

Japan's policy and initiatives (LNG Market/Oil and Gas Stockpiling)

Apr 2025

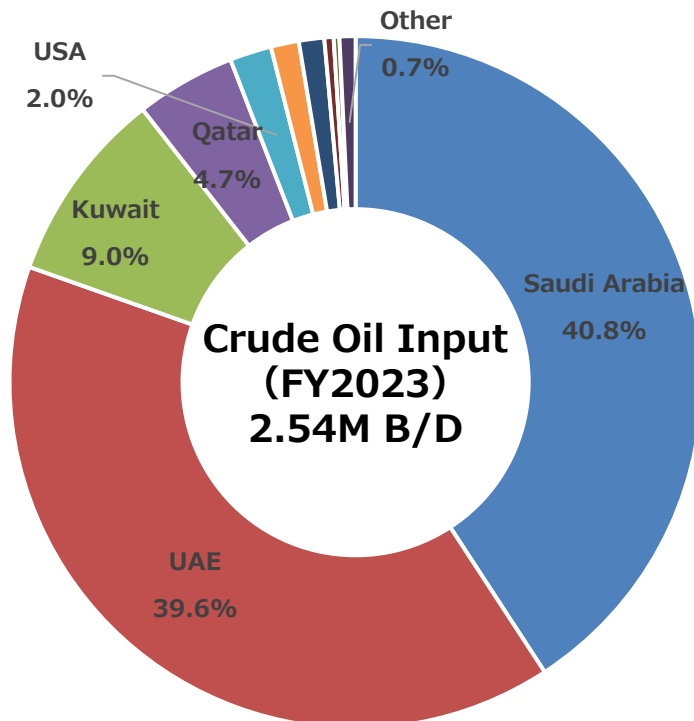
**Ministry of Economy, Trade and
Industry JAPAN**

Japan's policy/initiatives on LNG Market

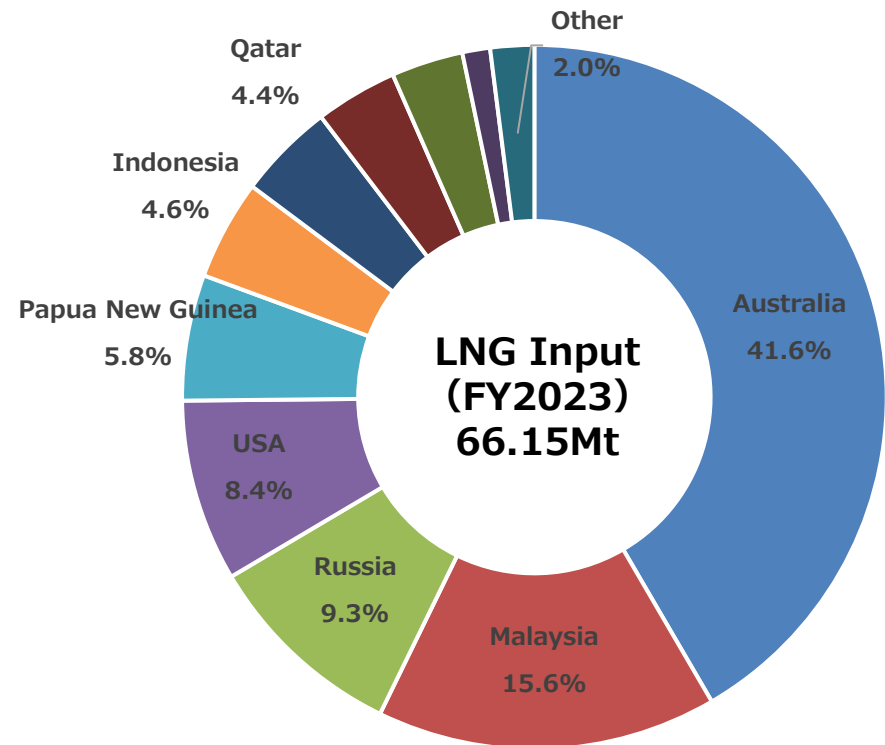
Japan's import volume and share of crude oil and LNG

- Japan imports almost all of its fossil fuels from abroad.
- Crude oil is mainly imported from Saudi Arabia and the United Arab Emirates, with a Middle East dependency ratio of approximately 90%.
- LNG is mainly imported from Australia and Malaysia, which account for about 10% of total Middle East dependence.

Crude oil import destination • volume



LNG import destination • volume



LNG Producer-Consumer Conference 2024

- October 2024, the Ministry of Economy, Trade and Industry (METI) and the International Energy Agency (IEA) held the LNG Producer-Consumer Conference 2024 in Hiroshima.

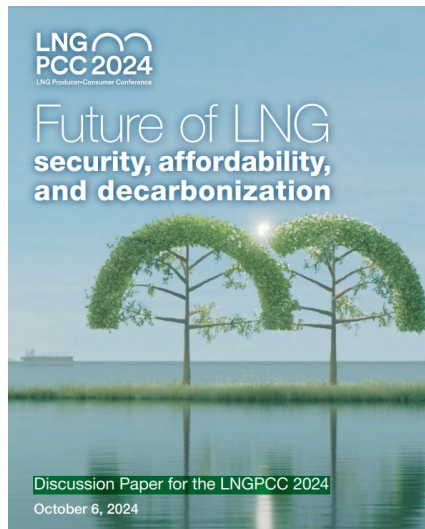
Main Outcome ① Public Announcement on the Role of LNG

Prior to the convening of the conference, METI and the IEA jointly released a discussion paper to serve as a trigger for the discussions, and, based on this, they held a government session and public-private panel discussions. Participants discussed the role of LNG towards net zero through the public-private dialogue among LNG producers and consumers.

As an outcome of the conference, METI and the IEA jointly compiled a joint chair summary.

■ The Role of LNG

- ① Natural gas fired power plants, as dispatchable sources of electricity, can provide flexibility to integrate variable renewables such as solar and wind energy worldwide.
- ② In emerging and developing economies, particularly in Asia, gas and LNG can help facilitate the transition away from coal.
- ③ Various technology options are being considered to reduce emissions across the LNG supply chain.



