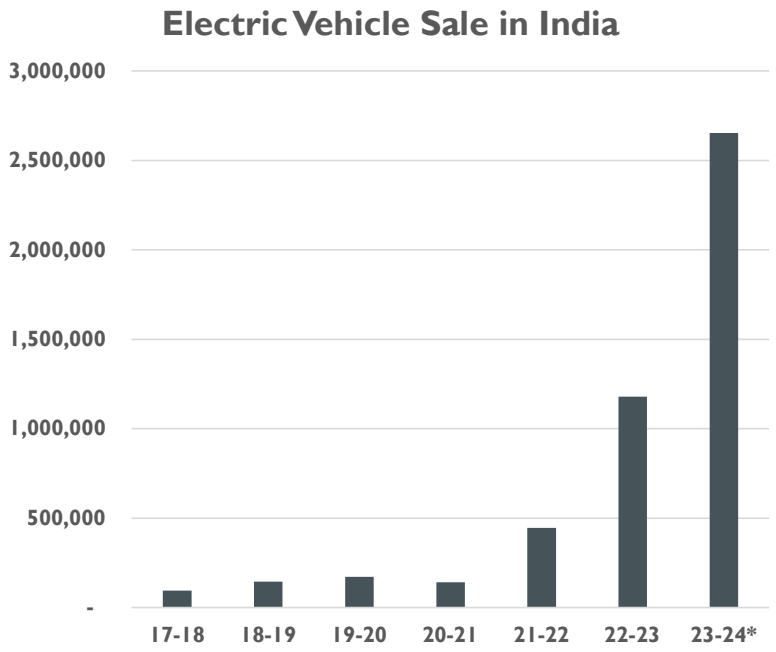
ELECTRIC VEHICLE INDUSTRY

MICROECONOMICS SECTORAL ANALYSIS

OVERVIEW

- EVs are available as commercial vehicles, passenger vehicles, 3 wheelers and 2 wheelers. EVs accounted for 1.8% of new vehicle sales in 2021, and more than 4% in 2022. Shares vary from more than 50% among three-wheelers, to 4% for two-wheelers and less than 1% for cars[1]
- Domestic electric vehicles (EV) market is expected to grow at a compound annual growth rate (CAGR) of 49per cent between 2022 and 2030 and is expected to hit one crore units annual sales by 2030. [2]
- EV Car segment is dominated by Tata Motors at 81% market share. MG motors, BYD and Hyundai have 10%, 2.3% and 1.7% market share respectively. Electric 2w segment is more diversified with respective market share of 21% by Ola, 13% by Okinawa and 12% by Hero.[3]
- Though there is a domination by select players, the overall EV market in India is Oligopolistic in nature with few suppliers and large number of buyers.



Financial years, until Dec 23 for 23 - 24

MARKET FAILURES IN THE SECTOR

- Electric vehicles produce no air pollution, and minimal noise pollution as compared to Internal Combustion Engine (ICE) Vehicles. The reduction in pollution is a positive externality on the society as a whole.
- The degree of positive externality however depends on the source of marginal power generation. The benefits of reduction in pollution is based on the degree of adaptation of renewable sources of energy viz a viz fossil fuels.
- Market power is currently concentrated with certain players who have entered and invested early in the market. But this is not a concern as more players continue to enter the sector and there are no barriers to entry.
- There are no market failure associated with asymmetric information and public goods in the EV sector as compared with ICE vehicle sector.

GOVERNMENT INTERVENTIONS – RATIONALE AND EVALUATION

SUPPLY SIDE

- National Electric Mobility Mission Plan (NEMMP) 2020
- Faster Adoption and Manufacturing of Electric Vehicles (Phase I – 2014 - 19, Phase II – 2019 – 24)
- Production Linked Incentive Schemes – (Advanced Chemistry Cell and Auto and Auto components)
- Zero custom duty on capital goods/machinery for manufacture of lithium-ion cells for use in batteries of electrically operated vehicles (EVs)

DEMAND SIDE

- Lower GST of 5% for electric vehicles
- Battery-operated vehicles given green license plates
- Transport vehicle of the category e-cart and e-rickshaw exempt from requirement of permit
- Battery Operated Vehicles exempt from payment of fees for the purpose of issue or renewal of registration certificate and assignment of new registration mark
- All India Tourist Permit for battery operated vehicles without payment of permit fee
- 19 States/Union Territories are providing exemptions / rebate on road tax
- Laws to provide EV charging infrastructure in vehicles

GOVERNMENT INTERVENTIONS – RATIONALE AND EVALUATION

To encourage manufactures to invest and produce more of electric vehicles given the nascent stage of the market and limited demand, the government has undertaken supply side interventions encouraging companies to invest in this sector.

The interventions have led to increase in investments; however they have not met their intended quantity targets.

EVs have higher upfront cost compared to ICE vehicles. Demand side interventions from government aim to bridge this gap by providing lower tax rates and other charges.

The adaptation of EV has been increasing. However, its share in overall automobile sale continues to be minimal.

Sustained long term efforts are required to achieve the intended targets.

UNINTENDED CONSEQUENCES OF INTERVENTIONS.

- Electric vehicles can cause negative externalities like congestion.
  - If government measures lead to increased use of private transport as against public transport or purchase of EVs in addition to ICE vehicles externalities like traffic congestions can increase.
- Impact on state government finances.
  - Though not an externality, this is a indirect consequence that has wider social impact.
  - The shift from petroleum products to electricity will have consequences for public finances, especially at the state level, where the taxes on petroleum products contribute 3% to 12% of net revenue receipts. By 2030, the shift from ICEs to EVs could lead to USD 5-8 billion in foregone tax revenue from avoided gasoline and diesel consumption at the state level. Additional tax revenue from EVs' consumption of electricity compensates only half of the forgone revenue. [1]

SUGGESTIONS AND WAY FORWARD

- India does not have an overarching decarbonisation strategy for its transport sector; India's last national-level transport plan dates to 2010. We need to create a unified national strategy to ensure uniformity in policy objective across various sectors and various levels of the government.
- Transport and electricity are state subjects and India could benefit by exchanging best practices across states. A national model code and a nodal agency can help in sharing information.
- A robust electric charging station is necessary to expand EV adaptation. Government has taken measures to promote large charging networks. Along with this government must also focus on encouraging private charging facilities at residential and commercial buildings. National model building code providing for charging infrastructure requirement is a step in this direction.

SUGGESTIONS AND WAY FORWARD

Cost of acquisition of EVs is higher than that of ICE models. Government can adopt policy instruments that can address this without burdening state finances.

- Establishment of zero-emission zones
  - Government can set up areas where only EVs, pedestrians and cyclists are granted access. Currently this is followed in areas near monuments, Such can be implemented in city centres etc.
- Government can also provide certain privileges for EV owners,
  - such as access to special parking areas (including preferential parking rates), access to preferential lanes (such as bus or taxi lanes)

The positive externality of electric vehicles exist when their usage net climate positive and it is possible only when the marginal source of electricity generation is renewable resources. So government must establish clear, time specified action steps towards reducing dependence on fossil fuels.

[1] "Transitioning India's Road Transport Sector." Paris: International Energy Agency, 2023. https://www.iea.org/reports/transitioning-indias-road-transport-sector.

2. "Economic Survey 2022 23." Department of Economic Affairs, Ministry of Finance, Government of India, January 2023.
3. Autocar Professional. "Tata Motors Charges towards Record Electric Car and SUV Sales in FY2024." Accessed January 18, 2024. https://www.autocarpro.in/analysis-sales/tata-motors-races-towards-record-electric-car-and-suv-sales-in-fy2024-116678.

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