

Japan's CCS Implementation Target and JOGMEC's role

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Energy Business Unit

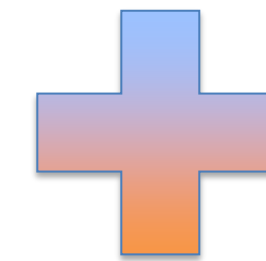
Japan Organization for Metals and Energy Security

September, 2024



Japan Organization For Metals and Energy Security (JOGMEC) is a policy executing agency of the Japanese government to stable and affordable supply of natural resources.

Area of Business



- CCS
- Hydrogen, Ammonia
- Wind Power

Area of Services

- | Financial Support |
|---|
| <ul style="list-style-type: none"> - Equity Finance - Liability Guarantee - Grant - Subsidy, etc. |

- | Technology Support |
|---|
| <ul style="list-style-type: none"> - Geological Survey - Technology Development - Marine Resources Development - Environmental Safety, etc. |

- | Intelligence Support |
|---|
| <ul style="list-style-type: none"> - Resource Diplomacy - International Cooperation - Information Analysis, etc. |



Energy is crucial to societal development

- Requires a stable and affordable supply
- Requires sustainable actions that respect the global environment

However...

Meeting all these requirements is challenging

- International politics and economics are full of uncertainties
- Considerations for the global environment often result in cost burdens for affordable supply

“Energy Trilemma”

Energy Security

Securing diverse energy sources increases costs.

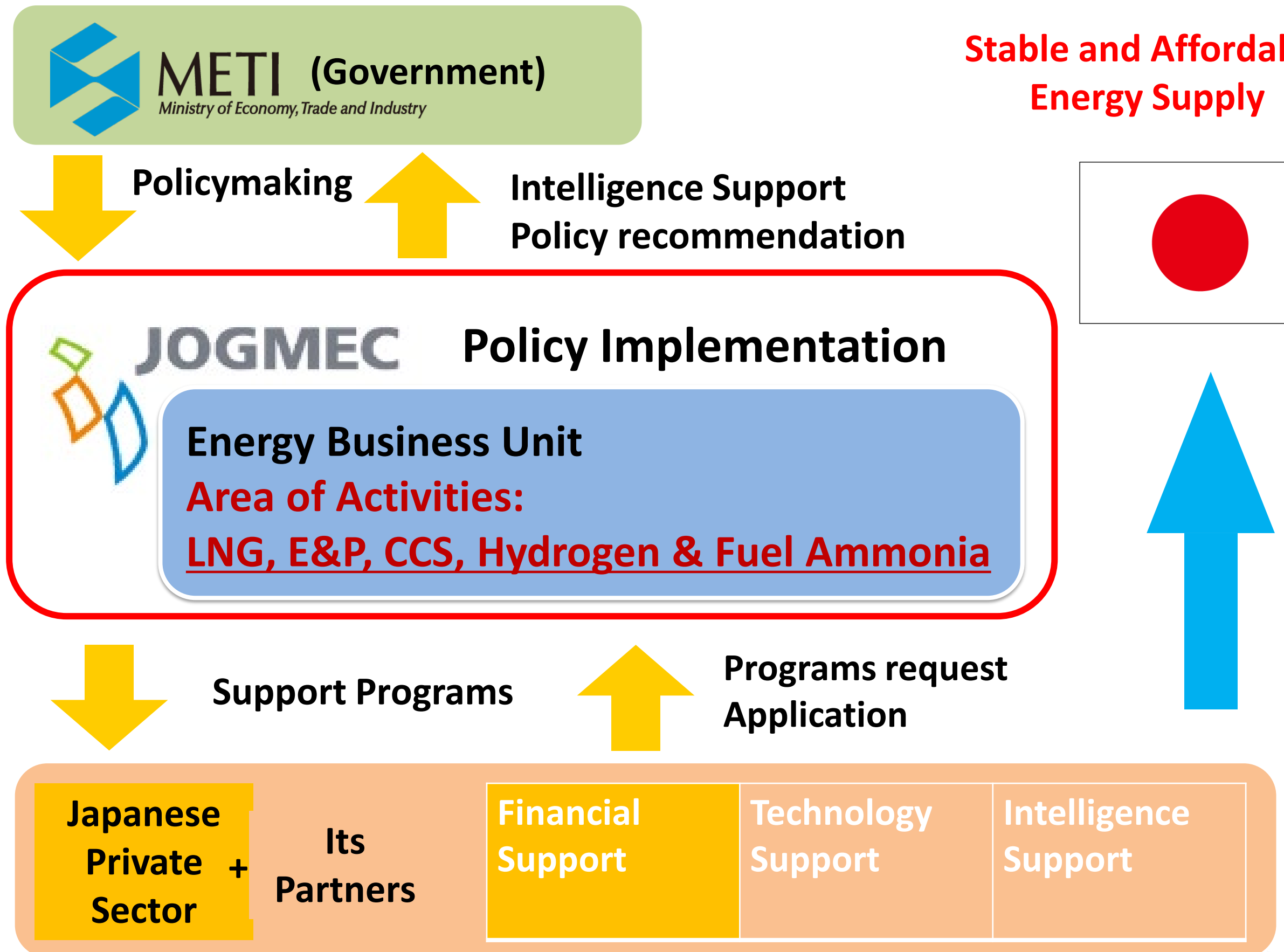
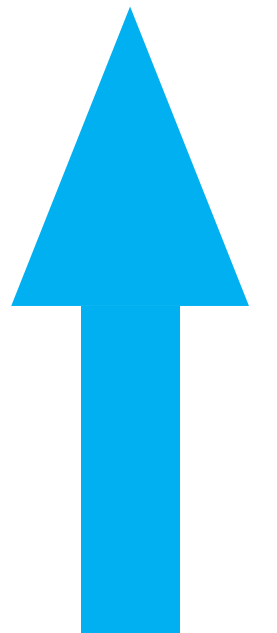
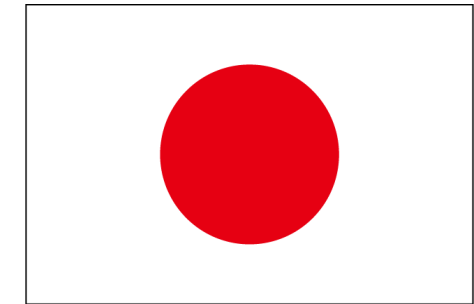
Economic Competitiveness

