



Adoption of Electric Vehicles in India

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ABSTRACT

The adoption of electric vehicles (EVs) in India has been slow despite the government's efforts to promote them through incentives and subsidies. This paper aims to examine the factors influencing EV adoption in India and to suggest policy recommendations to accelerate the transition to cleaner mobility. The study found that high upfront costs, range anxiety, lack of charging infrastructure, and limited availability of EV models are the main barriers to EV adoption in India. Additionally, the lack of awareness about the benefits of EVs and the perceived lower social status associated with owning an EV are also significant challenges. The paper recommends a multi-pronged approach to overcome these barriers, including incentivizing domestic manufacturing of EVs, expanding charging infrastructure, increasing public awareness, and promoting EVs as a status symbol. Overall, this paper highlights the need for comprehensive policies and sustained efforts to accelerate the adoption of EVs in India and achieve the country's ambitious targets for reducing emissions and air pollution.

Keywords: electric vehicles, India, adoption, barriers, policy recommendations, benefits.

Introduction

The adoption of electric vehicles (EVs) in India has become an increasingly important topic in recent years, as the country looks to reduce its dependence on fossil fuels and transition to a more sustainable and clean transportation system. While the Indian government has set ambitious targets for the adoption of EVs, the actual adoption rate has been slow due to a variety of factors, including high upfront costs, limited availability of EV models, range anxiety, and the lack of charging infrastructure.

Despite these challenges, there have been some positive developments in the EV sector in India, including the introduction of incentives and subsidies for EV buyers, the launch of new EV models by domestic and international automakers, and the expansion of charging infrastructure in major cities. Additionally, there has been growing public awareness and interest in EVs, driven in part by concerns over air pollution and climate change.

This paper seeks to examine the factors influencing the adoption of EVs in India and to identify policy recommendations to accelerate the transition to cleaner mobility. By analyzing the current state of the EV market in India, the paper aims to provide insights into how the government, industry, and other stakeholders can work together to overcome the barriers to EV adoption and promote sustainable transportation in the country. Overall, the successful adoption of EVs in India has the potential to contribute significantly to the country's economic development, energy security, and environmental sustainability.

Figures and tables

LCPRT and e-mobility: India's solution for sustainable growth of transportation sector

As India is experiencing acute challenges in controlling its carbon emissions, the country expects the emission level to grow even further as its transport industry is expanding. To tackle the emission from the transport industry, India is moving towards "zero or low carbon emission" transportation model by promoting the use of alternative fuel vehicles and Electric Vehicles (EVs).

In 2009, through its National Biofuels policy, India sets an "aspirational" target to blend 20% biofuels into the diesel and petrol mix by 2017. However, it has fallen well short of these targets. So far, it has attained only around 2% bioethanol and 0.1% biodiesel blend in 2018. Further, India came up with its first passenger vehicle fuel efficiency standards in 2014 which came into being in 2017. However, they are still less stringent than the EU norms. In addition, India has also set the national target of achieving 30% EV sales penetration by 2030 and launched National Mission on Transformative Mobility and Battery Storage to promote localization of EV component manufacturing. Alongside the various central-level interventions, several states have also notified their respective policies for promoting Electric Vehicles which cover subsidy and tax exemptions, among other incentives, for consumers/ buyers.



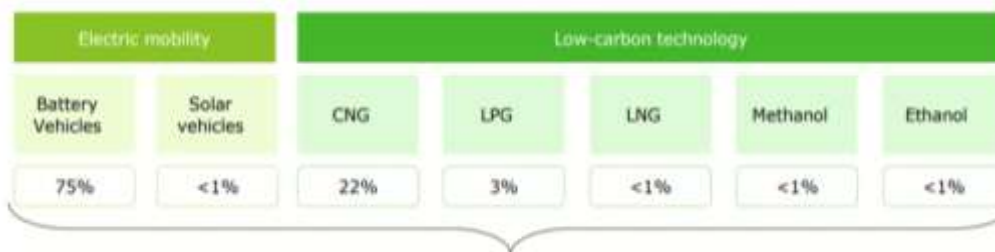
International crude oil prices have had significant impact on India's current account balance. Trend of expenditure on imports as a function of import volumes of crude oil for last nine years is provided at



For year FY16, when oil prices were at 46.17 US\$/bbl, CAB was (minus) 1.1% of GDP12, whereas it reached to (minus) 2.1% of GDP13 during FY19 when oil prices were at 69.88 US\$/bbl, although the import volume remained the same

Overall share of electric vehicles and low-carbon road transport technology in total vehicle sales is less than 1%¹⁴

Among available clean/ low carbon mobility technologies, electric vehicles and CNG vehicles are most preferred in India. Availability of fiscal incentives for electric vehicles and low prices of CNG compared to petrol and diesel could explain such preference for these technologies.



Conclusion

Overall, this paper emphasizes the need for comprehensive policies and sustained efforts to accelerate the adoption of EVs in India and achieve the country's ambitious targets for reducing emissions and air pollution. It is hoped that this paper will contribute to a deeper understanding of the challenges and opportunities associated with EV adoption in India and inform policy discussions and decisions in this important area.

the adoption of electric vehicles (EVs) in India faces significant challenges, including high upfront costs, limited availability of EV models, range anxiety, and the lack of charging infrastructure. Additionally, the lack of awareness about the benefits of EVs and the perceived lower social status associated with owning an EV are also significant barriers. However, there are opportunities to overcome these challenges through a multi-pronged approach that includes incentivizing domestic manufacturing of EVs, expanding charging infrastructure, increasing public awareness, and promoting EVs as a status symbol.

Accelerating the adoption of EVs in India has the potential to bring significant benefits, including reduced air pollution, improved energy security, and increased employment opportunities in the EV industry. The successful adoption of EVs can also contribute to the country's economic development and global competitiveness.

It is important for the Indian government, industry, and other stakeholders to work together to create a supportive ecosystem for EVs, including policies and incentives that encourage the adoption of EVs and support the development of the necessary infrastructure. Continued research and development in EV technology, including battery technology, will also be critical to overcoming the remaining barriers to EV adoption.

In summary, accelerating the adoption of EVs in India is a complex challenge that requires a coordinated effort from multiple stakeholders. However, the potential benefits of a cleaner, more sustainable transportation system are significant and make the effort worthwhile. With the right policies, incentives, and investments, India can become a leader in the transition to electric mobility and reap the rewards of a cleaner, more sustainable future.

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