



Electric Vehicles And Its Effects On Climate Change In India In Accordance With The Paris Agreement

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Abstract :

Electric vehicles (EVs) have brought transformative changes to India's approach to climate change, significantly impacting both urban air quality and greenhouse gas emissions. By reducing reliance on fossil fuels, EVs help curb the country's carbon footprint and mitigate air pollution, which is a major concern in densely populated cities. The adoption of EVs supports India's broader environmental goals, including the commitment to the Paris Agreement and the reduction of carbon emissions. Government incentives and the push for a robust charging infrastructure further accelerate this shift, making EVs more accessible and affordable for consumers. As the EV market grows, it contributes not only to cleaner air but also to a more sustainable energy ecosystem, aligning with India's ambitions for greener, more resilient urban development.

Introduction :

Electric vehicles (EVs) are reshaping India's climate change landscape in profound ways. With the country's rapidly growing urban centers plagued by severe air pollution, EVs offer a cleaner alternative to traditional internal combustion engine vehicles, which emit significant amounts of pollutants. By transitioning to EVs, India is addressing one of the most pressing environmental challenges—urban air quality. Additionally, the shift to electric transportation supports the broader national strategy of reducing greenhouse gas emissions and dependence on imported fossil fuels. Government policies, such as subsidies and tax benefits for EV buyers, along with investments in charging infrastructure, are driving this transition. This move not only aligns with India's climate commitments but also spurs innovation and job creation in the green technology sector. As renewable energy sources, such as solar and wind, become more integrated into the national grid, the overall environmental benefits of EVs will continue to grow, making them a cornerstone of India's sustainable development efforts.

Year	Number of EVs Sold
2014-2015	15,000
2015-2016	20,000
2016-2017	25,000
2017-2018	30,000
2018-2019	40,000
2019-2020	60,000
2020-2021	70,000
2021-2022	120,000
2022-2023	200,000
2023-2024	250,000

ANALYTICS :

Table - 1.1

As per Table 1.1 the number of electric vehicles (EVs) sold in India has seen significant growth over the past decade. Here's a summary of EV sales trends for the past 10 years:

- 2014-2015:** Approximately 10,000-15,000 EVs were sold.
- 2015-2016:** Sales remained relatively flat, with around 15,000-20,000 units.
- 2016-2017:** Sales saw a modest increase, reaching about 20,000-25,000 units.
- 2017-2018:** EV sales began to pick up, hitting around 25,000-30,000 units.
- 2018-2019:** The market grew further, with sales reaching approximately 30,000-40,000 units.
- 2019-2020:** The growth trend continued, with sales surpassing 40,000 units, largely driven by government incentives and increased awareness.
- 2020-2021:** Despite the pandemic, EV sales accelerated to around 60,000-70,000 units.
- 2021-2022:** This period marked a significant boost, with sales rising to approximately 100,000-120,000 units, supported by new models and improved infrastructure.
- 2022-2023:** EV sales surged to over 150,000-200,000 units, driven by increased consumer interest and supportive policies.
- 2023-2024:** The trend continues upward, with estimates suggesting sales exceeding 250,000 units annually.

These figures illustrate a steady growth trajectory in EV adoption in India, reflecting both increased consumer acceptance and supportive government measures aimed at fostering a cleaner and more sustainable transportation sector.

Electric Vehicles and It's Effects in India according to the Paris Agreement :

The Paris Agreement, an international treaty aimed at combating climate change, has had a significant influence on India's push towards electric vehicles (EVs). As a signatory to the Paris Agreement, India has committed to reducing its greenhouse gas emissions and increasing its reliance on renewable energy sources. The adoption of EVs plays a crucial role in this strategy by addressing several key objectives:

1. **Reduction of Emissions:** EVs produce zero tailpipe emissions, which helps lower overall greenhouse gas emissions from the transportation sector. This is particularly important for India, where transportation is a major source of air pollution and carbon emissions.
2. **Energy Efficiency:** Electric vehicles are generally more energy-efficient than internal combustion engine vehicles. By transitioning to EVs, India can make better use of its energy resources and reduce the overall carbon intensity of its transportation system.
3. **Support for Renewable Energy:** The integration of EVs with renewable energy sources, such as solar and wind power, aligns with India's goal to increase the share of renewables in its energy mix. As the grid becomes greener, the environmental benefits of EVs will be amplified.
4. **Government Policies and Incentives:** In response to the Paris Agreement and its own climate goals, India has introduced several policies to promote EV adoption. These include subsidies under the Faster Adoption and Manufacturing of Hybrid and Electric Vehicles (FAME) scheme, tax benefits, and incentives for manufacturing and purchasing EVs.
5. **Technological and Economic Growth:** The push towards EVs fosters innovation in the automotive sector and stimulates economic growth. By investing in EV technology and infrastructure, India is not only working towards its climate goals but also positioning itself as a leader in the emerging green technology market.
6. **International Cooperation:** The Paris Agreement encourages international collaboration on climate action. India's commitment to EVs is part of its broader strategy to contribute to global efforts in reducing climate change and meeting international targets.

Overall, the rise of electric vehicles in India is a tangible expression of the country's commitment to the Paris Agreement's objectives, reflecting a strategic move towards a more sustainable and environmentally friendly future.

Conclusion :

Over the next decade, the impact of electric vehicles (EVs) on climate change in India is expected to be substantial, influencing several key aspects:

1. **Reduction in Greenhouse Gas Emissions:** As EV adoption grows, India is likely to see a significant decrease in greenhouse gas emissions from the transportation sector. This reduction will be most pronounced if the electricity used to charge EVs comes from renewable sources, further diminishing the carbon footprint of the transportation network.
2. **Improved Air Quality:** With the shift from internal combustion engines to EVs, urban areas in India, which are often plagued by severe air pollution, will experience better air quality. This improvement in air quality will have direct benefits for public health and help mitigate the effects of air pollution.
3. **Decreased Dependence on Fossil Fuels:** EVs will reduce India's reliance on imported fossil fuels, which not only supports energy security but also reduces the country's exposure to global oil price fluctuations. This shift aligns with India's broader energy diversification goals and reduces its carbon footprint.
4. **Advancement of Renewable Energy Integration:** The growth of EVs will drive increased demand for renewable energy sources, as integrating EVs with a greener grid becomes more critical. This push will accelerate the development of renewable energy infrastructure, such as solar and wind power, further contributing to climate goals.
5. **Economic and Technological Benefits:** The EV sector will foster technological innovation and create new economic opportunities. Advances in battery technology, smart grid solutions, and clean energy

infrastructure will have ripple effects across various industries, contributing to long-term sustainability.

6. **Enhanced Climate Resilience:** By reducing emissions and improving air quality, EVs will contribute to India's resilience against the adverse effects of climate change. Cleaner air and reduced carbon emissions will help mitigate some of the impacts of global warming, such as extreme weather events and heatwaves.
7. **Behavioral and Policy Changes:** The successful integration of EVs into India's transportation system will likely influence future environmental policies and consumer behavior. As EVs become more mainstream, their benefits will reinforce the case for further investments in clean energy and sustainable practices.

In summary, the widespread adoption of electric vehicles in India over the next decade will play a crucial role in addressing climate change, improving air quality, and supporting the transition to a more sustainable and resilient energy system.

References:

1. Central Statistical Organisation Report.
2. Directorate General of Commercial Intelligence and Statistics Report
3. Databook for use of deputy Chairman, Planning Commission
4. RBI Bulletin
5. National Databook
6. World Bank Report
7. Handbook of statistics on the Indian Economy