Commissioner Murase delivering opening remarks



Scene from a panel discussion

LNG Producer-Consumer Conference 2024

Main Outcome ② Enhanced gas security

①The energy authorities of the government of Japan and Italy confirmed comprehensive cooperation of LNG.

In response to the Japan-Italy Action Plan on which the leaders of both countries announced in June 2024, stating that they will strengthen bilateral cooperation in the clean energy sector while supporting the role of natural gas, the energy authorities of the government of Japan and Italy confirmed comprehensive cooperation of LNG.

② The Japan Organization for Metals and Energy Security (JOGMEC) and Eni, an energy company in Italy, agreed on a memorandum of cooperation on support for LNG procurement and diversification of LNG procurement.

③The Ministry of Trade, Industry and Energy (MOTIE) of the Republic of Korea and METI agreed to cooperate on the stable supply of LNG and decided to initiate new initiative.

Korean and Japanese companies will trial cooperation regarding LNG procurement. In the future, based on the positive outcomes of this initiative, we envisage the signing of an arrangement between MOTIE and METI to further strengthen the cooperative relationship between both countries.

Main Outcome ③ The decarbonization of the LNG value chain

①Expand and collaborate on the Coalition for LNG Emission Abatement toward Net-zero (CLEAN) initiative.

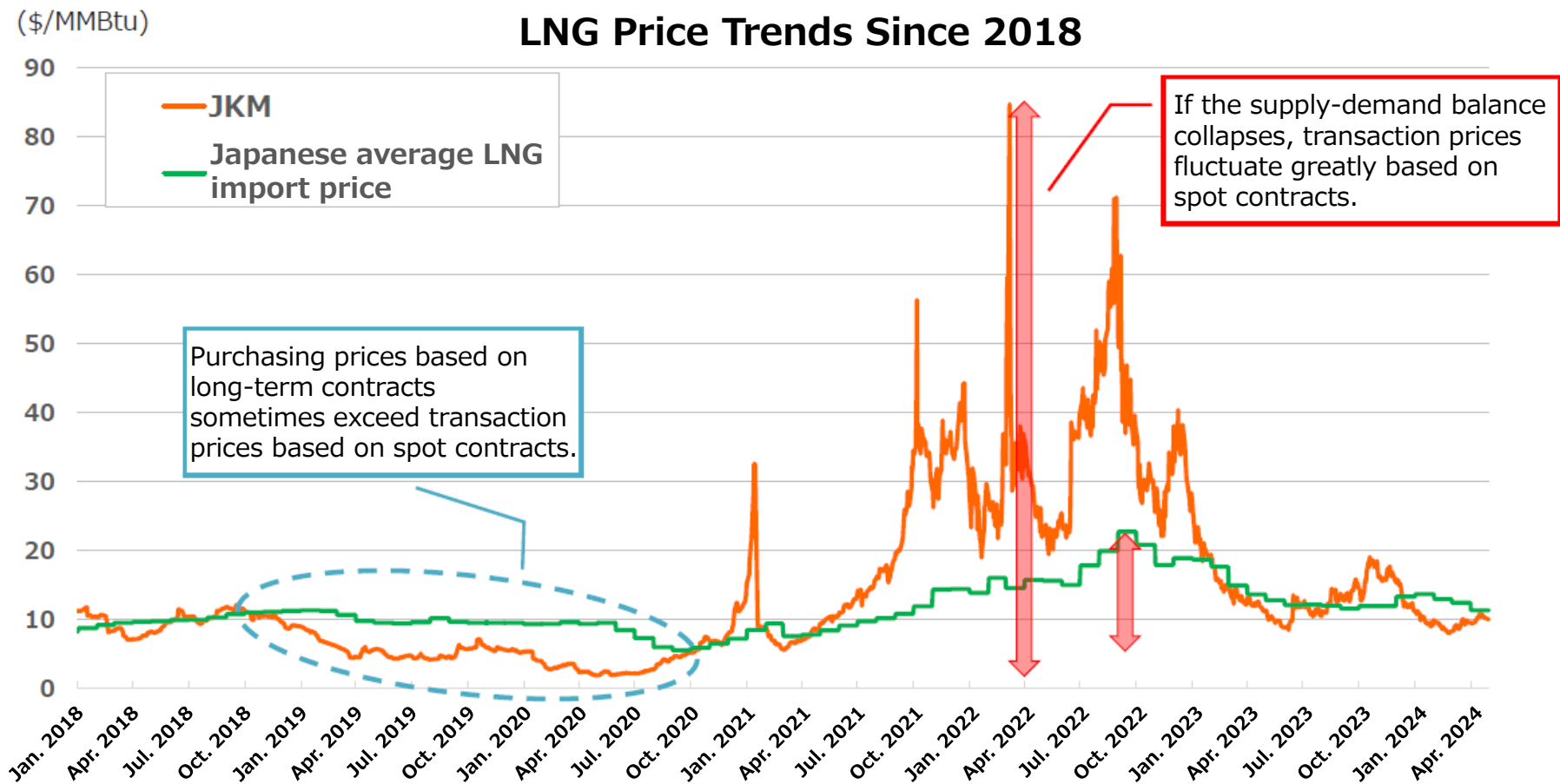
As a specific cooperation measure to address some issues surrounding natural gas and LNG, Japan announced that it has expanded the framework of the Coalition for LNG Emission Abatement toward Net-zero (CLEAN) initiative, a public-private joint effort to reduce methane emissions, which was established in 2023. The conference welcomed the joining of 22 more LNG importers to the framework, and 11 energy companies and 6 intentional organizations and entities acknowledged for this joining.

②Japan and the European Commission agreed on collaboration among LNG importer countries in order to reduce methane emissions from the LNG value chain, shared an approach to this reduction, and announced their intention to tackle this challenge.

③Japan and the International Group of Liquefied Natural Gas Importers (GIIGNL) announced that they will cooperate on the joint development of a framework for GHG emissions from the LNG value chain.

