



Methane and Fugitive Emissions Management – Innovative Strategies for Methane Detection, Mitigation, and Cost-Effective Solutions

29-30 SEPTEMBER 2025 | KUALA LUMPUR, MALAYSIA



Words into Actions:

Driving down methane emissions across the LNG value chain towards Japan and South Korea

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Japan Organization for Metals and Energy Security



Contents

1 Introduction of JOGMEC

2 CLEAN initiative : LNG buyers' alliance for a cleaner value chain

3 Technical Cooperation with Regional Partners



JOGMEC - Who We Are

Japan **O**rganization for **M**etals and **E**nergy Se**c**urity (**JOGMEC**) is a policy executing agency of the GoJ to ensure a stable and affordable supply of natural resources.

Area of Business



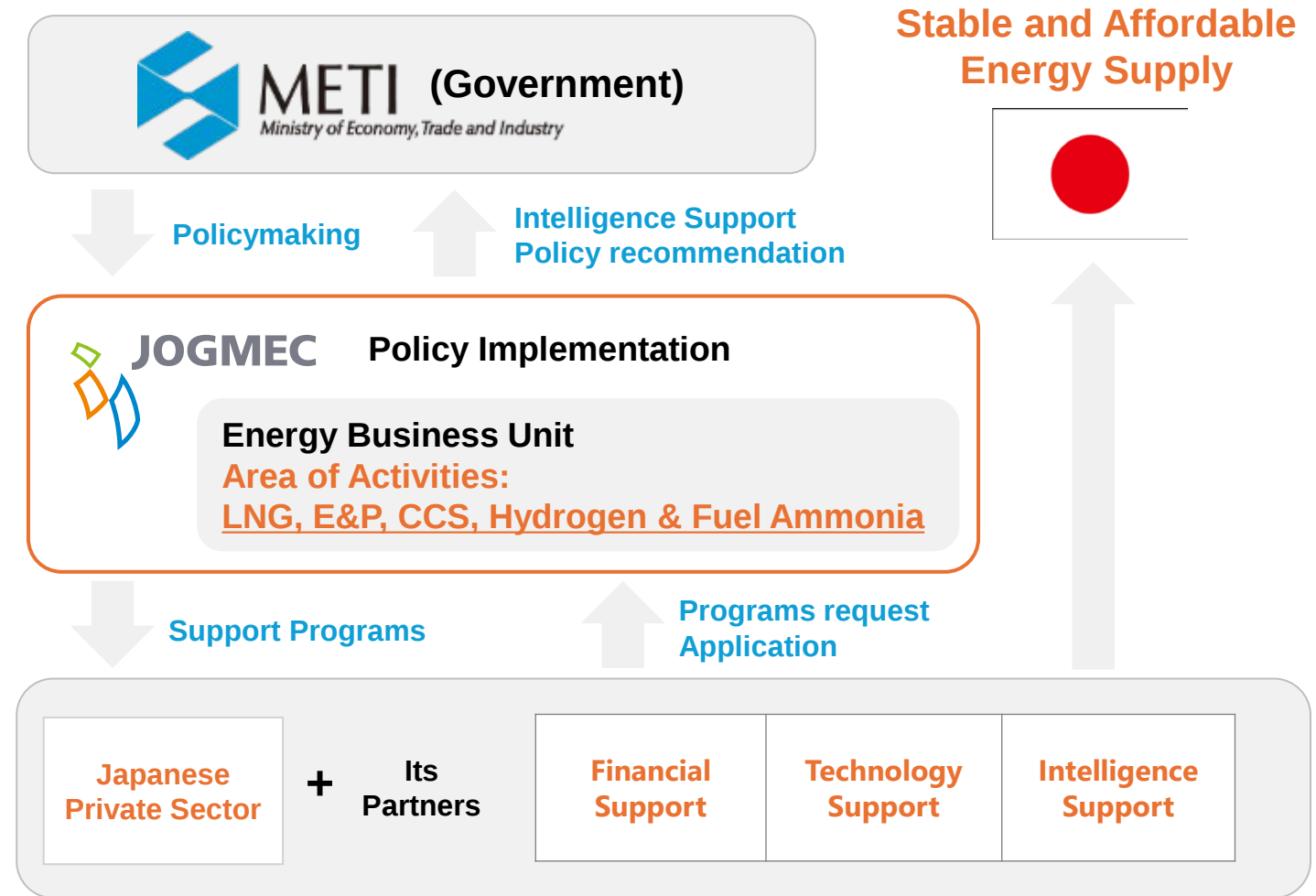
