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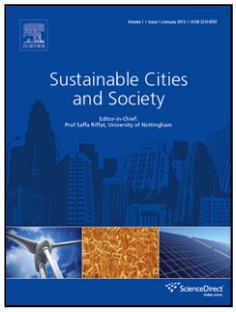

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Long-Term Cost of Ownership Comparative Analysis between Electric Vehicles and Internal Combustion Engine Vehicles

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Highlights

- EVs are currently cost-competitive with ICEVs under certain cost conditions.
- Vehicle usage levels greatly affect cost comparisons between EVs and ICEVs.
- EV incentives should be tailored based on battery technological advancement.
- Significant funding should be provided towards battery technology research.
- Fleet vehicles are well-suited to EV purchase in a cost perspective.

Abstract

Consumer acceptance of electric vehicles (EV) is considered one of the primary barriers to their widespread adoption, and paramount to this barrier is the negative perception of the higher initial purchase prices of EVs. This paper presents a comparative analysis on the costs of ownership of EVs and similar internal combustion engine vehicles (ICEVs) under an assortment of cost scenarios focusing on the myriad of options and variables available to EV users. The study incorporates a 10-year analysis period and as such differing electricity and gasoline price forecasts are utilised. Elements of real data returned from an EV trial are used to inform the analysis. Additional factors include the allowance of incentives to EV users since most incentives have limited availability, the potential effects of battery replacement, long-term vehicle ownership costs, and the costs of electric fleet vehicles. The results show that EVs are already cost-competitive with ICEVs when considering the 10-year analysis period,