Significance of Long-Term LNG Contracts

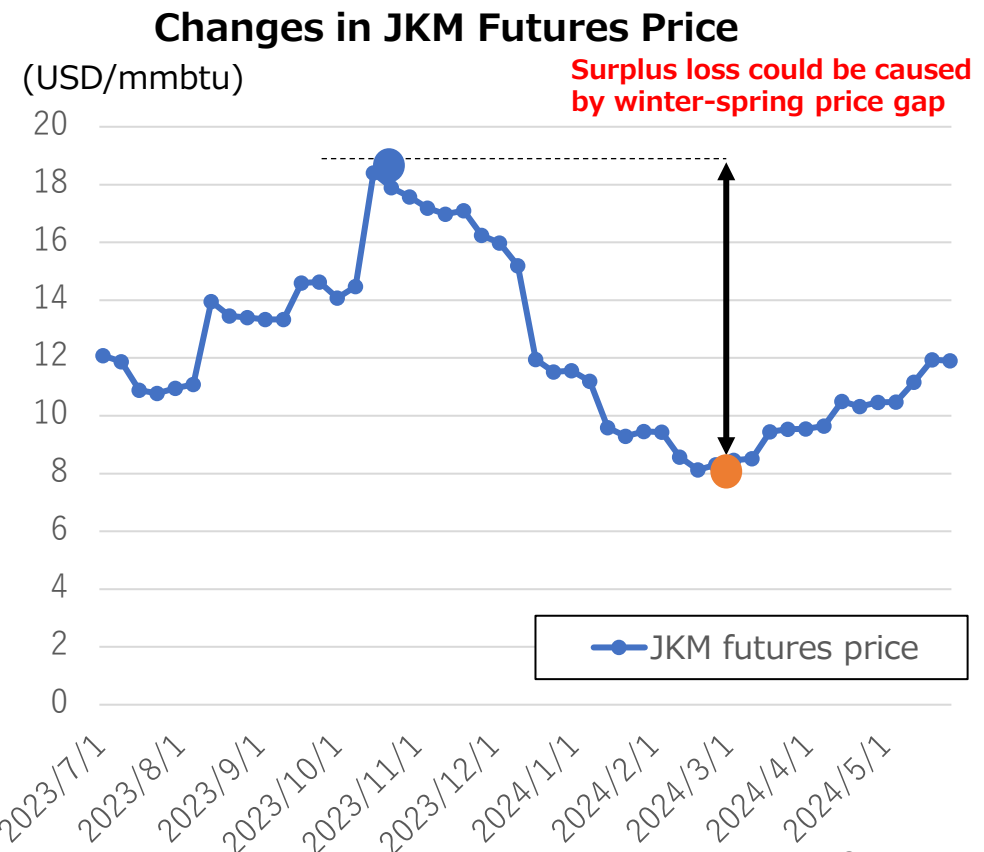
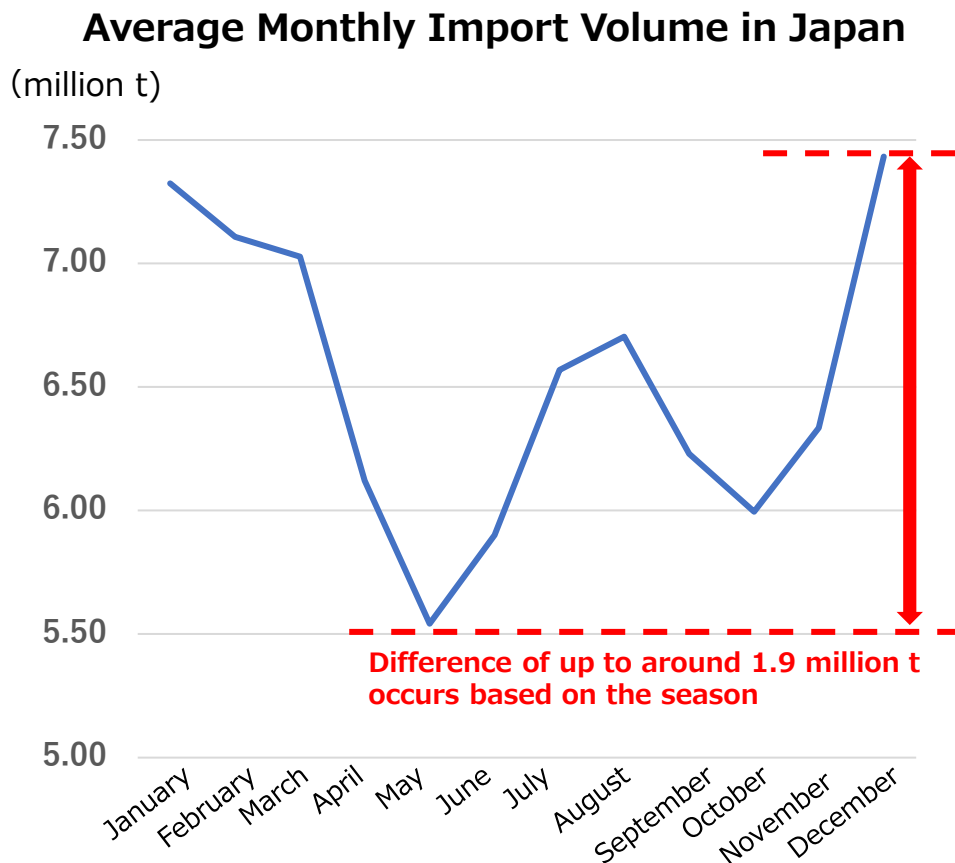
- In Japan, around 80% of LNG imported domestically is purchased based on long-term contracts. **Compared to procurement with spot contracts, it is therefore possible to purchase a volume determined based on a stable price.**
- **Procurement with long-term contracts does not always mean low prices.** It should be noted that the price trends sometimes reverse direction based on market conditions, **and it is necessary to pursue an optimal balance that will stabilize purchase prices over the medium to long term.**



Source: Created by JOGMEC based on various materials from Platts, IMF, ICE, etc. *Note: LNG cargo purchased based on spot contracts is included in Japan's average LNG import price.