Using fossil fuels ensures stable supply but has a significant environmental impact

Introducing renewable energy has high initial costs but is environmentally friendly in the long term.

Environmental Sustainability

Stable and Affordable Energy Supply



JOGMEC, as the executing agency of Japan's energy policy led by METI

- Solving issues related to the energy trilemma by providing
 - financial support services
 - technical support services
 - intelligence support services

- Providing services not only to Japanese companies but also to overseas partner organizations

* S+3E (Safety Plus Three Es) :
A concept that aims to simultaneously achieve safety (Safety) as a prerequisite, stable supply (Energy Security), economic efficiency (Economic Efficiency), and environmental compatibility (Environment).

Uniqueness of JOGMEC as a government agency

➤ To provide finance, technology, and intelligence support services simultaneously within one institution

⇒ JOGMEC's services are carried out in a way that maximizes this uniqueness.

Targeted points of JOGMEC's Energy Unit

1. LNG and E&P :

➤ LNG, E&P, Methane hydrate as the transitional energy

2. Low Carbonization:

➤ Methane Emission Control while using fossil fuels like LNG

➤ CCUS while utilizing our accumulated know-how

3. Decarbonization:

➤ To move away from dependence on fossil fuels in the future

➤ Actively supporting hydrogen, ammonia and synthetic fuels.

