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## Abstract

### The Analysis of Industrial Ecosystem for Korea's Hydrogen Industry and Policy Implications

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Recently, traditional automotive powerhouses such as Europe and Japan have begun to introduce next-generation hydrogen-powered vehicles. Chinese companies are also making full inroads into the hydrogen mobility sector with the launch of hydrogen buses, indicating that China's new industrial rollout is also heading for hydrogen cars.

The hydrogen industry is an emerging one, and there is still a lack of social awareness, and there are many areas that need to be addressed technically and economically. Nevertheless, hydrogen economy and industry using hydrogen energy are becoming more important worldwide. Hydrogen energy is considered to be the next generation of clean energy sources that replace fossil fuel and are environmentally friendly and energy efficient. The hydrogen industry consists of hydrogen supply, mobility, and fuel cell, and is expected to provide opportunities for creating diverse business models with significant spillover impacts.

Countries such as Japan, Germany, and the United States have already established specific roadmaps and goals for transition towards hydrogen energy and are actively pursuing the development of hydrogen industries. In March 2019, the Chinese government officially declared its commitment to building a hydrogen infrastructure for the first time, expressing its commitment to fostering the hydrogen industry. As China is the world's largest market and has successfully pursued electric vehicle policies, it is necessary to actively respond to the growing hydrogen industry in the future.

Korea has been preparing and implementing policies to supply hydrogen vehicles and revitalize the market since 2015, and has selected the hydrogen economy as one of the top three strategic investment areas. However, Korean hydrogen industry has a long way to go as it is in the early stage. Korea succeeded in mass-producing hydrogen cars in 2013 for the first time in the world and is considered to have the best competitive edge in the field of hydrogen fuel cells. On the other hand, strategic measures are needed to secure competitiveness of core materials and technologies that are lacking in the

hydrogen industry.

This study evaluates the potential and competitiveness of the hydrogen industry in Korea and develops future development path and strategies. It will be important to create and activate a robust industrial ecosystem.

This study is organized as follows: First, we examine the importance and the current status of global hydrogen industry, and compare and analyze the industrial policies of hydrogen countries. We then analyze the current status and policies of Korea's hydrogen industry. Also, we evaluate the Korea's hydrogen industry ecosystem, including hydrogen production, transportation, storage, charging, and fuel cells. Based on this, we also perform a SWOT analysis and diagnose potential growth in the future. As a concluding remark, we suggest viable options to create and develop an ecosystem for the Korean hydrogen industry.