Issues for Signing Long-Term Contracts and Environmental Improvement 2 (Seasonal Variation in LNG Imports and Surplus Loss Risk)

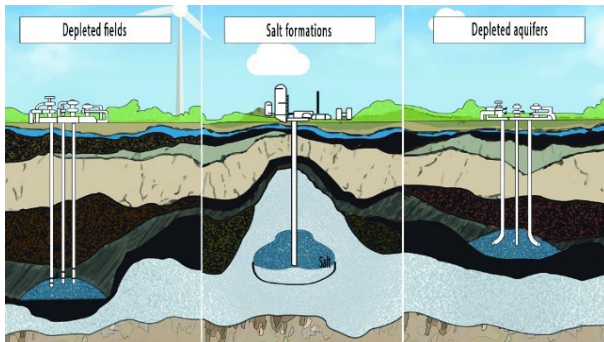
- There is a major difference in domestic LNG demand in Japan between winter/summer, when there is a lot of demand, and spring/fall, when there is not much demand.
- However, in the case of LNG procurement based on long-term contracts, LNG is basically supplied regularly based on the quantity, so it is not possible to import it only when demand is high. To ensure LNG supply during periods of high demand, additional procurement based on spot contracts is necessary along with long-term contracts.
- On the spot market, it is normal to anticipate that prices will fall in October-December and March-April, so there is a structure whereby loss will occur if there is a surplus of LNG purchased on the winter market and it is resold after prices fall.



Gas Reserve Mechanisms

- The gas reserve mechanisms proposed by Japan include the following three types.
- The introduction of gas reserves based on regional characteristics is an initiative that will help enhance energy security by improving the stability of the global gas market.
- Going forward, the IEA will conduct further research, etc. on the role of gas reserves.

Underground gas storage



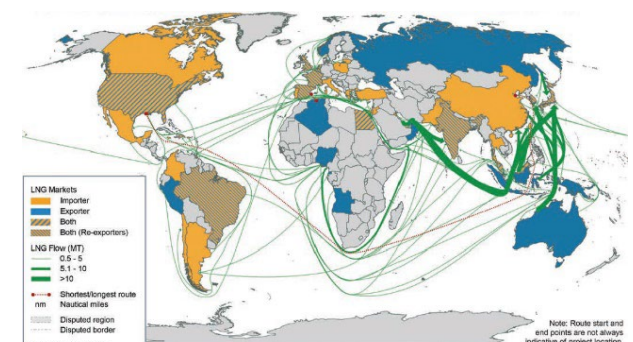
This is used in Europe and America, where there are many depleted gas fields. It enables large-scale stockpiling of gas over a long period of time, but sites that meet **the geographic conditions under which storage is possible** are limited.

Policy measures



This is used by countries that import LNG. It enables countries where stockpiling is difficult to prepare for the risk of a short-term LNG shortfall, such as Japan's **Strategic Buffer LNG (SBL)** and Singapore's Standby LNG Facility (SLF).

Securing flexible contracts

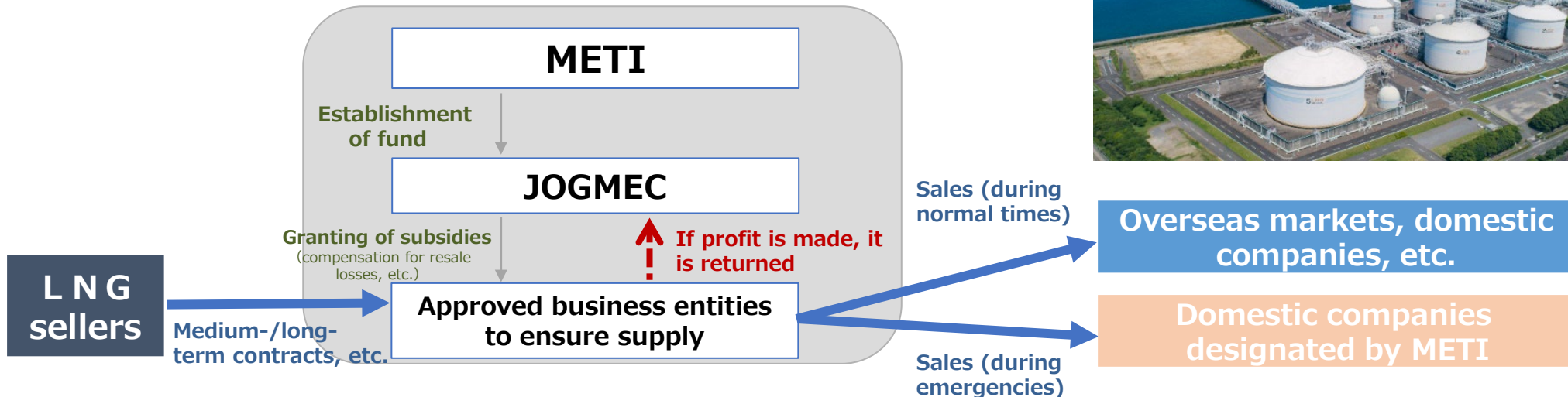


This allows for increasing procurement amounts in line with demand, etc. Furthermore, it is possible to **have contracts that increase supply reliability in an emergency through collaboration with public organizations, LNG producers, etc.**

Overview of Strategic Buffer LNG (SBL)