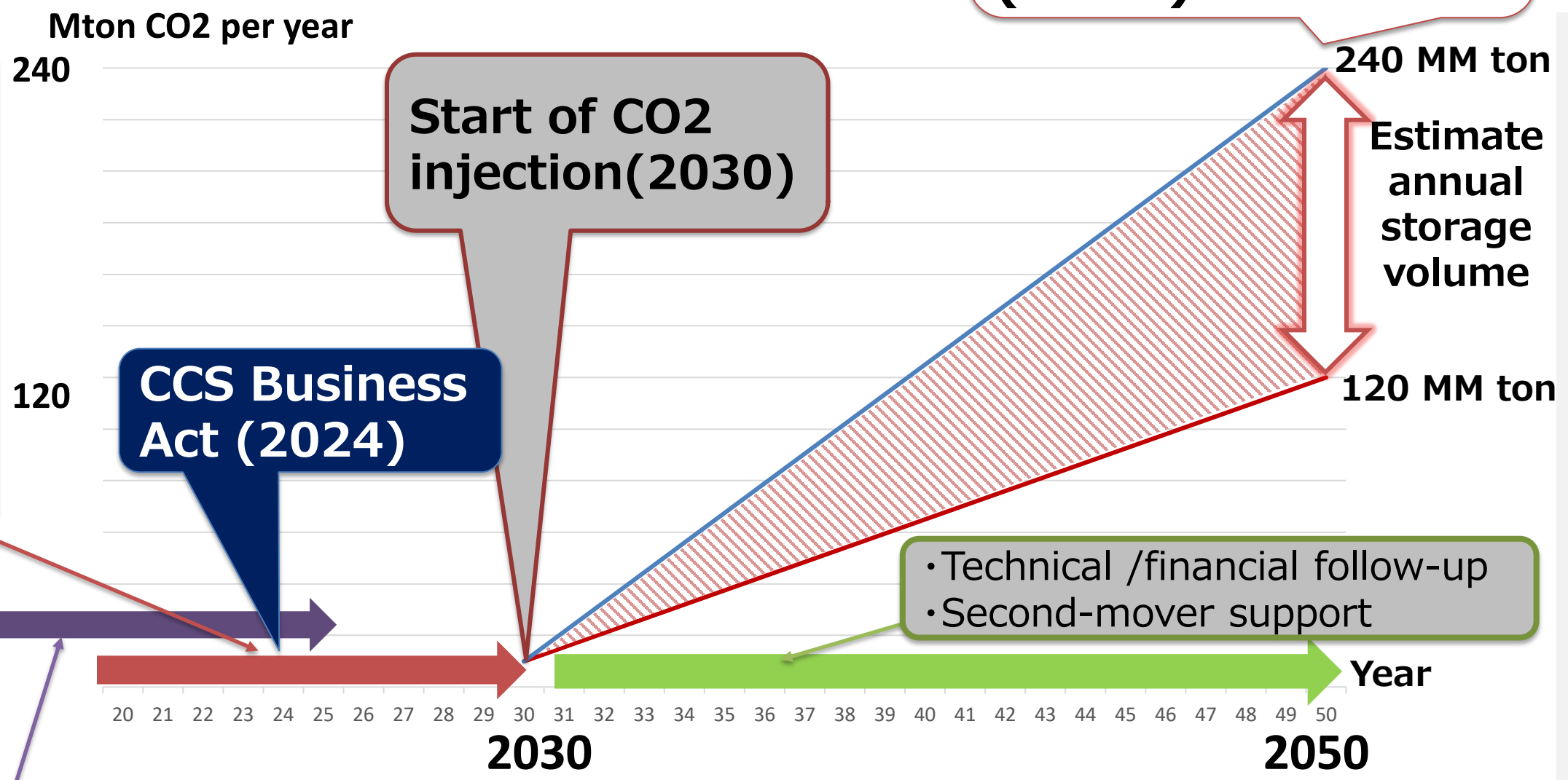


HIF Global LLC operates the world's first operational e-fuels plant from 2022, Haru Oni, Chile.



