INTERNATIONAL PARTNERSHIP FOR HYDROGEN AND FUEL CELLS IN THE ECONOMY

IPHE Country Update Nov 2024 – May 2025: [China]

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1. New Initiatives, Programs, and Policies on Hydrogen and Fuel Cells

State level

On November 8, 2024, the 12th Meeting of the Standing Committee of the 14th National People's Congress voted to pass the Energy Law of the People's Republic of China, which officially came into effect on January 1, 2025.

In this law, hydrogen energy is explicitly included in the energy management system for the first time. Following articles mentioned hydrogen energy:

Article 2, definition of energy, including hydrogen energy.

Article 33, promoting the development and utilization of hydrogen energy, high-quality development of the hydrogen energy industry.

Article 57, encouraging and supporting the research, development, demonstration, promotion, application, and industrialization of fundamental, critical, and cutting-edge major technologies, equipment, and related new materials in the fields of development and utilization of hydrogen energy.

https://www.gov.cn/yaowen/liebiao/202411/content_6985761.htm (in Chinese)

On December 30, 2024, Ministry of Industry and Information Technology, National Development and Reform Commission, and National Energy Administration jointly issued and implemented the Implementation Plan for Accelerating the Application of Clean Low Carbon Hydrogen in the Industrial Sector.

The Implementation Plan proposes to focus on expanding the application scenarios of clean low-carbon hydrogen in the industrial field, accelerate the upgrading of technical equipment products, and create new growth points for industrial transformation and upgrading. By 2027, positive progress will be made in supporting clean low-carbon hydrogen application equipment and promoting technology in the industrial sector, cultivating a group of leading enterprises and industrial clusters with strong industrial ecological leadership, as well as system solution suppliers with high professional level and strong service capabilities.

The Implementation Plan focuses on application scenarios such as clean low-carbon hydrogen substitution, hydrogen metallurgy, hydrogen carbon coupling to produce green methanol, hydrogen nitrogen coupling to produce green synthetic ammonia, hydrogen fuel cell vehicles, hydrogen powered ships, aviation, rail transit equipment, and hydrogen electric integration industrial green microgrids. The system proposes 30 specific work tasks. Propose safeguard measures from optimizing industry management, accelerating technological breakthroughs, cultivating key enterprises, and improving standards and specifications.

https://www.gov.cn/zhengce/zhengceku/202412/content_6995692.htm (in Chinese)

On February 27, 2025, National Energy Administration issued the Guiding Opinions on Energy Work in 2025.

The content of the Opinion on hydrogen energy mainly includes:

(1) Strengthening the standard supply of hydrogen energy, green liquid fuel and other fields.

(2) Steadily developing the renewable energy hydrogen production and sustainable fuel industry, steadily promoting the pilot application of fuel cell vehicles, orderly advancing the construction of the national hydrogen energy information platform, steadily and orderly exploring the pilot application of pipeline hydrogen transmission projects, and promoting the establishment and improvement of hydrogen energy management mechanisms in various regions.

(3) Deepen cooperation with the "the Belt and Road" countries in wind power, photovoltaic, hydrogen energy and other fields.

https://www.gov.cn/zhengce/zhengceku/202502/content_7007276.htm (in Chinese)

On March 26, 2025, Ministry of Transport, National Development and Reform Commission, Ministry of Industry and Information Technology, Ministry of Natural Resources, National Energy Administration, National Railway Administration, Civil Aviation Administration of China, National Post Office, State Grid Corporation of China, Southern Power Grid Co., Ltd jointly issued the Guiding Opinions on Promoting the Integrated Development of Transportation and Energy.

The Opinion proposes multiple contents in the field of hydrogen energy as follows:

(1) Construct charging (swapping) stations, gas stations, and hydrogen refueling stations along highways, in urban areas, distribution centuries, and other locations.

(2) Encouraging the use of renewable energy sources such as geothermal and air energy for cooling and heating in transportation hub stations, and rational allocation of new energy storage and flexible hydrogen production resources.

(3) Encourage the nearby consumption of new energy within the scope of transportation infrastructure development road area, optimize the allocation of new energy storage, flexible hydrogen production and other flexible adjustment resources.

(4) Promote the large-scale application of long-distance electric, hydrogen, hybrid and other railway new energy locomotives and vehicles, as well as supporting energy supply facilities in areas with weak power grid structures.

(5) Promote the application of clean energy such as electricity, liquefied natural gas (LNG), biodiesel, green alcohol, green ammonia, and green hydrogen on ships.

(6) Promote the construction of a number of green fuel production bases, accelerate the improvement of the supply capacity of liquefied natural gas (LNG), biodiesel, green alcohol, green ammonia, hydrogen energy, bio aviation oil and other materials. Encourage the development of clean energy hydrogen production based on transportation infrastructure and local conditions.

