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Japan's Proposed CCS Cost Gap Support Framework

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1. Introduction

The CCS Business Act, which establishes the legal framework governing CO2 storage activities, came into full force in May 2026. Following the full implementation of the CCS Business Act, on 26 June 2026, the Working Group on Support Measures for carbon capture and storage (CCS) projects under Japan's Carbon Management Subcommittee released an interim report setting out the proposed support framework for pipeline-based CCS projects. The newly released report addresses challenges in relation to how CCS projects can be made commercially viable.

The report recognises that, while the regulatory environment has steadily developed, CCS projects remain difficult to commercialise due to their high capital costs, long development periods, and limited revenue certainty. Against this background, the proposed support framework seeks to encourage private investment and facilitate the launch of commercial CCS projects in the early 2030s.

2. The Cost Gap Support Mechanism

The focal point of the proposal is a “cost gap support” mechanism.

The value chain of CCS projects consists of three interconnected and inseparable components, namely CO2 capture, transportation, and storage. A CCS project cannot function if any one of these elements is absent. Reflecting this characteristic, the report proposes a cost gap support framework, which covers the entire value chain rather than only a particular segment.

A. The Calculation Mechanism

Under the proposal, financial support will be calculated based on the difference between the "Benchmark Price" and the "Reference Price". As further explained below, the Benchmark Price is, for each ton of CO_2, (i) the CO_2 capture costs plus (ii) the transportation and storage costs, both including capital expenditure (CAPEX) and operating expenditure (OPEX); whereas, the Reference Price will be based on the average transaction price under Japan's emissions trading scheme.

(i) Calculation of the Benchmark Price

The calculation formula of the CO_2 capture costs for each year is detailed as follows:

$$\frac{A1 \times a1 + (A2 \times a2 + A3 + B1 \times 110\%\, max + B2 + C)}{Total\ Estimated\ CO2\ Storage\ Volume}$$

A1	Required power/fuel for capturing each ton of CO_2
a1	Unit price of power/fuel
A2	The total amount, during the support period, of costs necessary for continued CO_2 capture incurred after start of operation, which fluctuate with CPI or other price indices
a2	Correction factor for subsequent changes
A3	The total amount, during the support period, of costs necessary for continued CO_2 capture incurred after start of operation, which DO NOT fluctuate with CPI or other price indices
B1	Total construction costs
B2	Total required costs before start of operation
C	Total financing costs and taxes
Total Estimated CO_2 Storage Capacity	Estimated CO_2 storage volumes for each capture operator during the support period

The calculation formula of the transportation and storage costs for each year is as follows:

$$\frac{A1 \times a1 + (A2 \times a2 + A3 + B1 \times 110\%\, max + B2 + C)}{Total\ Estimated\ CO2\ Storage\ Volume}$$

A1	Required power/fuel for each ton of CO_2 transportation and storage
a1	Unit price of power/fuel
A2	The total amount, during the support period, of costs necessary for

	continued CO_2 transportation and storage incurred after start of operation, which fluctuate with CPI or other price indices
a2	Correction factor for subsequent changes
A3	The total amount, during the support period, of costs necessary for continued CO_2 transportation and storage incurred after start of operation, which DO NOT fluctuate with CPI or other price indices
B1	Total construction costs
B2	Total required costs before start of operation
C	Total financing costs and taxes
Total Estimated CO_2 Storage Capacity	Estimated CO_2 storage volumes for each capture operator during the support period

If there are multiple capture operators in a single project, the same transportation and storage costs will generally apply; whereas, different CO_2 capture costs will be set for each CO_2 capture operator because CO_2 capture costs vary by each capture operator.

Eligible costs extend beyond construction expenditure to include operation and maintenance costs, monitoring costs, financing costs, insurance premiums, taxes and, for transportation and storage activities, costs associated with decommissioning facilities, well abandonment, contributions to JOGMEC, and maintaining storage rights under the CCS Business Act.

However, it is also noted that, due to the limited number of competitors, the difference in storage methods, the length of the pipelines, and other factors that are specific to each project may significantly affect the storage costs and the capture costs. The design of a model to cap the maximum price will therefore require further evaluation.