Start of Advanced CCS Projects in 2023, 2024
 Preparations survey, exploratory drilling, site characterization, FEED and EPC

Basic studies and demonstration projects.
 (Iwanohara, Tomakomai, Minami-aga, Hirai, etc.)



Achievement of carbon neutrality (2050)

Start of CO2 injection (2030)

CCS Business Act (2024)

- Technical /financial follow-up
- Second-mover support

46%* reduction of GHG emission (2030)
 * Compared with 2013

240 MM ton

Estimate annual storage volume

120 MM ton

JOGMEC:

- ⇒ Finance support for "Advanced CCS Projects"
- ⇒ Technical support in various countries through joint study
- ⇒ Intelligence support to promote CCS projects globally

In collaboration with the METI to support policy formulation in each country, create rules for cross-border transport, and standardize infrastructure and ships.

Based on METI: May 27, 2022 [20220527_2.pdf \(meti.go.jp\)](https://www.meti.go.jp/press/20220527/20220527_2.pdf)



Selected 9 CCS projects (2024)

JOGMEC selected **9** role model projects
 (* all contracts not concluded yet)

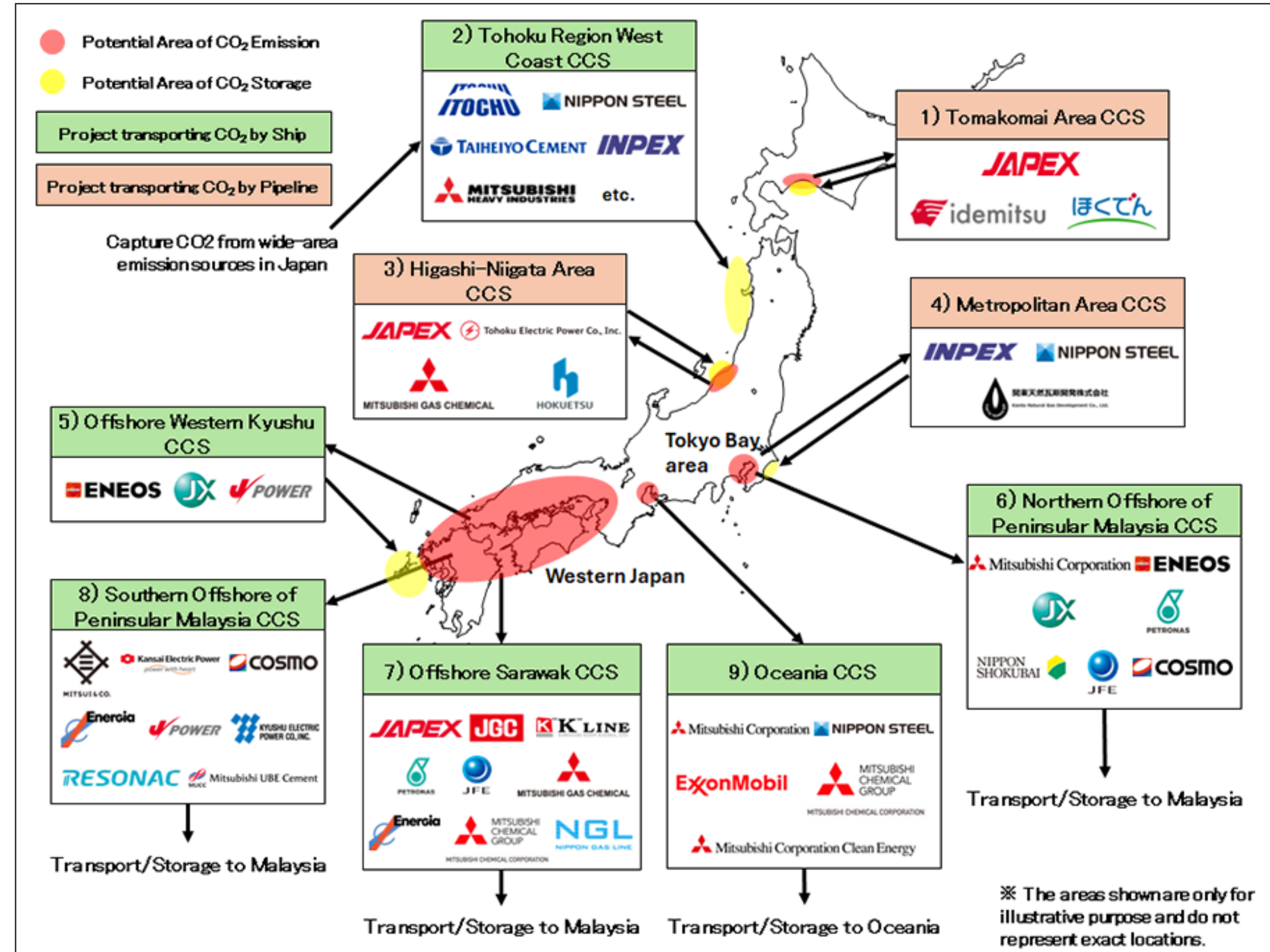
5 for domestic storage

4 for overseas storage

for Japanese Advanced CCS Projects in 2024.

JOGMEC provides support for the first time in Japan toward the initiation of CCS that is to capture and store CO2 underground, which would greatly advance Japan's efforts to achieve a carbon-neutral society.