(7) Construct comprehensive energy supply stations in service areas, freight stations, ports, airports, hubs, etc. that meet the conditions while ensuring safety. Actively and prudently promote diversified hydrogen energy storage and transportation methods.

(8) Accelerate the cultivation of industries such as new power batteries and key materials, hydrogen fuel cells, and green fuels, and ensure high-quality and stable supply of upstream raw materials and components.

(9) Promote the development and utilization of clean energy in transportation infrastructure, electric heavy-duty trucks, hydrogen heavy-duty trucks, electric ships, vehicle network interaction, power batteries, charging (swapping) stations, hydrogen refueling stations and other related standards, and improve safety, energy conservation, environmental protection and other standards.

https://www.gov.cn/zhengce/zhengceku/202504/content_7021087.htm (in Chinese)

On April 28, 2025, the National Energy Administration held a press conference to interpret the China Hydrogen Energy Development Report (2025) and answered questions from reporters.

The content of the report mainly includes three parts: the development of hydrogen energy at home and abroad in 2024, the outlook for the development of China's hydrogen energy industry in 2025, and major events. In the 2024 situation section, a systematic summary of the domestic and international hydrogen energy development situation in 2024 is conducted from six aspects: policy release, market size, price level, innovative applications, international cooperation, and standard certification. In the 2025 outlook section, relevant prospects are proposed from five aspects: strengthening policy coordination, promoting core technology research and development, improving the public service system, promoting hydrogen energy pilot work, and exploring international markets.

The report points out that in 2024, the central and local governments continue to strengthen top-level policy design, promote the introduction of special policies, enhance cross departmental coordination, and comprehensively implement policies to guide the high-quality development of industries. The Energy Law of the People's Republic of China, which is officially come into effect in 2025, clearly stipulates the active and orderly promotion of hydrogen energy development and utilization, and the promotion of high-quality development of the hydrogen energy industry. The Opinions on Accelerating the Comprehensive Green Transformation of Economic and Social Development released by the Central Committee of the Communist Party of China and the State Council proposes to promote the full chain development of hydrogen energy "production, storage, transportation, and use", and establish and improve standards for hydrogen energy "production, storage, transportation, and use". More than 560 hydrogen energy special policies have been issued nationwide, promoting the development of local hydrogen energy industries according to local conditions. In 2024, China's annual production and consumption of hydrogen energy exceed 36.5 million tons, ranking first in the world. By the end of 2024, the cumulative production capacity of renewable energy hydrogen production projects worldwide has exceeded 250,000 tons per year, with China accounting for over 50%. China has gradually become a leading country in the development of renewable energy hydrogen production and related industries worldwide.

The report points out that by 2024, China gradually achieves breakthroughs in key technologies throughout the entire chain of hydrogen production, storage, transportation, and utilization, guided by technological innovation and with the goal of industrial scale and commercialization. A batch of large-scale renewable energy hydrogen production projects in Kuche, Xinjiang and Ningdong, Ningxia have been completed and put into operation, connecting the entire process of renewable hydrogen production, storage and utilization, and playing a good demonstration role. The demonstration and application of fuel cell vehicles are steadily advancing, with over 540 hydrogen refueling stations built in various regions and about 24000 fuel cell vehicles promoted; More than 15000 fuel cell vehicles have been promoted in the five regions of Beijing-Tianjin-Hebei, Shanghai, Guangdong, Zhengzhou, and Hebei. Multiple types of fuel cell power generation and combined heat and power projects have been put into operation. F-class 50 MW heavy-duty gas turbine has completed the combustion of 30% hydrogen gas in the burner, and megawatt level pure hydrogen gas turbine has completed the overall test verification. At the same time, six hydrogen energy technology equipment were selected as the first major technology equipment in

the energy field in the fourth batch by the National Energy Administration, covering the entire process of hydrogen energy production, storage, and transportation.
https://www.nea.gov.cn/20250428/95f44cc519d445ea811a5d381ab8a5f6/c.html
(in Chinese)

Provincial level
Collected toll free policy for fuel cell vehicles

Province (City)	Duration
Shandong	2024/3 – 2026/2
Inner Mongolia (Ordos)	2024/6 – 2026/5
Shanxi (Lvliang)	2024/7 – 2026/6
Shaanxi	2024/9 – 2027/8
Jilin	2024/9 – 2026/8
Hubei	3 years
Sichuan	3 years
Qinghai	2024/12 – 2026/12
Inner Mongolia (Baotou)	2025/1 – 2026/12
Henan	2025/1 – 2025/12
Liaoning	2025/5 – 2028/5
Shanxi	2025/6 – 2027/5