Area of Services

Financial Support	Technology Support	Intelligence Support
- Equity Finance - Liability Guarantee - Grant - Subsidy, etc.	- Geological Survey - Technology Development - Marine Resources Development - Environmental Safety, etc.	- Resource Diplomacy - International Cooperation - Information Analysis, etc.

JOGMEC - Interface between Policy and Business -

JOGMEC, the executing agency of Japan's energy policy

- Services:
 - financial support
 - technical support
 - intelligence support
- Serves not only Japanese companies but also their overseas partners
- S+3E (Safety plus three 'E's)



Contents

1

Introduction of JOGMEC

2

CLEAN initiative : LNG buyers' alliance for a cleaner value chain

3

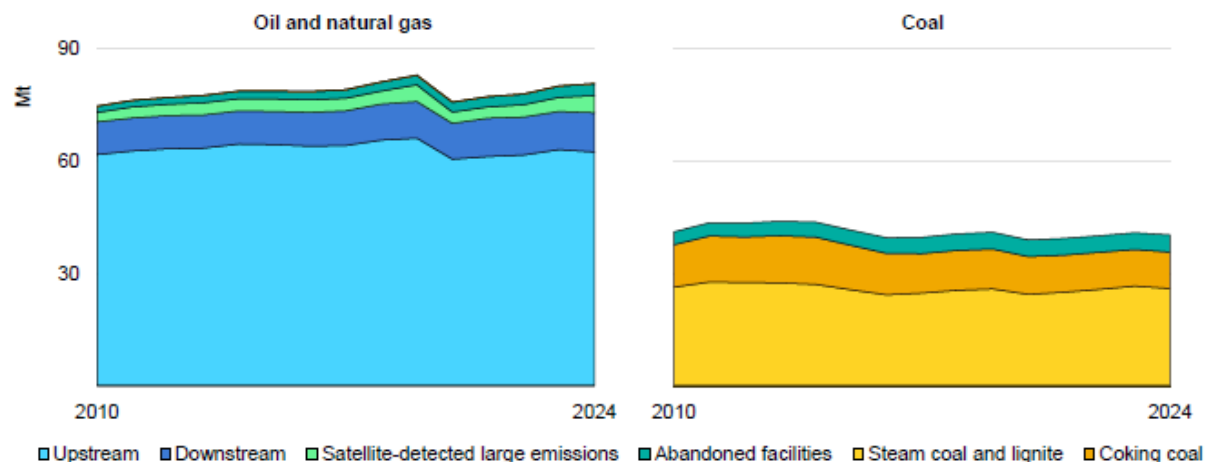
Technical Cooperation with Regional Partners