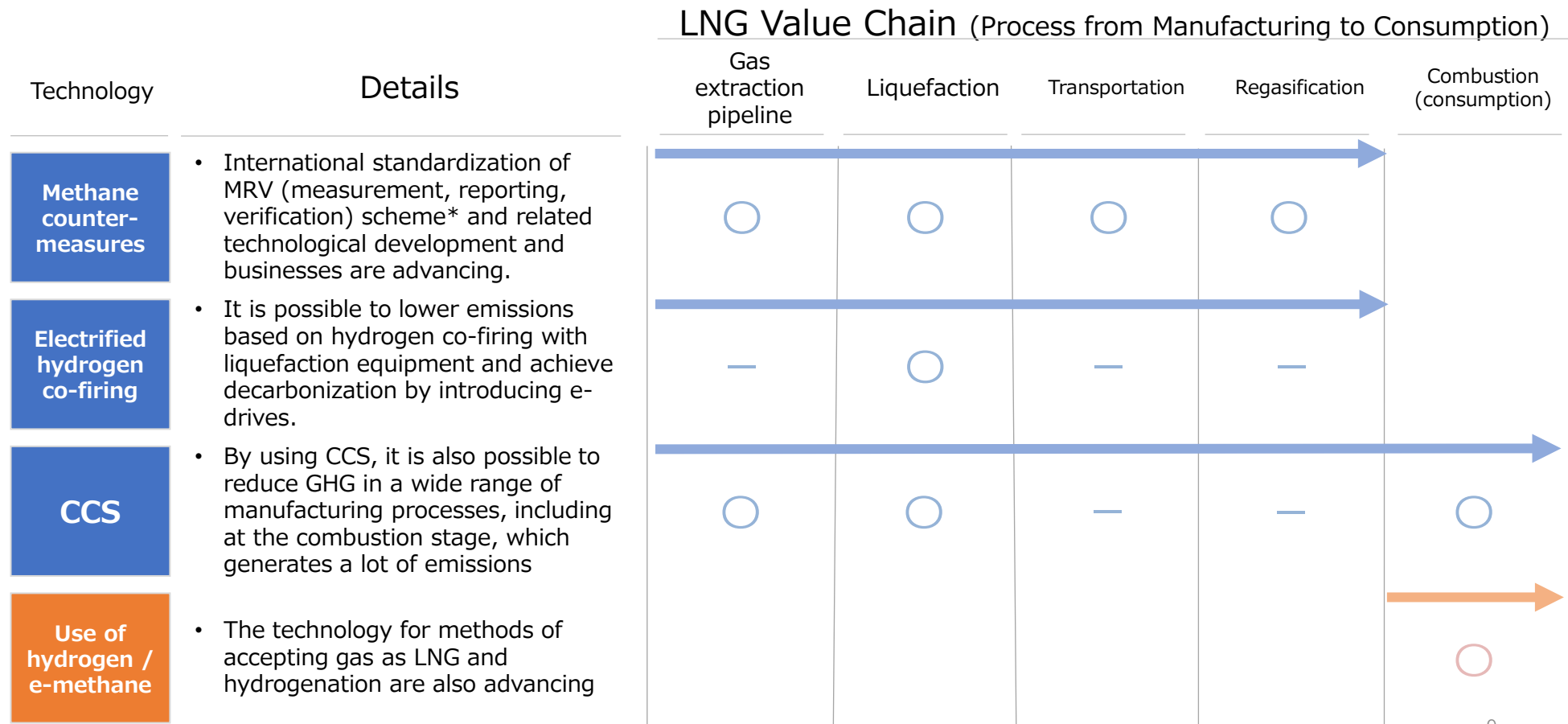
- Based on the characteristics of LNG, which is difficult to stockpile in a tank for a long time like oil, Japan has prepared a **mechanism for securing LNG in the event of an emergency (Strategic Buffer LNG or SBL)** by leveraging the procurement capabilities of private companies.
- Based on the **Economic Security Promotion Act**, the objectives, etc. of ensuring and operating the SBL are presented in terms of METI initiative policies. In accordance with its initiative policies, it provides **support to companies to ensure the SBL**.
- If an emergency occurs with domestic electricity and gas companies, **the SBL secured by approved business entities to ensure supply will be used to provide a grace period** during which the affected companies can respond to the situation and **prevent the interruption of supply**.
- On November 24, 2023, **JERA Co., Inc.'s plan to ensure supply was approved**. Operation started in December 2023.

Project Diagram



Low-Carbonization of LNG Value Chain

- In the future, low-carbonization of the value chain by using LNG will be important.
- Across the entire LNG value chain from upstream to downstream, around 75% of total GHG emissions occur during combustion. GHG emissions in upstream and midstream processes account for about 25% of the total.
- Throughout the entire LNG value chain from upstream to downstream, there are multiple transition technologies that could be applied.



Component Technology for Low-Carbonization of LNG Value Chain

- GHG emissions that occur during LNG combustion can be reduced with CCS or by using e-methane, blue hydrogen, etc. On the other hand, upstream/midstream GHG emissions can be low-carbonized by using methane emission reduction measures, hydrogen co-firing or electrification for liquefaction equipment, or CCS.
- **A roadmap for LNG value chain low-carbonization** by combining these **is being jointly researched with the IEA.**

Methane emission measurement technology



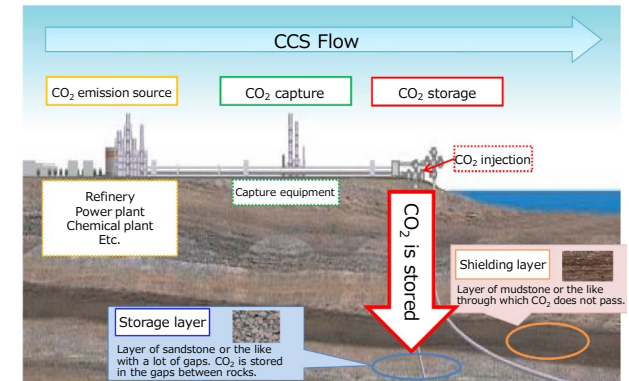
- Identifying and quantifying methane leaks and occurrence sources using wide-area measurement such as drones and satellite imaging and pinpoint measurement at sites. Through this technology, it is possible to identify methane emission sources and implement leak countermeasures.

Electrification of liquefaction equipment



- Emissions are reduced through electrifying liquefaction equipment by decommissioning gas turbines and introducing e-drive refrigerant compressors, using renewable energy, etc.
- In actual use at U.S.'s Freeport LNG. Woodfibre LNG also planning to introduce it.