(ii) Calculation of the Reference Price

The report does not provide details in relation to the calculation of the Reference Price; however, it is noted that the Reference Price is based on the average trading price within the emissions trading scheme, taking into account that the costs of CO_2 mitigation measures vary by industry and operator, and that the means of achieving carbon neutrality (such as energy conservation and fuel switching) differ accordingly.

It is also noted in the report that, if the Reference Price exceeds the Benchmark Price and the operator receives an economic benefit exceeding the intended level of support, the excess amount will be subject to repayment.

B. The Support Period

The proposed support period is 15 years. This length of time has been decided in consideration of various factors. Firstly, a certain period of time is needed for CCS business to form an autonomous decarbonisation market. Secondly, as a completely new business to be established

in Japan, time is needed to accumulate practical experience in the business. Thirdly, CCS business is a high-value, long-term investment in its nature, which entails a longer payback period. And fourthly, a period of 15 years has also been implemented in countries with relevant experience. In addition to the 15-year support period, capture operators and transportation and storage operators will each be subject to a further 10-year post-support operational obligation to lower the overall cost of the entire CCS value chain. However, the details of the obligations yet to be determined.

The proposed framework therefore assumes a project structure extending over approximately 25 years, reflecting the long-term nature of CCS infrastructure.

Another notable feature is the proposal to provide upfront support for construction costs. Where such support contributes to reducing the overall amount of long-term revenue support, up to 75% of eligible construction costs for both capture projects and transportation and storage projects may be provided in advance.

Given the substantial capital investment required for capture facilities, CO_2 compression facilities, pipelines, injection facilities, and wells, this measure has the potential to improve the bankability of early CCS projects by reducing initial financing requirements and improving long-term cash flow certainty.

3. Interruptions and Risk Management

Where temporary interruptions occur due to reasons not attributable to the relevant operator, the report proposes that an extension of the support period may be permitted, subject to consultation and budgetary constraints. Similar treatment is proposed where interruptions in one part of the chain affect other project participants.

As CCS projects consist of interconnected capture, transportation, and storage processes, an interruption affecting one part of the chain may prevent the entire project from operating. The report recognises that this "cross-chain risk" requires specific policy measures, particularly during the early stages of CCS development.

In circumstances where operators are unable to maintain necessary cash flow during an interruption period, the report proposes that CAPEX-equivalent amounts may be advanced during the suspension period, subject to repayment if the operator does not resume operations during the extended support period.

The report also addresses force majeure and events comparable to force majeure. In addition to traditional force majeure events such as natural disasters (earthquakes, floods, storms, typhoons), pandemics, war, civil unrest, and terrorism, it recognises project-specific risks that may qualify as force majeure-equivalent events.

For transportation and storage operators, force majeure-equivalent events may include

unforeseen geological conditions affecting storage capacity that could not have been identified by a reasonable and prudent operator exercising ordinary diligence in similar circumstances. For capture operators, force majeure-equivalent events may include abnormal reductions in CO2 supply volumes arising from uncertainties in capture technology or operations that a reasonable and prudent operator could not have anticipated.

Capture operators and transportation and storage operators will be required to agree on terms consistent with these support measures, including arrangements regarding cross-chain risk management. Where an interruption becomes permanent rather than temporary (resulting in project termination), the report indicates that support arrangements and creditor-debtor relationships will be determined through individual consultation with the relevant operators and stakeholders, taking into account the cause of the event and each party's responsibility.

4. Conclusion

The report provides a first look into the support framework for CCS projects. The framework recognises that successful CCS deployment depends on the coordinated development of capture, transportation, and storage infrastructure as an integrated value chain rather than any single component, and that self-sustainability is crucial for sustained development of CCS projects. Therefore, rather than relying solely on capital subsidies, the proposed framework combines cost gap support, a 15-year support period, upfront construction funding, long-term operational support, and mechanisms addressing project-specific risks including cross-chain risk management.

However, the report also identifies several matters that require further consideration. These include domestic CO2 accounting rules for CCS implementation, the treatment of decarbonisation value created through CCS, consistency with other policy measures, the potential for future integration with CCU initiatives such as synthetic fuels and methanation, and support measures for ship-based transportation of liquefied CO2.

If implemented substantially as proposed, the proposed framework is likely to become a key foundation for commercial CCS projects and the development of an integrated CCS value chain in Japan during the early 2030s.

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