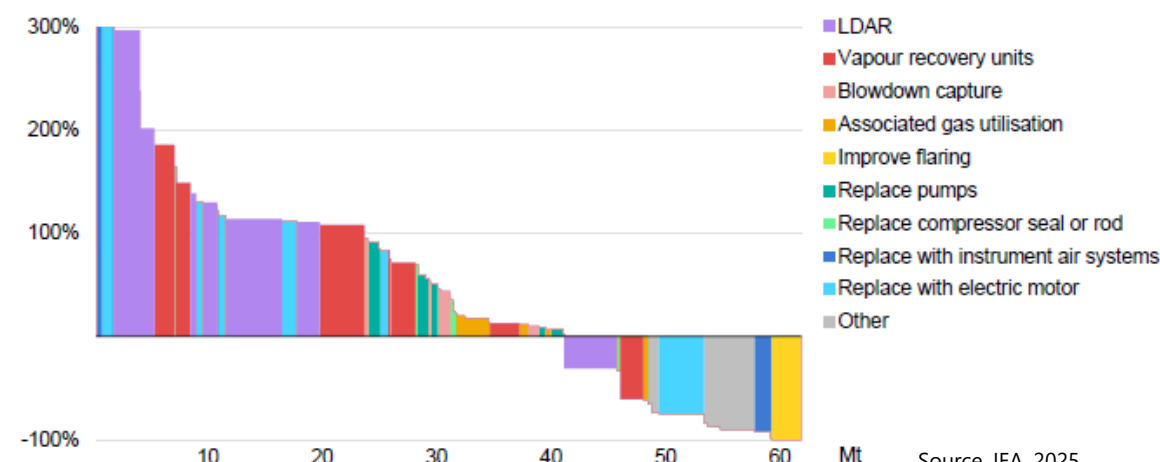
Why Methane

- GWP20: 83; GWP100: 27
- Fossil fuel sector accounts for >120 Mt of methane emission.
- Deploying targeted methane mitigation would prevent a roughly 0.1 °C rise in global temperatures by 2050
- Low-hanging fruit
- Action by importing countries can help drive significant methane emissions reductions in exporting countries

Methane emissions from the fossil fuel sector, 2010-2024



Internal rate of return of emissions-reduction measures in oil and gas operations





CLEAN - Overview

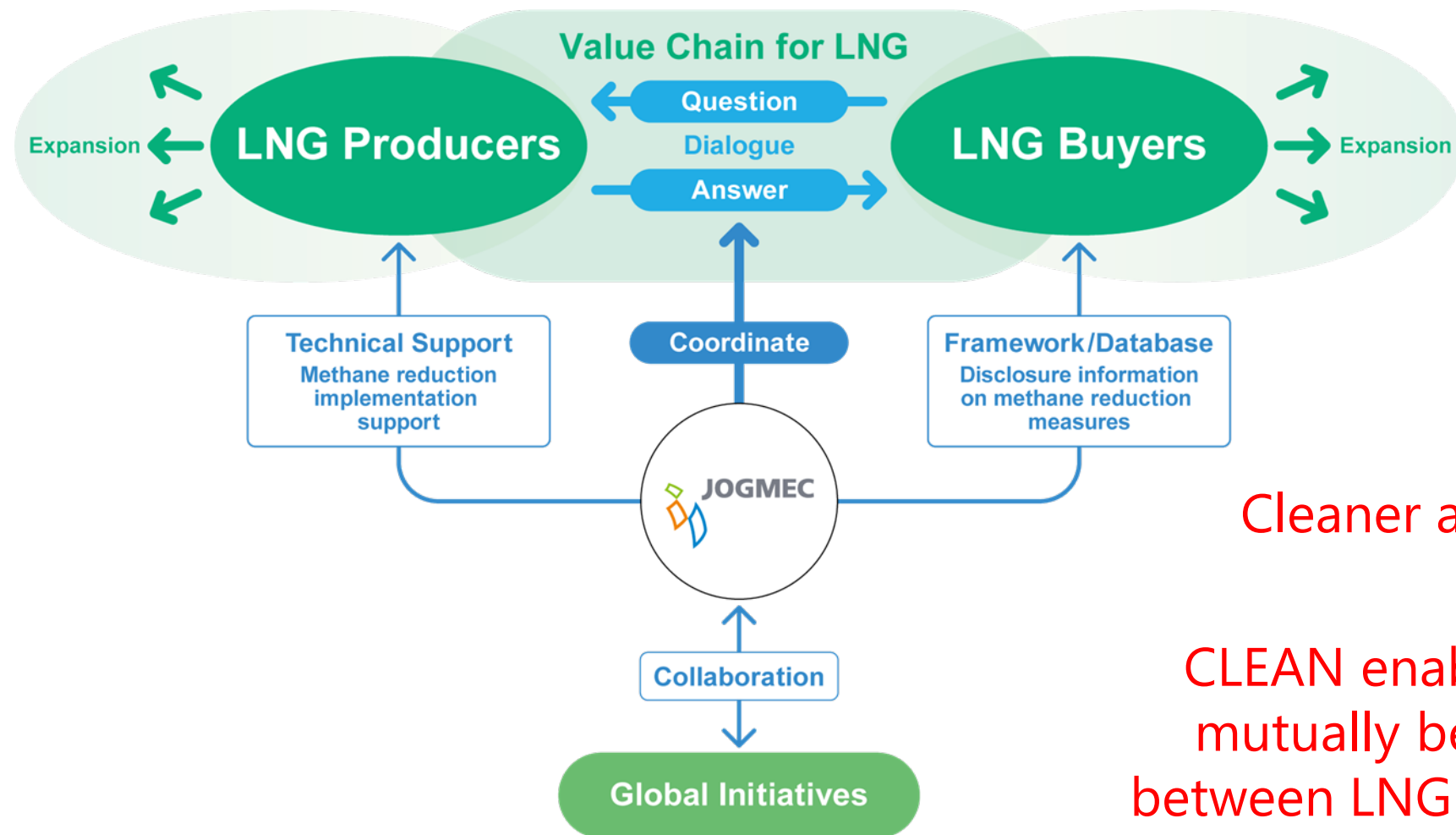
Coalition for LNG Emission Abatement toward Net-zero