https://www.jogmec.go.jp/english/news/release/news_10_00036.html

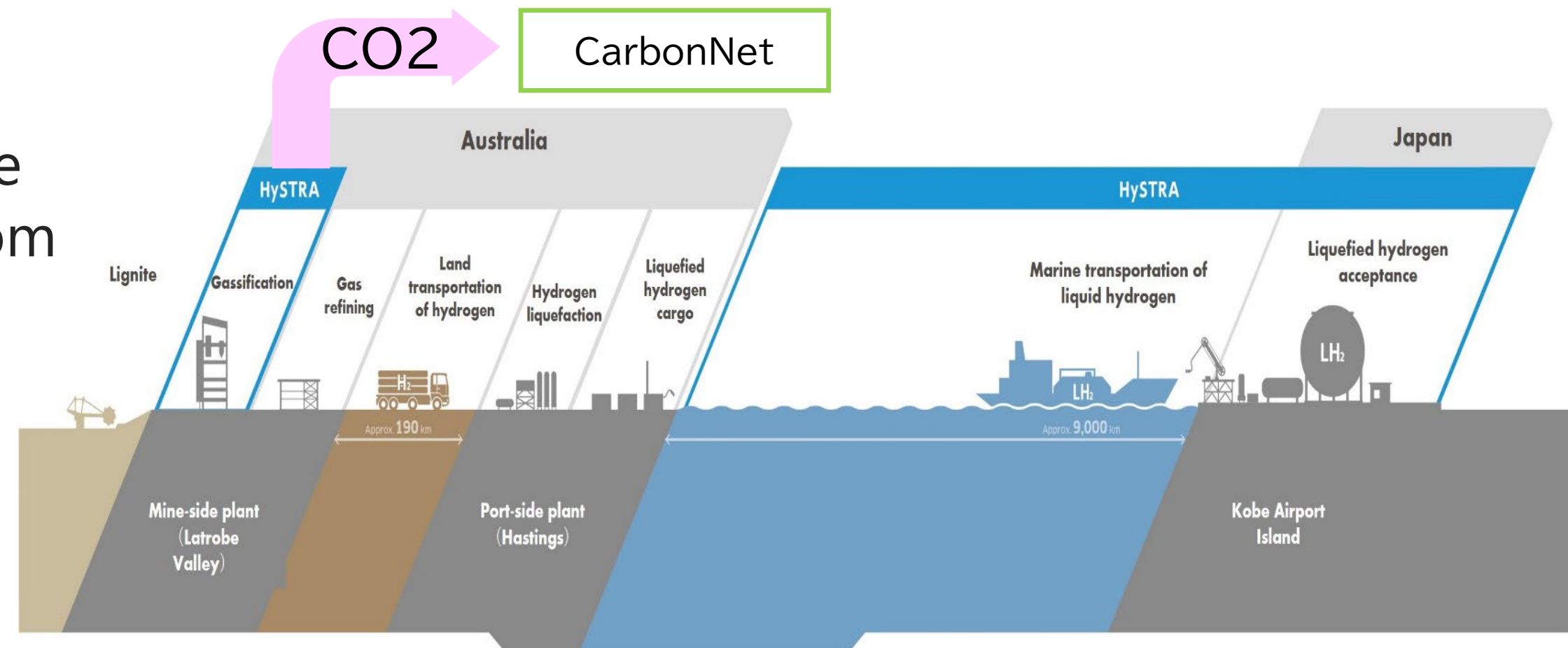


CarbonNet CCS Project

- JOGMEC signed an agreement for our engagement with the CarbonNet CCS planned for the Victorian Government in Jan, 2022.
- We will contribute to the FEED of the CCS project being conducted by the Government, and will work with the Government to proceed with the commercialisation of the project.
- The project is
 - ✓ to store 6 mtpa of CO₂ (Total at least 168 MM tons).
 - ✓ the world's first international blue hydrogen value chain derived from lignite coal.
 - ✓ Attained jointly by Japan and Australia



Location of the CarbonNet project in the Gippsland Basin, Victoria



Concept of the Blue Hydrogen Value Chain

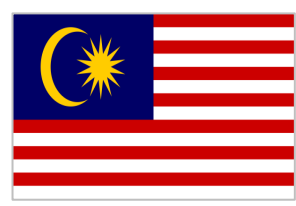
<http://www.hystra.or.jp>