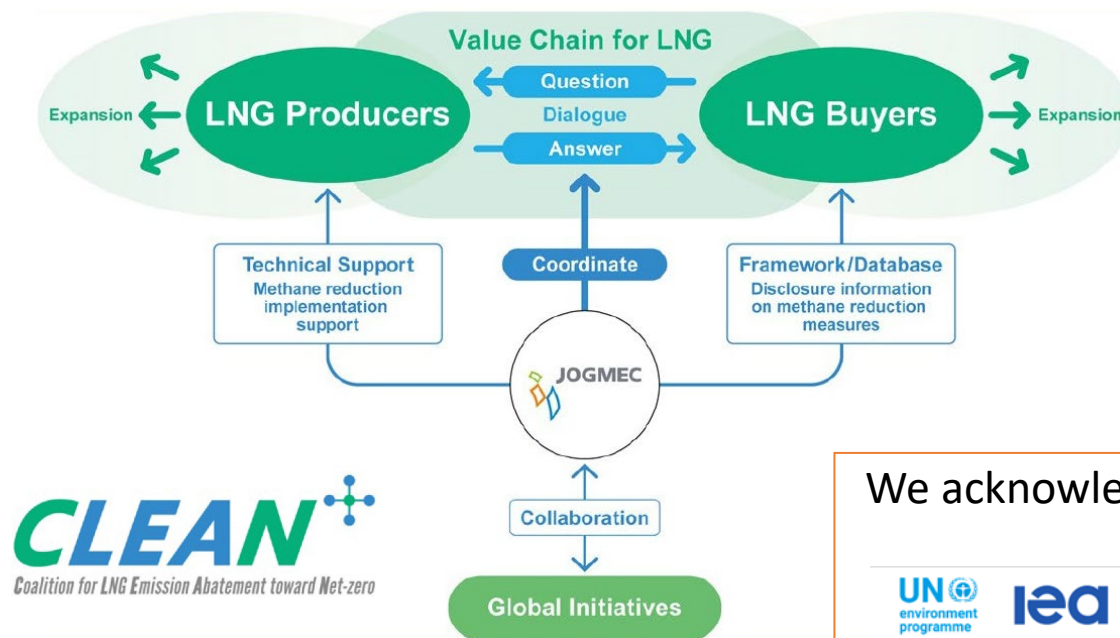
CCS



- Emissions in the value chain are reduced by storing CO₂ captured in upstream gas development, liquefaction equipment, etc. underground. By introducing this technology not just on the supply side but also on the demand side (power plants, etc.), it is also possible to reduce emissions during gas combustion.

Methane Emission Reduction Measures Based on CLEAN (Coalition for LNG Emission Abatement toward Net-zero)

- LNG buyers in Korea and Japan can lead the dialogue on LNG methane emissions with LNG producers to reduce emissions across the LNG value chain. The governments of Japan and Korea will also support this Initiative.
- At the LNGPCC2024, the CLEAN initiative was expanded to include electric and gas utilities and major trading companies (to a total of 24 companies). The initiative will cover about a quarter of the world's LNG imports. Support for the initiative from energy companies (11 companies) and international organizations (6 organizations) has also been announced.



