

## Feasibility of Battery Electric Vehicles in Saudi Arabia: Cost and Sensitivity Analysis

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**Abstract :** Battery electric vehicles (BEVs) are increasingly seen as a sustainable alternative to internal combustion engine (ICE) vehicles, primarily due to their environmental and economic benefits. Saudi Arabia's interest in investing in renewable energy and reducing greenhouse gas emissions presents significant potential for the widespread adoption of BEVs in the country. However, several factors have hindered the adoption of BEVs in Saudi Arabia, with high ownership costs being the most prominent barrier. This cost discrepancy is primarily due to the lack of localized production of BEVs and their components, leading to increased import costs, as well as the high initial cost of BEVs compared to ICE vehicles. This paper aims to evaluate the feasibility of BEVs compared to ICE vehicles in Saudi Arabia by conducting a cost of ownership analysis. Furthermore, a sensitivity analysis will be conducted to determine the most significant contributor to the ownership costs of BEVs that, if changed, could expedite their adoption in Saudi Arabia.

**Keywords :** battery electric vehicles, internal combustion engine, renewable energy, greenhouse gas emissions, total cost of ownership

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