

Economic Impact of Electric Vehicles in India

Dr. Runa Paul

Carmel Convent Sr. Sec. School Ratanpur Bhopal Madhyapradesh. Economic Impact of Electric Vehicles In India

Abstract

Conventional fuel-based vehicles are one of the major sources of greenhouse gas emissions. Transport sector, therefore, has a huge negative impact on the environment. Electric vehicles (EVs) are perceived as highly promising innovations in environmentally conscious transportation solutions to address pollution and energy demand in the transport sector. The sensitivity analysis presents that due to differences in fuel prices, tax structure and subsidy rates, there is a high disparity in cost-effectiveness of electric scooter ownership. This paper has been divided in three sections section I briefly introduces electric vehicle and their importance, section II highlights the impact of electric vehicle in Indian Economy and section states the conclusion with the future of Electric Vehicle in India. Section III states the major hurdles in evolving electric vehicles in India. Section IV is the last section stating the conclusion of the paper.

Keywords: Electric Vehicle, Promising, Energy, Cost-effectiveness

1. INTRODUCTION

The global automobile industry is undergoing a major transformation with electric vehicles (EVs) emerging as a sustainable alternative to traditional fuel-based mobility. In India, this shift holds immense promise not only for reducing environmental impact but also for driving innovation and industrial competitiveness. (Panmand, 2025)

Renewable source of energies is playing an important role in the global scenario They can be renewed and can be used often there is no dearth of renewable energy. (Runa, 2020) Electricity generated with renewable source has great demand in the present scenario. Conventional fuel-based vehicles are one of the major sources of greenhouse gas emissions. Transport sector, therefore, has a huge negative impact on the environment. Electric vehicles (EVs) are perceived as highly promising innovations in environmentally conscious transportation solutions to address pollution and energy demand in the transport sector. The sensitivity analysis presents that due to differences in fuel prices, tax structure and subsidy rates, there is a high disparity in cost-effectiveness of electric scooter ownership. Notably, cost per kilometre of EVs is less expensive than petrol variants in most of the tested scenarios which entails the lack of subsidies. This analysis can aid policymakers in developing more tailor-made policies that enhance the economic viability of the EV option, considering regional factors and existing fiscal tools. (Sunanda, 2024)

2. Impact of Electric Vehicles in Indian Economy

Sustainability has become one of the most pressing challenges of our time, particularly for fast-growing countries like India. With its expanding population and rapid urbanization, India faces increasing

pressure on its infrastructure, especially in the transportation sector. Transport plays a vital role in everyday life connecting people, goods, and services but it is also one of the largest contributors to air pollution, greenhouse gas emissions, and fossil fuel consumption. In this context, technology offers an opportunity to rethink how we move and to make that movement more sustainable, efficient, and inclusive.(Ambewadikar, 2025)

The Indian governments Faster Adoption and Manufacturing of Hybrid and Electric Vehicles (EVs) initiative has significantly promoted electric vehicle adoption, with sales reaching 0.34 million in 2021, primarily driven by two-wheelers and three-wheelers. This transition is vital for reducing fossil fuel dependence and environmental degradation.(Chaudhary, 2025)

Electric vehicles will reduce the level of sound and air pollution . These vehicles do not harm the environment to a larger extent. Country like India where the population is too high need more electric vehicle. In FY2022, 455,733 EV units were sold, while India's Ministry of Road Transport and Highways reported that 1,334,385 electric vehicles were on Indian roads as of July 2022. The number of EVs is expected to rise, driven by the efforts of central and state governments, as well as private sector players, to promote electrification on Indian roads. EVs are gaining global attention for their role in reducing emissions and conserving natural resources. In India, the EV market saw a significant 168% year-over-year increase in 2021, with nearly 0.32 million vehicles sold. The adoption of electric vehicles in India supports the Paris Agreement's goals of reducing carbon emissions, improving air quality in urban areas, and decreasing oil imports.

Uttar Pradesh led the EV market in 2021 with 66,704 units sold, followed by Karnataka with 33,302 units and Tamil Nadu with 30,036 units. Uttar Pradesh dominated the three-wheeler segment, while Karnataka and Maharashtra led in the two- wheeler and four-wheeler segments, respectively. (Jemima, 2024)

3. Problems In Introducing Electric Vehicles in India

Electric vehicles in India are costly ,they cannot be afforded by all. There has to be a change in the price of the electric vehicles so that it is afforded by all.The real sustainability will be brought if a large mass of population can afford the electric vehicles. There has to be more charging centres so that people can charge vehicles easily.Many people in India are below poverty line they cannot afford electric vehicle and they cannot afford huge loans also.

4. Conclusion

The future of Electric vehicles is bright in India.In India, this shift holds immense promise not only for reducing environmental impact but also for driving innovation and industrial competitiveness. EV adoption in India has grown rapidly, with over two million sales recorded in 2024 compared to only fifty thousand in 2016. Key drivers of this growth include government subsidies, advancing battery technologies, and growing environmental awareness. (Panmand, 2025). Government of India should promote various schmes to develop the future of electric vehicle in India.

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