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# **Japan Energy Newsletter**

**Japan Electric Power  
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## 1 The U.S. and Japan Release a Joint Statement on Cooperation for Energy Security and the Clean Energy Transition<sup>1</sup>

On January 9, 2023, Minister of Economy, Trade and Industry (METI) Yasutoshi Nishimura met with U.S. Secretary of Energy (DOE) Jennifer M. Granholm and issued a statement on the countries' plans for collaboration on energy security and accelerating the clean energy transition. During the meeting, they discussed the current global energy crisis, the need for cooperation on clean energy, and the importance of the transition towards clean energy sources, including geothermal energy, nuclear power, and hydrogen and ammonia fuel. As a result, Japan and the U.S. agreed to strengthen their collaboration on the development of next-generation advanced nuclear reactors while maximizing the use of existing nuclear power plants; to create a robust supply chain for nuclear materials and components; to advance their policies on the adoption of clean hydrogen and ammonia fuel; and to facilitate cooperation between Japanese and the U.S. companies. The main points of the joint statement are as follows.

- **Improving energy security by supporting upstream investments in the U.S.:** Japan and the U.S. will explore the need for diverse and reliable energy supplies following Russia's invasion of Ukraine and support upstream investments in the U.S.
- **The utilization and development of nuclear energy:** The two countries will collaborate on the study of next-generation advanced reactors, maximize the use of existing nuclear power plants, and collaborate to create a robust supply chain for nuclear fuels among their allies, including uranium fuel and components. METI and DOE will work jointly on the development and construction of advanced nuclear technologies, including small modular reactors (SMRs), and on facilitating collaboration opportunities with entities from other countries.
- **Strengthening clean hydrogen and ammonia fuel policies:** Japan and the U.S. will develop their clean hydrogen and ammonia policies and continue encouraging hydrogen energy partnerships between Japanese and U.S. businesses to reduce production costs and encourage new distribution and utilization methods.
- **Promoting the Japan-U.S. Clean Energy and Energy Security Initiative (CEESI):** METI and DOE held a ministerial dialogue in May 2022 to establish the CEESI. Through the joint statement, Japan and the U.S. reaffirmed the role of the CEESI in sharing knowledge in the fields of CCUS/carbon recycling and civilian nuclear energy. The joint statement also stated that Japan and the U.S. will continue to cooperate in holding offshore wind power workshops, geothermal technology workshops, and other joint initiatives related to renewable energy.
- **Cooperation in preparing for the 2023 G7 chaired by Japan:** Secretary Granholm and Minister Nishimura welcomed Japan's acceptance of the 2023 G7 Presidency. Their joint statement noted the importance of international coordination and collaboration on accelerating the clean energy transition and ensuring energy security in order to achieve zero emissions. Japan and the U.S. will also promote efforts to diversify the supply of important minerals and

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<sup>1</sup> <https://www.meti.go.jp/press/2022/01/20230111003/20230111003.html>

materials, implement new cooperation programs for countries interested in using nuclear energy, and promote industrial decarbonization and new standards through the G7 Industrial Decarbonization Agenda (IDA).

## 2 Ministry of Economy, Trade and Industry Announces a Roadmap for the Commercialization of CO2 Storage<sup>2</sup>

On January 26, 2023, Japan's Ministry of Economy, Trade and Industry (METI) hosted a study group consisting of carbon capture and storage (CCS) experts and energy-related companies. During the meeting, METI announced the final version of the long-term CCS roadmap for the practical application of CO2 storage. The goal by 2030 is to have an outlook on the storage of 6-12 million tons of CO2 (the equivalent of CO2 emissions from 2-3 coal-fired power plants). On the same day, private industry participants, including JX Oil & Gas Exploration, Itochu, and Hokkaido Electric Power Company (HEPCO), announced they will establish a joint venture to study and research CO2 storage.

### 2.1 Development of METI's Long-Term CCS Roadmap

Japan's government is promoting the introduction of CCS as one of the ways to achieve its goal of carbon neutrality by 2050. The country plans to conduct a feasibility study on the procurement of mining equipment by 2023 and then make a final investment decision by 2026 in order for CCS businesses in Japan to launch by 2030.

