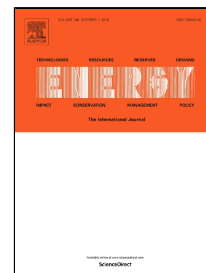


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Insights into the Characteristics of Technologies and Industrialization for Plug-In Electric Cars in China

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Abstract

Plug-in electric vehicles (PEVs) have been seen by many countries as a solution to the fossil fuel consumption and urban air pollution problems of the transportation sector. PEV stocks climbed to 1 million in 2015 and doubled as of 2016. Although the global mass market is developing, developmental laws for the technologies and industrialization of PEVs still need to be identified. These laws are necessary for finding solution to the problems of PEV penetration in the future. On the basis of a characteristic analysis of global PEV marketing progress, it can be found that China is becoming the main player in PEV sales and market penetration. It has potential be the largest PEV market in the world in future. Although China has the advantages of market volume, there are still severe challenges for the further mass adoption of PEVs in China. Therefore, a comprehensive evaluation on the evolution of China's PEV industry and technology is desirable as a foundation for identifying key problems regarding market penetration, so as to devise a long-term national PEV strategy. This study are performed based on detailed PEV marketing and technological data to present an in-depth view. A three-dimensional (market penetration rate, constitution, and concentration) evaluation method is proposed, and the market-acceptance indicators and cluster analysis method are used to analyze the correlations between the all-electric range (AER) of PEVs and market acceptance. This research allows us to draw several conclusions : (a) initial PEV market penetration depends mainly on fiscal incentive policies, which also strongly influences the technological roadmap for PECs; (b) A0- and A-class sedans are the dominant models for individuals, and small battery electric cars (BECs) will hold a large market share for a long time; (c) range-extended-type plug-in hybrid electric cars (PHECs) are suitable and

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