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Japan Energy Newsletter

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1 Japan Approves Revision of Basic Hydrogen Strategy¹

On June 6, 2023, the Japanese government held the 4th Ministerial Conference on Renewable Energy and Hydrogen, where it revised the country's Basic Hydrogen Strategy. The previous strategy set the annual hydrogen supply target at 3 million tons by 2030 and 20 million tons by 2050. The revised strategy sets a new target of 12 million tons by 2040. The new strategy also aims to reduce the cost to 30 yen per 1Nm³ of hydrogen by 2030 and further reduce the cost to 20 yen per 1Nm³ by 2050. Currently, the cost of hydrogen is 100 yen per 1Nm³ of hydrogen. The revised strategy stresses three goals: 1) decarbonization, 2) stable energy supply, and 3) economic growth. To achieve these goals, the strategy includes an investment plan of 15 trillion yen over 15 years, which will fund investments to help the public and private sectors to develop a hydrogen supply chain.

Background of the Strategy Revision

Japan initially adopted the world's first national hydrogen strategy in 2017. Since then, 25 other countries and regions have formulated their own hydrogen strategies, which have led to active global technology development and investment as part of the global efforts to reduce carbon emissions.

Two major events occurred in the last three years. First, in October 2020, Japan made its "2050 Carbon Neutral Declaration," which changed the role of hydrogen and ammonia from "new energies" to "electricity generation fuels that play a significant role in the power supply." Second, Russia's invasion of Ukraine in February 2022 caused a critical shift in the global energy supply structure. As a result, the G7 countries, including Japan, have prioritized phasing out their dependence on Russian energy, which has heightened the need to develop hydrogen as an energy source. Due to these shifts, the Japanese government decided to revise its Basic Hydrogen Strategy.

At the same time, Japan has been promoting several Green Transformation (GX) initiatives. GX is a set of policy reforms targeting the following three goals: 1) a stable supply of energy with steady economic growth, 2) the enhancement of Japan's international industrial competitiveness, and 3) decarbonization. According to the GX approach, Japan's national hydrogen competitiveness depends on whether it can create a large-scale and robust supply chain for hydrogen and ammonia, improve its supply infrastructure, and build a hydrogen society. This strategy also covers ammonia and synthetic methane/synthetic fuels, and the term "hydrogen" in "basic hydrogen strategy" and "hydrogen society" also refers to those fuels.

Primary Revisions² to the Basic Hydrogen Strategy

The revision has changed the basic strategy for achieving a hydrogen-based society to directions for accelerating the realization of a hydrogen society, such as through the new hydrogen supply target and cost reduction discussed above.

¹ https://www.meti.go.jp/shingikai/enecho/shoene_shinene/suiso_seisaku/pdf/20230606_2.pdf

² <https://warp.da.ndl.go.jp/info:ndljp/pid/11646345/www.meti.go.jp/press/2017/12/20171226002/20171226002-1.pdf>

The strategy sets new demand-side initiatives and goals, such as establishing a new domestic and international supply chain and increasing the production target of water electrolysis equipment by Japanese-affiliated companies in domestic and overseas markets to about 15 GW by 2030. Achieving these goals will be particularly important for establishing a production base for domestic hydrogen production.

In addition, the strategy includes new supply-side initiatives to formulate and implement strategies based on domestic and international trends in power generation, fuel cells, and heat and raw material utilization. The plan indicates the current situation and direction of each area and notes that efforts will be made to strengthen industrial competitiveness and expand the demand for hydrogen.

The strategy also addresses the need for a support system for building a large-scale supply chain. The government will promote a scheme that provides long-term support for business operators (i.e., first movers) that aim to begin supplying low-carbon hydrogen and ammonia in Japan by around 2030. This scheme will provide long-term support for part or all of the difference between the "breakeven price," which is assumed to be the price that will enable business operators to obtain appropriate profits from the hydrogen and ammonia they supply, and the "reference price," which is equivalent to existing fuels. At the same time, a system will be developed to improve the supply infrastructure. There are plans for 15 trillion yen in public and private sector supply chain-related investments over the next 15 years.

Hydrogen Industry Strategy

The revision has added a key new item to the strategy, "direction towards strengthening the competitiveness of the hydrogen industry," which defines clean hydrogen as one of the clean energy technologies for industrial competitiveness and presents a strategy for building new markets for the hydrogen industry.

Moreover, according to the revised strategy, as hydrogen becomes widespread worldwide and its related markets continue to expand, it will be essential to spread Japanese technology and products both domestically and internationally and strengthen Japanese companies' competitiveness. Considering the fields in which Japanese companies have technological superiority, the following nine fields and 5 types are considered the core strategic fields and will receive investment and other forms of support (Table 1).

