Battery electric vehicles bevs iran

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The share of fossil fuel consumption in different sectors of Iran"s industries40,41.

It can be inferred that by increasing the capacity of power generation in Iran, the potential for further application can be investigated while various consumers can be introduced. Therefore, besides the household and industrial applications of surplus electricity production, EVs can seek more benefits through this upward trend. It should be noted that regarding the expected numbers of EVs, additional advancements in electricity power generation would be required. Based on the latest statistics, Iran produces around 1 million cars per year while only 1% of the delivered vehicles are powered by electrical power38,39. Hence, a potent potential for electrification in Iran"s vehicle industry can be found that can be fulfilled through a comprehensive program on the national scale.

The number of car production based on the different types in last years43,44,45.

The price of gasoline over 20 years42.

It should be noted that Iran is one of the greatest carbon producers in the world (by total emission and per capita). In this case, a transition to electrification can prevent greenhouse gas (GHG) emissions from being released into the environment. In this case, the environmental benefits of using vehicles without emissions can be considered. Through this process, the benefits will be doubled as the contribution of the transportation system to GHG emission is presented in Fig. 4.

CO2 emission in Iran by different sectors46.

To assess the technical and economic influences of the electrification transitions in the transportation system in Iran, a comparative investigation is intended to be put forward. The chief aim of this assessment is to estimate the possible benefits of the replacement of fossil fuels-based vehicles with EVs. In this way, two sections of the technical and economic analyses can be conducted. To investigate the effective aspects of electrification in Iran, a comprehensive comparison is required to measure the performance of the intended scheme. In this case, the PROMETHEE method is taken into consideration.

It should be noted that being straightforward and simple, having high potential for flexibility, no necessity to normalize, and visual illustration are the main plus points of this technique while requiring the weights assignments, difficulty in large problems, and being highly reliant on the preferences and judgments of the decision makers are categorized as the undesirable features of this method48. Figure 5 represents the flowchart of the PROMETHEE technique.

PROMETHEE technique flowchart.

The prioritization function pj (a, b), represented as a tool of the alteration amid two substitutes for involved standards, can be determined distinctly for all criteria to denote one alternative extent of desire to other quantitates. This formula is indicated as pj (f(a), f(b)) where its value is constantly from 0 to 149.