It will be crucial for Japan to improve the business environment for CCS by 2030, including the development of regulations, policy reforms, and measures to reduce the cost of CCS business operations. Japan's Sixth Strategic Energy Plan, issued in October 2021, emphasized the need for a long-term CCS roadmap that identifies key milestones for advancing technologies, reducing costs, identifying CCS development areas, and ways to improve the business environment for the commercialization of CCS technologies. Japan subsequently released an interim report on the long-term CCS roadmap in June 2022.<sup>3</sup>

The final version of the roadmap aims to secure 6 to 12 million tons of annual CO2 storage capacity by 2030. In addition, the Japanese government will support pilot CCS projects, expected to launch by 2030, and advance the CCS business environment. Based on the roadmap, Japan will (1) develop clusters of CO2 recovery facilities and CO2 storage hubs, (2) explore methods to considerably reduce CCS costs, and (3) work to gain an understanding from the public regarding CO2 storage areas. The government will support three to five CCS projects, focusing on various issues, such as CO2 capture technologies, distribution methods, and identifying potential storage areas, to create diverse CCS business models (Fig. 1).<sup>4</sup>

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<sup>2</sup> [https://www.meti.go.jp/shingikai/energy\\_environment/ccs\\_choki\\_roadmap/006.html](https://www.meti.go.jp/shingikai/energy_environment/ccs_choki_roadmap/006.html)

<sup>3</sup> [https://www.meti.go.jp/shingikai/energy\\_environment/ccs\\_choki\\_roadmap/pdf/005\\_03\\_00.pdf](https://www.meti.go.jp/shingikai/energy_environment/ccs_choki_roadmap/pdf/005_03_00.pdf)

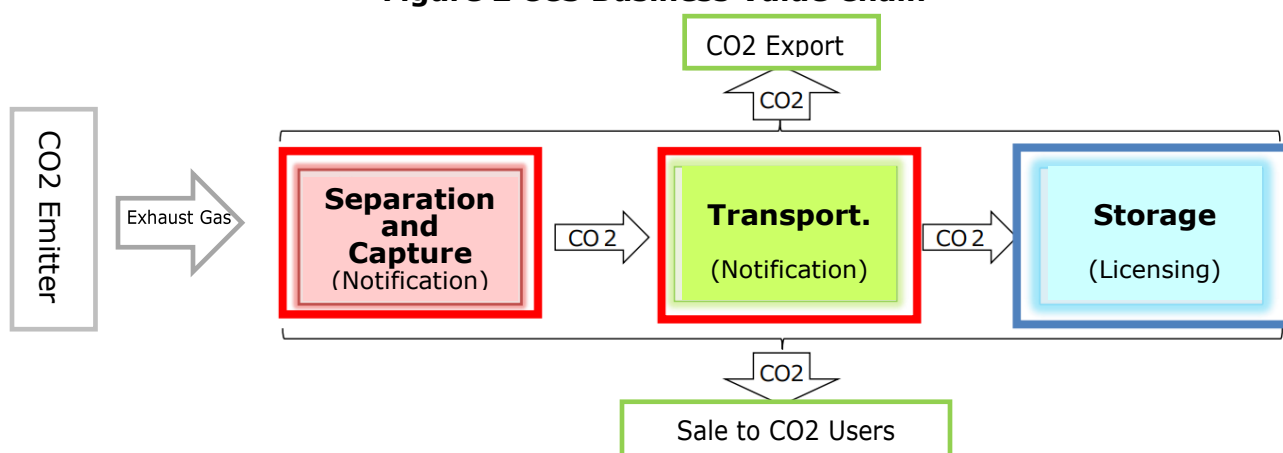
<sup>4</sup> [https://www.meti.go.jp/shingikai/energy\\_environment/ccs\\_choki\\_roadmap/pdf/006\\_03\\_01.pdf](https://www.meti.go.jp/shingikai/energy_environment/ccs_choki_roadmap/pdf/006_03_01.pdf)

**Figure 1 Expected Locations for CO2 Capture, Distribution Methods, and CO2 Storage Sites**

Locations for CO2 Capture	Distribution Methods	CO2 Storage Sites
Thermal Power Plant Steel Production Plant Chemical Factory Cement Factory Paper Factory Hydrogen Production Plant, etc.	Pipeline Ship	Underground Coastal Seabed Offshore Subsea

Source: Ministry of Economy, Trade and Industry

**Figure 2 CCS Business Value Chain**



Source: Ministry of Economy, Trade and Industry

The roadmap noted the urgent need to enact the CCS business law immediately to improve the CCS business environment. It also categorized the roles in the CCS value chain (such as business operator for CO2 separation and capture, distribution, and storage)(Fig.2). A notification system will be introduced for separation and capture entities, as well as distribution operators, and a licensing system will be introduced for storage operators. Similar to the regulatory framework in the Mining Law and the Mine Safety Law, which regulates oil and natural gas businesses, Japan will give storage business rights to storage operators and develop a mechanism to define the liability for damages, no-fault liability, and limited monitoring duties. <sup>5</sup>

Japan has set cost reduction for CCS as one of the top priorities for the industry, with the expectation that its policies will eventually reduce CCS business costs to less than 60% overall of the current cost level. The targets for cost reduction are set as follows:

- 1) Cost of CO2 Separation/Capture: About half by 2030 and less than one-fourth by 2050.
- 2) Cost of CO2 Distribution: With CO2 distribution businesses starting in 2030, the cost of CO2 distribution is expected to be less than 70% in 2050.

