Electric Vehicles - India’s Future

This editorial is based on **“Driving into the Future”** which was published in the Indian Express on 01/12/2021. It talks about the need of shifting towards electric vehicles for the sake of environment and the key issues India faces in doing the same.

India is the fifth largest car market in the world and has the potential to become one of the top three in the near future — with about 40 crore customers in need of mobility solutions by the year 2030.

However, keeping in mind the goals set under the **Paris agreement**, the increasing number of automobile customers shall not imply an increase in the consumption of conventional fuels.

To ensure a positive growth rate towards achieving **India’s Net Zero Emissions by 2070**, a transportation revolution is required in India which will lead to better “walkability”, public transportation; railways, roads and better cars. Many of these “better cars” are likely to be electric.

Lately, there is a growing consensus among automotive professionals and the public alike that the future of vehicles is electric. However, in this regard, India still has a lot to cover in terms of **battery manufacturing**, establishing charging infrastructure etc.

Electric Vehicles and India

- **Origin and Increasing Scope:** The push for **Electric Vehicles (EVs)** is driven by the global climate agenda established under the Paris Agreement to **reduce carbon emissions** in order to limit global warming.
    - The global electric mobility revolution is today defined by the rapid growth in electric vehicle (EV) uptake.
    - About two in every hundred cars sold today are powered by electricity with EV **sales for the year 2020 reaching 2.1 million.**
        - The global EV fleet totalled 8.0 million in 2020 with **EVs accounting for 1% of the global vehicle stock** and 2.6% of global car sales.
    - Falling battery costs and rising performance efficiencies are also fueling the demand for EVs globally.
- **Need for Electric Vehicles:** India is in need of a transportation revolution.
    - The current trajectory of adding ever more **cars running on expensive imported fuel** and cluttering up already overcrowded cities suffering from infrastructure bottlenecks and **intense air pollution** is unfeasible.
    - The transition to electric mobility is a **promising global strategy for decarbonising the transport sector.**
- **India’s Support to EVs:** India is among a handful of countries that **support the global EV30@30 campaign**, which aims for at least 30% new vehicle sales to be electric by 2030.
    - India’s **advocacy of five elements for climate change — “Panchamrit”** — at the **COP26 in Glasgow** is a commitment to the same.
        - Various ideas were espoused by India at the Glasgow summit, such as, **renewable energy catering to 50%** of India’s energy needs, **reducing carbon emission by**

1 billion tonnes by 2030 and **achieving net zero by 2070.**

- The government of India has taken various measures to develop and promote the EV ecosystem in the country such as:
  - The remodeled **Faster Adoption and Manufacturing of Electric Vehicles (FAME II)** scheme
  - **Production-Linked Incentive (PLI) scheme for Advanced Chemistry Cell (ACC)** for the supplier side
  - The recently launched **PLI scheme for Auto and Automotive Components** for manufacturers of electric vehicles.

Associated Challenges

- **Battery Manufacturing:** It is estimated that by 2020-30 India's cumulative demand for batteries would be approximately 900-1100 GWh.
  - However, there is concern over the **absence of a manufacturing base for batteries in India,** leading to sole reliance on imports to meet rising demand.
  - As per government data, **India imported more than $1 billion worth of lithium-ion cells in 2021**, even though there is negligible penetration of electric vehicles and battery storage in the power sector.
- **Consumer Related Issues:** In 2018, India was reported to have only 650 charging stations, which is quite less than the neighboring counterparts who already had over 5 million charging stations.
  - **Lack of charging stations** makes it unsuitable for the consumers in covering long range.
  - Moreover, it **takes up to 12 hours for a full charge of a vehicle at the owner's home** using a private light-duty slow charger.
  - Also, the **cost of a basic electric car is much higher** than the average price of a car running on conventional fuel.
- **Policy Challenges**: EV production is a **capital intensive sector** requiring long term planning to break even and profit realization, **uncertainty in government policies related to EV production discourages investment** in the industry.
- **Lack of Technology and Skilled Labour:** India is **technologically deficient** in the production of electronics that form the backbone of the EV industry, such as batteries, semiconductors, controllers, etc.
  - EVs have higher servicing costs which require higher levels of skills. **India lacks dedicated training courses for such skill development.**
- **Unavailability of Materials for Domestic Production:** Battery is the single most important component of EVs.
  - India **does not have any known reserves of lithium and cobalt** which are required for battery production.
  - **Dependence on other countries** for the import of lithium-ion batteries is an **obstacle in becoming completely self-reliant** in the battery manufacturing sector.

Way Forward

- **Electric Vehicle as Way Forward:** EVs will **contribute to improving the overall energy security situation** as the country imports over 80% of its overall crude oil requirements, amounting to approximately $100 billion.
  - The push for EVs is also expected to play an **important role in the local EV manufacturing industry** for job creation.
  - Additionally, through several grid support services, EVs are expected to strengthen the grid and help **accommodate higher renewable energy penetration** while maintaining secure and stable grid operation.
- **Opportunities for Battery Manufacturing and Storage:** With recent technology disruptions, battery storage has **great opportunity in promoting sustainable development** in the country, considering government initiatives to promote e-mobility and **renewable power (450 GW energy capacity target by 2030)**.
  - With rising levels of per capita income, there has been a **tremendous demand for consumer electronics** in the areas of mobile phones, UPS, laptops, power banks etc. that require advanced chemistry batteries.
  - This makes **manufacturing of advanced batteries one of the largest economic**

opportunities of the 21st century.

- **EV Charging Infrastructure**: An EV charging infrastructure that draws power from local electricity supply can be **set up at private residences, public utilities** such as petrol and CNG pumps, and **in the parking facilities of commercial establishments** like malls, railway stations, and bus depots.
    - The Ministry of Power has prescribed **at least one charging station to be present in a grid of 3 km** and at every 25 kms on both sides of the highways.
    - The Ministry of Housing and Urban Affairs under the **Model Building Bye-laws, 2016 (MBBL)** has mandated **setting aside 20% of the parking space for EV charging facilities** in residential and commercial buildings.
        - Giving effect to the MBBL will also require the **state governments to introduce necessary amendments** to their respective building bye-laws.
- **Increasing R&D in EVs:** The Indian market needs **encouragement for indigenous technologies** that are suited for India from both strategic and economic standpoint.
    - Since investment in **local research and development is necessary to bring prices down,** it makes sense to leverage local universities and existing industrial hubs.
    - India should **work with countries like the UK** and synergise EV development.

Drishti Mains Question

Discuss how Electric Vehicles (EVs) offer a promising future to India's transport sector besides complying with its target of net zero emissions by 2070.