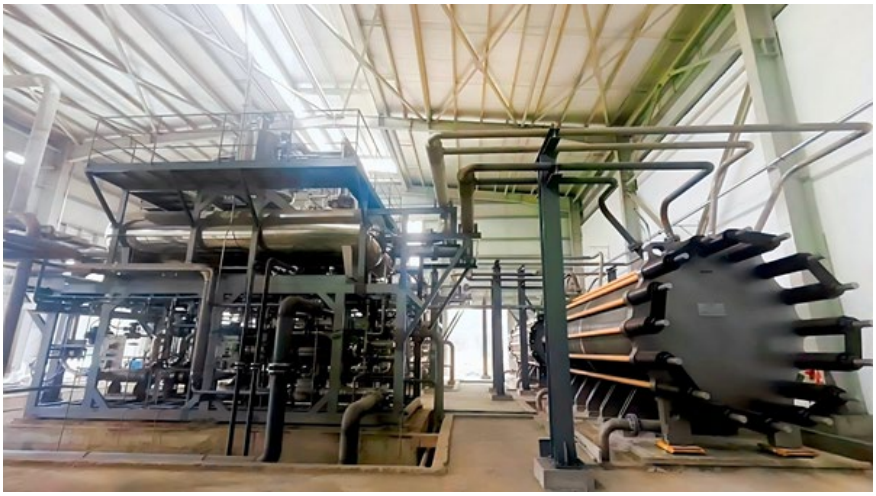
Policies issued within 2024/11 -2025/5 are marked in red font.

2. Hydrogen and Fuel Cell R&D Update

On January 17, 2025, the National Energy Administration released "Top 10 Technological Innovation Achievements in the Energy Industry for 2024", two of which are related to the hydrogen energy industry**.**

(1) New high-efficiency 3000 standard cubic meters/hour alkaline water hydrogen production device

Alkaline electrolysis of water for hydrogen production is a key technology for achieving large-scale production of green hydrogen energy from new energy sources. This achievement has broken through key technologies such as high stability and low energy consumption electrode preparation, high gas resistance and low impedance new diaphragm preparation, optimization of large-size electrolytic cell structure, system integration and safety protection. The new alkaline electrolysis water hydrogen production device with a capacity of 3000 standard cubic meters per hour based on this achievement has been successfully applied to the Xingguo Foundry 300000 cubic meters per day green electrolysis water hydrogen production - hydrogen storage - 450 cubic meters blast furnace hydrogen rich smelting demonstration project in November 2024, effectively promoting the connection of the entire green hydrogen industry chain in China.



(2) 630 MW coal-fired unit ammonia blending power generation technology

Ammonia blending combustion in coal-fired units is an effective way to reduce carbon dioxide emissions from coal-fired power plants at the source of combustion. This achievement has solved key technical problems such as ignition and burnout difficulties, changes in heat absorption distribution of boiler heating surfaces, and increased emissions of nitrogen oxides from flue gas in ammonia blending combustion on large capacity coal-fired boilers. The system has constructed a clean and efficient combustion technology equipment system for ammonia blending in large capacity coal-fired boilers. Based on this achievement, the 630 MW coal-fired unit in Taishan, Guangdong completed the industrial application of 20% ammonia blending combustion under specific operating conditions in October 2024, providing a practical and feasible technical solution for carbon reduction at the source of coal-fired units in China.

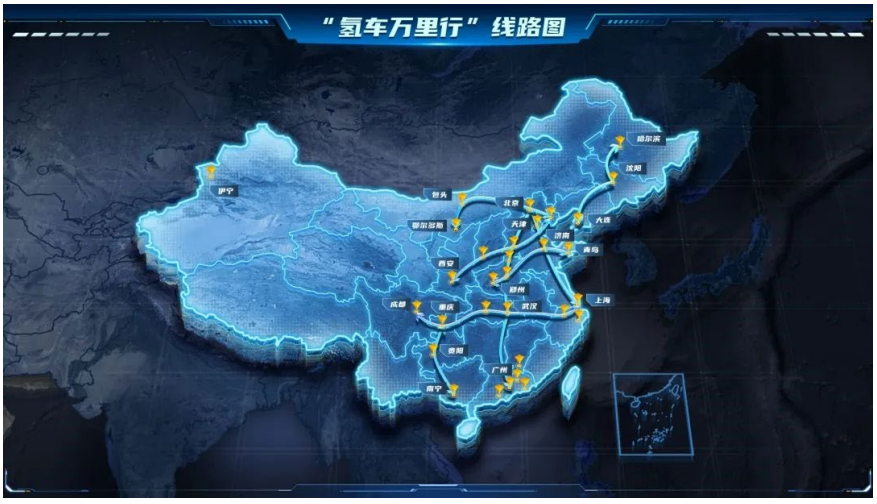
https://www.nea.gov.cn/20250117/13e6ccdc8f77475498bf95c4134cf020/c.html
(in Chinese)

3. Demonstration, Deployments, and Workforce Developments Update

On March 12, 2025, the Ministry of Finance, the Ministry of Industry and Information Technology, the Ministry of Science and Technology, the National Development and Reform Commission, and the National Energy Administration jointly issued Notice on the Approval of the Implementation Plan for the Demonstration and Application Adjustment of Fuel Cell Vehicles in Urban Agglomerations.
Hami (Xinjiang), Lvliang (Shanxi), Puyang (Henan), Jiyuan (Henan), Cangzhou (Hebei), and Dalian (Liaoning) have joined the fuel cell vehicle demonstration city clusters.