Japan Organization for Metals and Energy Security



Cross-border CO2 Transportation MOCs

MOC on cross border CO2 transportation [Sep.2023]



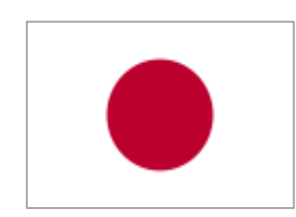
PETRONAS (MALAYSIA)



MOC on CCS partnership (including cross border CO2 transportation) [Aug.2024]



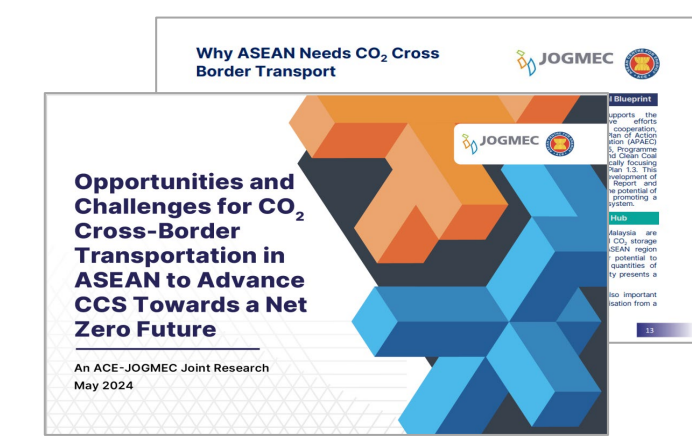
THE MINISTRY OF TRADE AND INDUSTRY OF THE REPUBLIC (SINGAPORE)



AZEC: Asia Zero Emission Community
ACN: Asia CCUS Network

JOGMEC's activities

Collaboration with ACE (ASEAN Center for Energy)
 Joint report on cross-border CO2 transportation [May 2024]



https://www.jogmec.go.jp/english/news/release/news_10_00067.html

METI/JOGMEC/Asia CCUS Network's International Workshop on CO2 Cross-border Transport and Storage in the Asia-Pacific Region [Feb.2024]



Workshop Handbook will be available within 2024 !



