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Electric Vehicles Have the Potential to Fuel India's Growth

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It does not take the brightest minds in the world to conclude that the mention of 14 cities of India in the World Health Organisation's (WHO) report featuring top 20 most polluted cities in the world indicates that it is high time for India to pave way for cleaner alternative technologies like Electric Vehicles, as transportation sector continues to top the chart of contributors which escalate pollution levels.

Statistics Imply Transportation Sector is the Prime Culprit

- Union Ministry of Environment, forest and climate change reckons that the magnitude of CO₂ emissions generated by the transportation sector till 2010 stood at 188 Metric Tonnes (MT), 87% of which was contributed by the road transport alone.
- Petroleum Planning and Analysis (PPA) cell estimated in 2014, that the transportation sector commanded a staggering 70% and 100% of diesel and petrol demands respectively.
- It can also be deduced from the PPA's estimates that transportation sector is the largest consumer of oil, for 40% and 13% of oil consumption can be attributed to diesel and petrol respectively, which in turn is a heavy strain for the Indian economy since 80% of oil demand in India is met through imports.

Electric Vehicles can Salvage the Solution

- Transition to Electric Vehicles from traditional oil fueled vehicles will kill two birds with one stone- 1. Resolve the problems of increasing oil imports 2. Minimize air pollution levels.

- Electric Vehicles have the following advantages over conventional gasoline powered vehicles:
 - Energy Efficiency exhibited by EVs is 3 to 3.5 times more than that of traditional internal combustion engine-based vehicles.
 - The emission profile of EVs has an edge over traditional automobiles as they have negligible emission content, thus EVs help bring down the degree of pollution.

Note: Energy efficiency is the percentage of the total supplied energy that is utilised for useful work and is not radiated as waste heat.

Measures Taken in the Direction

Efforts at International Level

- Financial and Non-Financial incentives offered for purchase of EVs: Various countries are using financial and non-financial incentives like- upfront reductions in prices of EVs, tax exemptions, subsidies, emission testing exemptions, availability of public chargers, as stimulants to encourage people for EV adoption.
- Campaign: This campaign has been initiated globally with an aim of achieving 30% sales share of EVs by 2030. Netherlands, Norway, Ireland are the global forerunners in sales of EVs.

Steps Taken by India

To build a sustainable EV ecosystem initiatives like- National Electric Mobility Mission Plan(NEMMP) and Faster Adoption and Manufacturing of (Hybrid &) Electric vehicles in India(FAME India) have been launched by India.

NEMMP: It was launched in 2013 with an aim to achieve national fuel security by promoting hybrid and electric vehicles in the country. There is an ambitious target to achieve 6-7 million sales of hybrid and electric vehicles year on year from 2020 onwards.

FAME: FAME India Scheme [Faster Adoption and Manufacturing of (Hybrid &) Electric Vehicles in India] was launched in 2015 with the objective to support hybrid/electric vehicles market development and manufacturing ecosystem. The scheme has 4 focus areas i.e. Technology Development, Demand Creation, Pilot Projects and Charging Infrastructure.

- Several states' transport utilities have procured over 500 electric buses in a bid to incorporate EVs in the system.

- Organisation like Bureau of Indian Standards(BIS), Deptt. of Heavy Industry, Automotive Research Association of India are devising design and manufacturing standards of EVs ,Electric Vehicle Supply Equipment(EVSEs) & charging infrastructure to smoothen the advent of in-house production of EVs.

EVSE: Electric vehicles, including plug-in hybrid electric vehicles (PHEVs), receive energy from the electrical grid through Electric Vehicle Supply Equipment (EVSE), more commonly known as EV chargers.

Recently Centre for Study of Science, Technology and Power Sectors (CSTEP) arrived at a figure of 164 feasible e-bus routes in Bengaluru, by studying & analysing factors like constraints of location, size of depots, bus schedules, incentives, policy schemes, etc.

Glitches in the Advent of Electric Vehicles in India

- The huge EV energy requirements cannot be satisfied with the current capacity of electricity distribution grid assets.
- Vital materials for battery manufacturing such as Lithium, Nickel, Cobalt and battery grade graphite are not available adequately in India and thus are required to be imported.
- India is technologically deficient in the production of electronics that form the backbone of EV industry, such as batteries, semiconductors, controllers, etc.
- Rare earth materials that are required to make magnets for EV motors are unavailable in India.
- We don't possess the necessary technology and knowledge to manufacture Lithium batteries yet.

Way Forward and Potential Solutions

- Establishing the right coordination among three pillars of EV industry i.e.,urban planning, transportation and power sectors will assist in systematic adoption of EVs.
- In-house manufacturing will be instrumental to build technological expertise and will provide job opportunities to youngsters.
- Embracing a policy driven approach to promote in house manufacturing of vehicles, batteries & EVSEs as well as purchase of EVs will go a long way in setting up a sustainable EV ecosystem. For instance Karnataka came up with its EV policy in 2017, which included fiscal incentives like investment promotion subsidies & reimbursement of land conversion fee.

- Signing of Memorandum of Understanding (MoU) with countries rich in materials like Lithium, rare earth materials, etc will facilitate continuous supply of raw material for manufacturing. India is already a member of International Solar Alliance (ISA), whose other member countries like Australia, Chile, Brazil, Ghana, etc are rich in Lithium, reserves. Also India can partner up with Congo, Madagascar & Cuba for cobalt and Burundi, Brazil, & Australia for Nickel supply.
- Recently ISRO held a conference with heads of 137 companies to offer its in-house Lithium battery technology for mass production.
- Central Electrochemical Research Institute (Karaikudi, Tamil Nadu) and RAASI Solar Power Ltd. have collaborated to begin in-house manufacturing of Lithium ion battery, which is a great beginning.

Seeing the widespread benefits of EVs in various fronts, India needs to pull up its socks and begin advancing in the direction of EV adoption and let EVs propel the engines of growth.