



Electric Vehicles (EVs)

Why in News

- Recently Union Cabinet approved setting up of a '**National Mission on Transformative Mobility and Battery Storage**' to promote clean, connected, shared, sustainable and holistic mobility initiatives.

Electric Vehicles (EVs)

- An electric vehicle, uses one or more electric motors or traction motors for propulsion.
- An electric vehicle may be powered through self-contained battery, solar panels or an electric generator to convert fuel to electricity.

Need for EVs in India

Climate change

- Problem of rapid global temperature increase has created the need for a reduction in the use of fossil fuels and the associated emissions.
- India has committed to cutting its GHG emissions intensity by 33% to 35% percent below 2005 levels by 2030.

Rapid urbanization

- Economic development leads to rapid urbanization in emerging nations as rural populations move non-agricultural sectors in cities creating environmental problems.
- According to a recent study by WHO, India is home to 14 out of 20 most polluted cities in the world. EVs will help in tackling this problem by reducing local concentrations of pollutants in cities.

Energy security

- India imports oil to cover over 80 percent of its transport fuel.
- EVs can reduce dependence on imported crude oil promoting India's energy security.

Innovation

- It will encourage cutting edge technology in India through adoption, adaptation, and research and development.
- EVs manufacturing capacity will promote global scale and competitiveness.

Employment

- Promotion of EVs will facilitate employment growth in a sun-rise sector.

Clean and Low carbon Energy

- The shift towards renewable energy sources has led to cost reduction from better electricity

generating technologies. This has introduced the possibility of clean, low-carbon and inexpensive grids.

Cutting edge Battery Technology

- Advances in battery technology have led to higher energy densities, faster charging and reduced battery degradation from charging. Combined with the development of motors with higher rating and reliability, these improvements in battery chemistry have reduced costs and improved the performance and efficiency of electric vehicles.

Challenges for EV Industry in India

- **Lack of a stable policy for EV production:** EV production is 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.
- **Technological challenges:** India is technologically deficient in the production of electronics that form the backbone of EV industry, such as batteries, semiconductors, controllers, etc.
- **Lack of associated infrastructural support:** The lack of clarity over AC versus DC charging stations, grid stability and range anxiety (fear that battery will soon run out of power) are other factors that hinder the growth of EV industry.
- **Lack of availability of materials for domestic production:** Battery is single most important component of EVs. India does not have any known reserve of lithium and cobalt which are required for battery production. India is dependent on countries like Japan and China for the import of lithium-ion batteries.
- **Lack of skilled workers:** EVs have higher servicing costs and higher levels of skills is needed for servicing. India lacks dedicated training courses for such skill development.

Government Initiatives

- Government has set a target of electric vehicles making up 30 % of new sales of cars and two-wheelers by 2030 from less than 1% today.
- 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.**
- Organization like Bureau of Indian Standards (BIS), Department 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.

FAME II

- The Phase-II of FAME seeks to give a push to EVs in public transport and seeks to encourage adoption of EVs by way of **market creation** and **demand aggregation**.
- It envisages the **holistic growth of EV industry**, including providing for charging infrastructure, research and development of EV technologies and push towards greater indigenization.
- **Establishment of Charging stations** are also proposed on major highways connecting major city clusters on both sides of the road at an interval of about 25 km each.
- The scheme with total outlay of Rs 10,000 Crores over the period of three years will be

implemented with effect from 1st April 2019.

- FAME 2 will offer incentives to manufacturers, who invest in developing electric vehicles and its components, including lithium-ion batteries and electric motors.
- The centre has asked states to frame their EV policy and provide additional fiscal and non-fiscal incentives to manufacturers and buyers.

National Mission on Transformative Mobility and Battery Storage

- To promote clean, connected, shared, sustainable and holistic mobility initiatives.
- The Mission will drive mobility solutions that will bring in significant benefits to the industry, economy and country.

Phased Manufacturing Programme

- Valid for 5 years till 2024 to support setting up of a few large-scale, export-competitive integrated batteries and cell-manufacturing Giga plants in India.
- Creation of a PMP valid for 5 years till 2024 to **localize production** across the entire Electric Vehicles value chain.

Way Forward

- Education curriculum and skill development plans should be upgraded to match the requirements of the sectors.
- Stabilizing policy environment by working on tax incentives, non-fiscal incentives can address the uncertainty of demand helping the industry to achieve economies of scale.
- EVs are rapidly growing sunrise sector which can give push to 'Make in India'.
- Signing of Memorandum of Understanding (MoU) with countries rich in materials like Lithium, rare earth materials etc. to deal with lack of availability of these materials.
- 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.
- Affordable, accessible, inclusive and safe mobility solutions are primary strategic levers for rapid economic development and improving 'Ease of Living'.