Table 1: 9 Strategic Fields and 5 Types in the Industrial Strategy of the Basic Hydrogen Strategy

	Strategic Field	Type
1	Hydrogen production	(1) Hydrogen supply
2	Building a hydrogen supply chain	
3	Decarbonized power generation	(2) Decarbonized power generation
4	Fuel cell	(3) Fuel cell
5	Decarbonized steel	(4) Direct use of hydrogen
6	Decarbonized chemical products	
7	Hydrogen fuel ship	
8	Fuel ammonia	(5) Utilization of hydrogen compounds
9	Recycled carbon products	

2 Japan, Australia, and Several Southeast Asian Countries Jointly Announce the Cooperative Development of Common Rules for CO₂ Underground Storage³⁴

On June 23, the Ministry of Economy, Trade and Industry of Japan (METI) held the first Asian Zero Emission Community Senior Officials Meeting (AZEC SOM) in Jakarta, Indonesia, during which it was proposed that the participating countries should formulate common rules on the technologies for capturing carbon dioxide (CO₂) and storing it underground. This meeting was held based on the results of the 1st AZEC Ministerial Meeting in March 2023, with support from the Economic Research Institute for ASEAN and East Asia (ERIA).

Eleven countries - Australia, Brunei, Cambodia, Indonesia, Japan, Laos, Malaysia, Philippines, Singapore, Thailand, and Vietnam – have joined the Asian Zero Emissions Community (AZEC). AZEC was launched as a multilateral framework following the joint statement. The organization has decided to hold an annual ministerial meeting and a regular Senior Officials Meeting (SOM) going forward.⁵ At the 1st Ministerial Meeting held in Japan on March 4, 2023, the participating countries announced in a joint statement that they will cooperate together to develop a comprehensive energy-savings society as part of the transition towards a carbon-neutral/net-zero-emissions society, and they will commit to accelerating the comprehensive energy transition in the Asian region.^{6 7}

In the joint statement, the countries agreed on the following three points:

- 1) Engaging in decarbonization while ensuring energy security
- 2) Balancing decarbonization and economic growth
- 3) Under the three common recognitions of implementing energy transitions according to the actual situation of each country, each country will cooperate on decarbonization and carbon neutrality as a partner through AZEC

At the June 23 meeting of AZEC, the Japanese government re-emphasized its stance of continuing its existing support in Asia and contributing to the decarbonization of the region. It was also confirmed during the meeting that the participating countries will implement new initiatives based around the following three goals as concrete measures for future policy coordination:

³ <https://www.meti.go.jp/press/2023/06/20230626001/20230626001.html>

⁴ <https://www.eria.org/news-and-views/eria-supports-first-asia-zero-emission-community-azec-senior-official-meeting-asom/>

⁵ <https://www.jetro.go.jp/biznews/2023/03/227d765ff92ae042.html>

⁶ <https://www.meti.go.jp/press/2022/03/20230306005/20230306005-23.pdf>
<https://www.meti.go.jp/press/2022/03/20230306005/20230306005-24.pdf>

⁷ <https://www.meti.go.jp/press/2022/03/20230306005/20230306005.html>

- 1) Formulating a master plan for hydrogen and ammonia
- 2) Formulating technical standards for CCS
- 3) Promoting the utilization of the Joint Crediting Mechanism (JCM)

Japan also agreed to continue its initiatives for decarbonization in Asia together with AZEC partner countries by expanding the market for decarbonization technologies and the accompanying cost reductions.

According to Nikkei News⁸, regarding the second point (Formulating technical standards for CCS), AZEC plans to formulate joint rules regarding underground CO₂ storage that will be common to Australia and Southeast Asian countries. Some of the points to be covered in the joint rules are as follows:

- 1) Methods for calculating the amount of CO₂ that could be substantially reduced
- 2) Criteria to ensure safety when choosing storage sites
- 3) Calculation methods for CO₂ storage amounts
- 4) Monitoring methods to check for leaks after storage, etc.

If the current standardization efforts continue to progress as expected, it will reduce operating costs and shorter maintenance periods for decarbonization-related technologies. In addition, if Japan takes the lead in building international rules, one likely outcome is that it will also make it easier for Japan to take the necessary steps that lead to decarbonization. A concrete plan for standardization is expected to be presented at the next AZEC ministerial meeting, which will be held in Japan in the spring of 2024.

⁸ <https://www.nikkei.com/article/DGKKZO72140480T20C23A6EA1000/>

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