

## Electric Vehicles as a Sustainable Mode of Transportation-The Sri Lankan Context

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### Abstract

Environmentally Sustainable Transportation is considered to be one of the main solutions to the development challenges faced by human societies, as reflected in the Sustainable Development Goals (SDGs) and climate change action plans. In particular, Electric Vehicles (EVs) have emerged as a sustainable mode of transport and many countries have included the promotion of EVs as a part of their development agendas to mitigate climate change and resulting pollution. EVs are capable of providing significant economic and environmental benefits, particularly over their entire useful life cycle, greater than those of traditional Internal Combustion Engine (ICE) vehicles. During the last decade, the Government of Sri Lanka has taken policy and regulatory interventions to promote cleaner vehicles, with particular emphasis on EVs. Though the market response to hybrid vehicles is remarkable, the EVs has still failed to have a significant impact indicating presence of challenges. Accordingly, the present study was implemented with the main focus on understanding the national EV scenario. A comprehensive literature survey and user perception survey were conducted covering two-wheelers, three-wheelers and electric light duty vehicles (cars). The questionnaires for the surveys were designed to get a perspective into the preference, type and frequency of use, battery charging options, issues and the expectations of current and potential EV users and charging infrastructure providers. The survey carried among the battery retailers show positive nature in engaging actively with the EV market requirements in terms of battery charging, recycle process of batteries and open to new methods being incorporated such as the conversion of the shops into mini charging and battery swapping centers. The results suggest the high potential of EVs in the context of sustainable transportation. The important aspects to be considered is to motivate potential buyers to EVs and support the present users in the long-term policy decisions without annual restrictions directly or indirectly in terms of any financial impediments while establishing adequate supply chain infrastructure including adequate charging stations, battery facilities and availability of EV parts. Analysis mainly constitutes of using graphical representations and logical comparisons to evaluate the national scenario. The study highlights the importance of inclusion of EVs in the current vehicle fleet for considerable level of positive change in the environmental perspective. The impact on the demand for petroleum and the level of burden thus created on the national economy further elaborate the need for the EVs to replace ICE vehicles as a highly preferred alternative vehicle to potential buyers.

**Keywords:** Electric vehicles, Charging infrastructure, Environmental impacts, Sustainable transportation