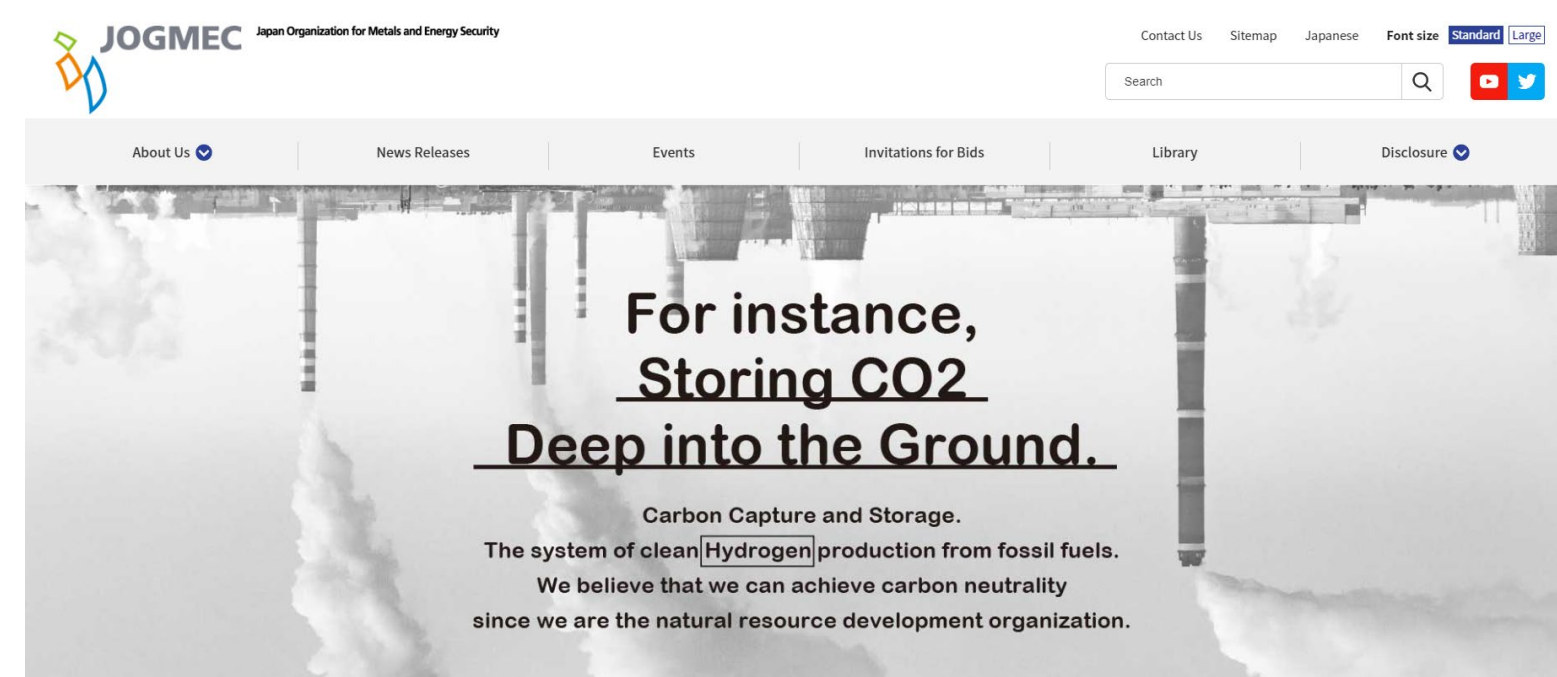
https://www.jogmec.go.jp/english/news/release/news_08_00014.html

Our role

- JOGMEC's role is to respond to future uncertainties as much as possible
- JOGMEC strives to provide diversified and comprehensive services

In the field of low carbonization and decarbonization

- JOGMEC incorporates the latest technologies and provides comprehensive support specially,
 1. Methane Emission Reduction Technologies
 2. Carbon Capture and Storage (CCS) technologies
 3. Promotion of hydrogen energy use



Thank you for your attention!

Visit our website!



<https://mirai.jogmec.go.jp/en/>

<https://www.jogmec.go.jp/english/index.html>