We participate in CLEAN initiative



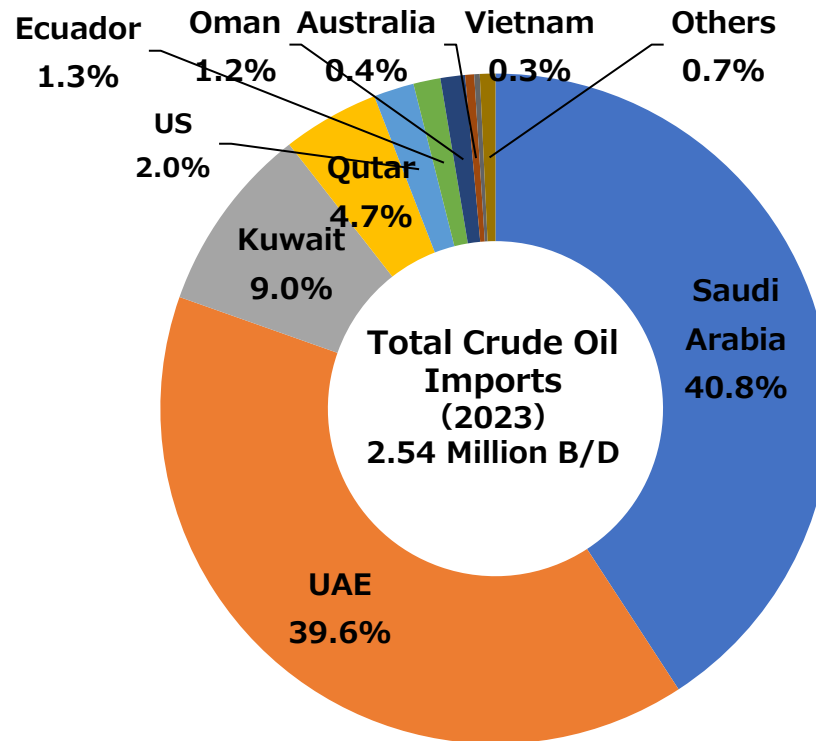
We acknowledge CLEAN initiative



Oil and Gas Stockpiling in Japan

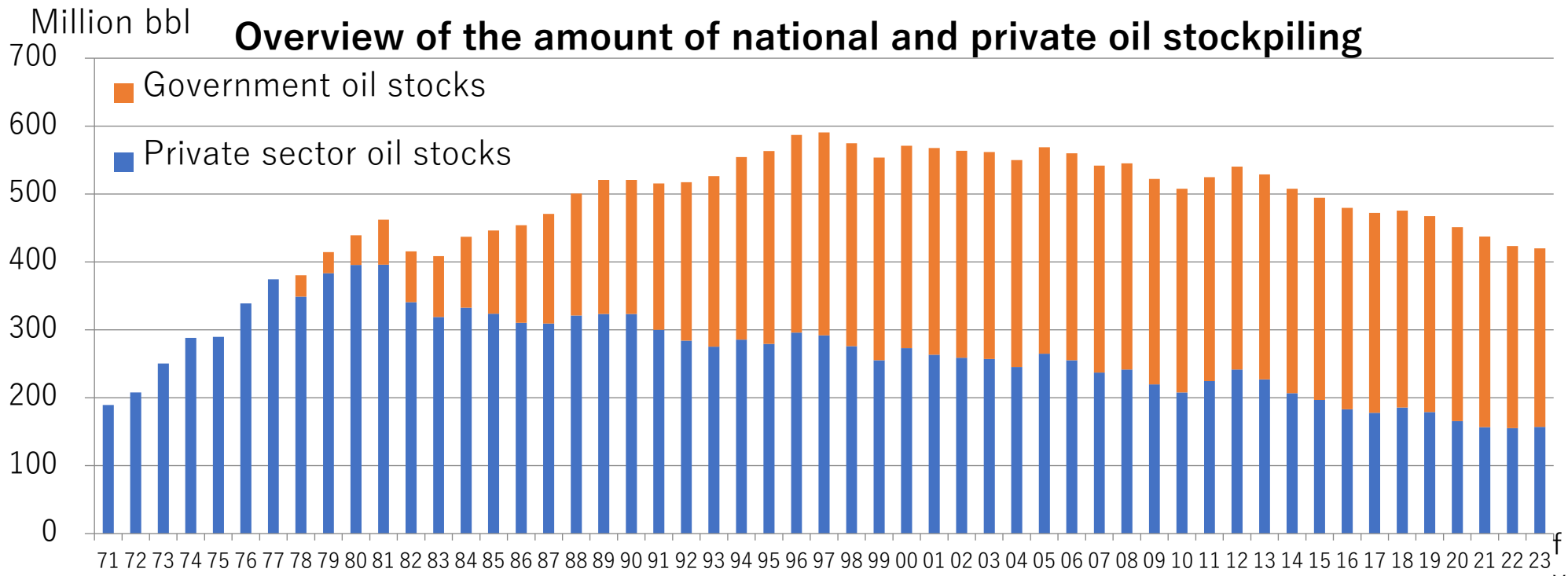
Import dependency

- About 95% of crude oil is imported from the Middle East where political instability persists.
- Keeping in mind the prolonged supply disruption from the Middle East, it is necessary to maintain the current stockpiling amount and establish a system in which the public and private sectors work together to enable effective stock release.



Overview of Japan's stockpiling history

- Japan launched private stockpiling first in 1972, then enacted the Oil Stockpiling Act in 1975.
- National stockpiling was started in 1978.
- The government has obliged private companies to maintain their stocks of more than 70 day-equivalent consumption.



Japan's Oil Stockpiling System

1) Government oil stockpiling:

The Government of Japan owns oil stocks and JOGMEC manages the stocks in accordance with the Oil Stockpiling Act.

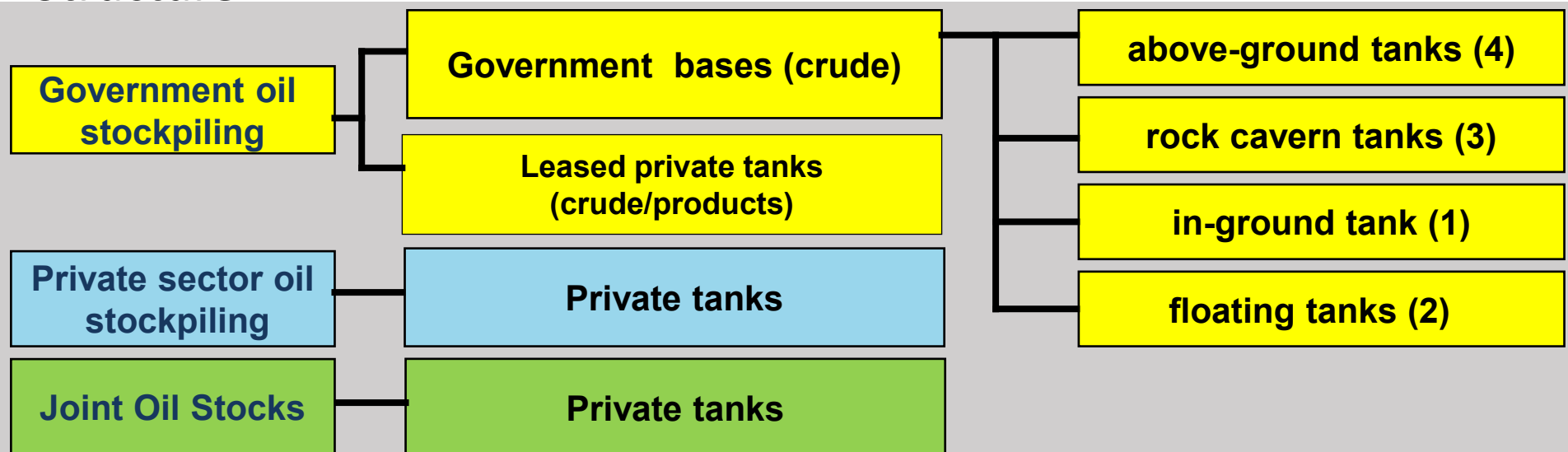
2) Private sector oil stockpiling:

Private companies such as oil refiners, distributors, and importers are obliged to maintain a certain amount of oil stocks in their tanks in accordance with the Act.

3) Joint Oil Stocks with Oil producing countries:

The projects have been carried out with Saudi Arabia and UAE since 2009. In December 2020, ANRE and Kuwait Petroleum Corporation (KPC) agreed to start the new project.