<sup>5</sup> [https://www.meti.go.jp/shingikai/energy\\_environment/ccs\\_choki\\_roadmap/pdf/006\\_03\\_02.pdf](https://www.meti.go.jp/shingikai/energy_environment/ccs_choki_roadmap/pdf/006_03_02.pdf)

3) Cost of CO<sub>2</sub> Storage: With CO<sub>2</sub> storage businesses starting in 2030, the cost of CO<sub>2</sub> storage is expected to be less than 80% in 2050.

## 2.2 Efforts by Private Businesses

On February 26, 2023, when the final draft of the roadmap was released, several private business operators announced their own CCS initiatives. JX Nippon Oil & Gas Exploration, ENEOS, and J-Power announced that they will jointly establish West Japan Carbon Storage Research Co., Ltd., a joint venture, in February 2023 to accelerate their preparations for domestic CCS commercialization.<sup>6</sup> They will launch a CO<sub>2</sub> storage project in western Japan, where ENEOS and J-Power's emission sources are located and they have some potential locations for CO<sub>2</sub> storage. This project, supported by national and local governments and involving collaborations with residents and related organizations, will explore and evaluate CO<sub>2</sub> storage candidate sites.

Separately, Idemitsu Kosan, Hokkaido Electric Power Company (HEPCO), and JAPEX have launched a carbon dioxide capture, utilization, and storage (CCUS) project in the Tomakomai area of Hokkaido, leveraging their own business bases and strengths.<sup>7</sup> In the Tomakomai area, various industries, including the business bases of the partner companies, are concentrated around the port area. Many efforts toward carbon neutrality are happening in the region, which makes it a promising location to launch a hub-and-cluster CCUS business by 2030. The three companies will jointly conduct technical studies on CO<sub>2</sub> emission points, CO<sub>2</sub> capture facilities, and CO<sub>2</sub> distribution pipelines and evaluate CO<sub>2</sub> storage locations in the area. The project will also evaluate the utilization of CO<sub>2</sub>.<sup>8</sup>

In another initiative, ITOCHU, Mitsubishi Heavy Industries, INPEX, and Taisei Corporation announced that they have signed a memorandum of understanding to examine the feasibility of large-scale, wide-area CCS value chain projects using ship transportation for CO<sub>2</sub> emitting businesses in Japan.<sup>9</sup> They will work together to support hard-to-abate industries, such as materials industries, where it is particularly difficult to achieve decarbonization via electrification and hydrogenation. They will also plan to reduce CO<sub>2</sub> emissions by advancing the commercialization of CO<sub>2</sub> separation, capture, distribution, and storage. The project will also identify candidate sites for CO<sub>2</sub> storage in Japan.

Finally, on January 26, 2023, Nippon Steel, Mitsubishi Corporation, and ExxonMobil Asia Pacific announced that they have formed a CCS partnership to investigate the process for the capture of CO<sub>2</sub> emitted from Nippon Steel's domestic steelworks and evaluate the necessary equipment for developing a CCS value chain in the Asia Pacific region. ExxonMobil will conduct a study of CO<sub>2</sub> storage sites in Australia, Malaysia, Indonesia, and other countries in the Asia Pacific region, while Mitsubishi Corporation will evaluate overseas CO<sub>2</sub> transportation and the construction of a CCS value chain. This

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<sup>6</sup> [https://www.meti.go.jp/shingikai/energy\\_environment/ccs\\_choki\\_roadmap/pdf/006\\_s01\\_00.pdf](https://www.meti.go.jp/shingikai/energy_environment/ccs_choki_roadmap/pdf/006_s01_00.pdf)

<sup>7</sup> [https://www.meti.go.jp/shingikai/energy\\_environment/ccs\\_choki\\_roadmap/pdf/006\\_s02\\_00.pdf](https://www.meti.go.jp/shingikai/energy_environment/ccs_choki_roadmap/pdf/006_s02_00.pdf)

<sup>8</sup> Hub & cluster type of CCUS business: these are CCS businesses that capture and store CO<sub>2</sub> from many different emission sources in a region, and make effective use of that CO<sub>2</sub> to further reduce emissions.

<sup>9</sup> [https://www.meti.go.jp/shingikai/energy\\_environment/ccs\\_choki\\_roadmap/pdf/006\\_s03\\_00.pdf](https://www.meti.go.jp/shingikai/energy_environment/ccs_choki_roadmap/pdf/006_s03_00.pdf)

partnership will be the first attempt by Japanese businesses to explore opportunities for overseas CO2 capture and storage, and for creating an international CCS value chain.<sup>10</sup>

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<sup>10</sup> [https://www.meti.go.jp/shingikai/energy\\_environment/ccs\\_choki\\_roadmap/pdf/006\\_s04\\_00.pdf](https://www.meti.go.jp/shingikai/energy_environment/ccs_choki_roadmap/pdf/006_s04_00.pdf)



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