東亞運輸氫能化現況與策略

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摘要

再生能源替代化石能源已成能源轉型典範，而低碳運輸是該過程中最重要的項目。石油將機器引入人類世界，從那時候起，石油供應一直是控制運輸活動。對於東亞經濟體，能源安全和環境保護是運輸部門實施節能減碳的主要驅動力。針對中國、日本、韓國、台灣等東亞國家，本文概述各國在運輸部門所進行減少碳氫化合物燃料的政策、機制和技術，同時描述它的能源消耗、相關文獻以及近期發展概況，重點項目聚焦氫能的應用。在本文各章中，我們提出東亞國家特別在此方面的能源技術、經濟發展和政策影響等關鍵點。最後，我們以氫能未來在台灣如何普及的關鍵因素作為總結。藉助中日韓各國發展氫能車經驗，希望本研究對台灣發展低碳能源有所貢獻，惟國內運輸市場不大如果要大舉投入氫能車輛工業，相關技術或零組件必須事先有所突破，因此國家氫能技術演進藍圖將是後續研究重點。

關鍵詞：東亞、低碳運輸、氫能、現況、發展策略

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Status and Strategies of Hydrogenation in East Asia's Transportation

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Abstract

The substitution of fossil energy for renewable energy has being consisted a paradigm for energy transition, and low-carbon transportation is the most important project in the process. Oil has introduced machine into human world. Since then, oil supply has been the key to control transportation activities. For East Asian economies, energy security and environmental protection are the main drivers of energy conservation and carbon reduction measures implemented in the transportation sector. For East Asian countries such as China, Japan, South Korea, and Taiwan, this paper outlines the policies, mechanisms, and technologies for reducing hydrocarbon fuels in the transportation sector. It also describes the energy consumption, related literatures, and recent developments of transportation sectors in these countries. The emphasis placed on the application of hydrogen vehicle. In each section, we present the key points of various technologies, economic developments and policy impacts on East Asian region. Finally, we summarize the key factors of the development of hydrogen energy for Taiwan in the future. With the experiences of developing hydrogen vehicles in China, Japan and South Korea, this research will contribute to the development of low-carbon energy in Taiwan. However, the domestic transportation market in Taiwan is not so large, and if the hydrogen vehicle industry is to be heavily invested, the bottlenecks of crucial technologies and/or key components must be broken through in advance. Therefore, the national hydrogen energy technology blueprint will be the focus of follow-up research.

Keywords: East Asia, low carbon transportation, hydrogen energy, status, development strategy

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