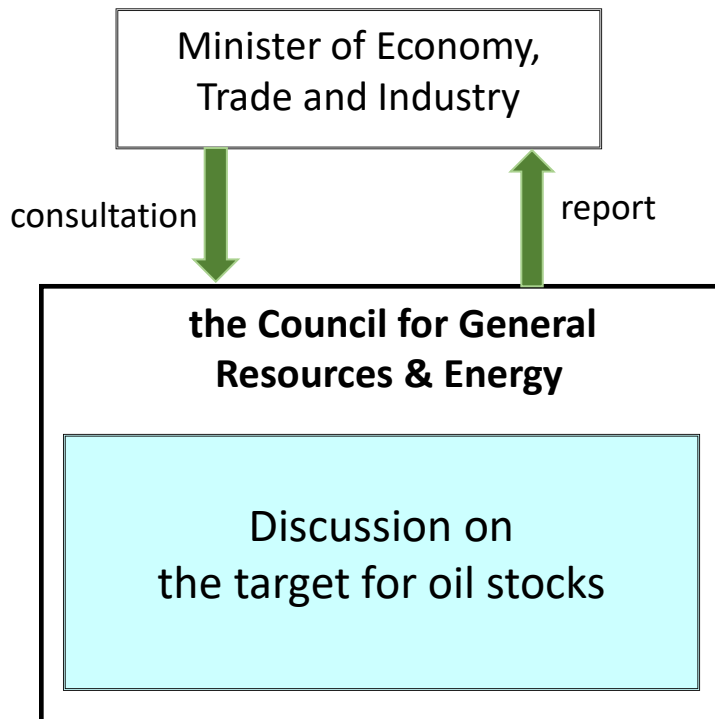
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Stockpiling Target

- Oil stockpiling law requires the Minister of METI to set a 5-year target for oil stocks based on the council's report every year.
- Since FY2015, the target account has been changed from quantity-base to day-base. This change allows us to have more flexibility on our stockpiling, to some extent, while keeping it at a certain level.

Process for setting the target



The Target of FY2024FY – FY2028

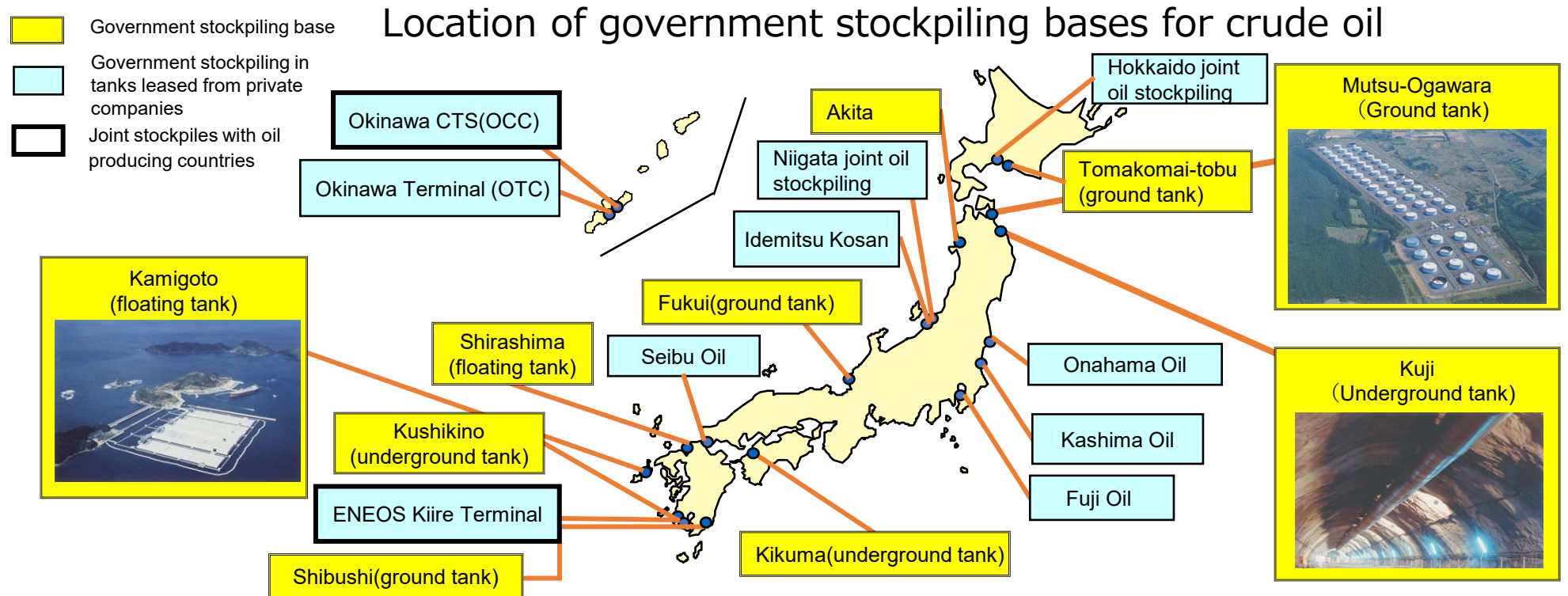
- Each oil reserve shall not be less than the following amounts
 - government stocks
 - about a 90-day equivalent to import volume, including one-half of joint storage
 - private stocks
 - 70-day equivalent to domestic demand

Current Status of Stockpiling

At the end of January 2025, the total quantity of stocks and locations are as follows:

- Government oil stockpiling: 120 days (about 260 million Barrel)
- Private sector oil stockpiling: 76 days (about 160 million Barrel)
- Joint oil storage: 7 days (about 18 million Barrel)
- Total : 204 days (about 440 million Barrel)

Days are calculated by IEA methodology.
Amounts are converted into product basis.



(※) The Joint Oil Storage is the oil stocks oil producing countries are storing in Japan. In case of an emergency, the said oil stocks will be supplied to Japanese oil companies on a priority basis.

Strategic Buffer LNG

Under the new Economic Security Promotion Act, METI will launch a new LNG security framework, Strategic Buffer LNG (SBL) for the first time in our history.

Operation Image

- ① METI nominates a Japanese company as an authorized company handles SBL operation. METI also designates JOGMEC as a support agency.
- ② The Japanese company secures the SBL by short/long term contracts.
- ③ During normal times, the company sells the SBL to utilities/companies including overseas markets.
- ④ Under the emergency situation, the company sells the SBL to utilities in Japan facing risks of a supply disruption.
- ⑤ JOGMEC compensate for losses of the company, if each sales result in a loss.