On May, 2025, the Fuel Cell Vehicle Demonstration and Application Support Office of China Automotive Technology Research Centre, in collaboration with industry enterprises, has launched the "Hydrogen Vehicle Ten Thousand Miles Tour" activity, aiming to comprehensively evaluate the operational effectiveness of fuel cell vehicles in typical scenarios through over 13000 km of real vehicle verification covering key hydrogen energy high-speed demonstration lines in the "Four Verticals and Four Horizontals" across the country and connecting five major urban agglomerations, providing authoritative data support for industrial scale development.
After screening and integration, the following 15 routes have been preliminarily determined, with more than 200 fuel cell vehicles participating in the demonstration activities, passing through more than 40 hydrogen refueling stations along the route.

No.	Line name	Round trip mileage (km)
1	Shandong-Henan Hydrogen High-Speed Dedicated Line	1400
2	Beijing-Tianjin-Hebei Material distribution line	500
3	Henan Urban Agglomeration High Speed Logistics Network	600
4	Hubei-Henan Container Transport	1020
5	Greater Bay Area Light cold chain logistics	1160
6	Tianjin-Hebei Steel Transportation Route	1400
7	Yining (Xinjiang) Online Ride Hailing Operation	300
8	Western Land-Sea New Corridor	2300
9	Chengdu-Chongqing Hydrogen Corridor Demonstration Line	600
10	Shenyang-Dalian Hydrogen Energy Expressway Corridor	720
11	Surrounding Hangzhou Bay Hydrogen Energy Expressway	800
12	Shaanxi-Shanxi Heavy Truck Cross Provincial Round-Trip	800
13	Wuhan-Yichang Expressway Demonstration Line	1080
14	Beijing Hydrogen Bus Demonstration Line	160
15	Inner Mongolia Coal Green Transportation	260
	Total	13100



4. Events and Solicitations

On November 28, 2024, the "United Nations Development Programme Hydrogen Energy Industry Talent Development Summit" was successfully held in Foshan City, Guangdong Province, jointly hosted by the United Nations Development Programme China Representative Office and the Nanhai District People's Government of Foshan City.
As the first international hydrogen industry talent conference led by an international organization in China, the summit focuses on the cultivation of high-quality skilled talents in the hydrogen energy field, promotes the deep integration of industry and education, and explores the path of providing important skilled talent support for industrial development.

5. Investments: Government and Collaborative Hydrogen and Fuel Cell Funding

On November 14, 2024, the Ministry of Finance issued Notice on Advance Allocation of 2025 Energy Conservation and Emission Reduction Subsidy Funds Budget.
The document publicly announced the **second year** fuel cell vehicle demonstration and application award, with a total reward fund of approximately **1.625 billion yuan**.
The fuel cell vehicle demonstration city cluster that can receive subsidies in the second year includes 10 provincial-level administrative regions such as Beijing, Tianjin, and Hebei. The top five cities in terms of reward funds are Tangshan (Hebei) 398.3 million yuan, Shanghai 313.49 million yuan, Zhengzhou (Henan) 263.68 million yuan, Beijing 243.08 million yuan, and Tianjin 112.07 million yuan.
https://jjs.mof.gov.cn/zxzyzf/jnjpbzzj/202411/t20241114_3947565.htm (in Chinese)

On April 21, 2025, the Ministry of Finance issued Notice on Issuing the Budget for Energy Conservation and Emission Reduction Subsidies in 2025 (First Batch).
The funds allocated this time include the allocation of reward funds for the demonstration and application of fuel cell vehicles in the **third year**, which is approximately **2.34 billion yuan**.

https://jjs.mof.gov.cn/zxzyzf/jnjpbzzj/202504/t20250418_3962256.htm (in Chinese)

6. Regulations, Codes & Standards, and Safety Update

On December 25th, 2024, the National Energy Administration approved 276 energy industry standards. Two of them are related to hydrogen energy.

Code	Name	Implementation date
NB/T 11745-2024	Mobile vacuum insulated liquid hydrogen pressure vessel	2025-6-25
SY/T 7820-2024	Design Specification for Hydrogen Pipeline Engineering	2025-6-25