CLEAN is an initiative to drive down methane emissions across LNG value chain through a market-based approach and knowledge sharing

- CLEAN aims to:
 - collect and amplify LNG importers' concerns;
 - enhance transparency and visibility;
 - disseminate and share best practices; and,
 - reduce methane emissions.
- Fully voluntary-based; no mandate, no constraints, no limitations.



CLEAN – Schematic Diagram



Cleaner and competitive LNG

CLEAN enables and strengthens mutually beneficial partnership between LNG producers and buyers.

CLEAN Survey 2024 in numbers

A questionnaire asking methane emissions was sent to **20 major LNG projects.**

80% of LNG projects responded to the questionnaire.

35% of major LNG projects provided methane emission data.

87% of Japan and **92% of South Korea's LNG supply** is within the scope of OGMP 2.0.

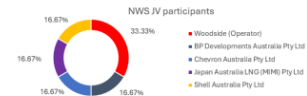
The methane intensity target for the Japanese LNG value chain is around 0.2%, calculated by a weighted average of the OGMP 2.0 reported data.
South Korea is similarly around 0.19%.

Best Practices from Annual Report 2024

North West Shelf (NWS) Project—Australia

1. Project overview

Equity



Production capacity (100%)

LNG 16.9 Mtpa. Domestic gas 630 TJ/d. Condensate 14,385 t/d

Main Facility

Offshore platforms: Goodwyn Alpha; North Rankin Complex; Angel.

Two connecting trunklines to Karratha Gas Plant (liquefaction).

History of Project FID 1977, operation started 1984.



Best Practice Roadmap - North West Shelf Project

Compressor wet seals – vapor recovery

Design best practice

The issue

- LNG train liquefaction compressors seals can emit methane continuously by design.

The approach

- A variety of options were assessed for mitigation potential. Vapor recovery packages were procured and installed in 2022.
- The packages capture the methane from the seals (previously being vented) and recover it to the compressor suction.
- This outcome improves the efficiency and reduces the methane emissions.

Outcome

- Mitigation of 280 tpa of methane.



Further details on this project is available in the Methane Guiding Principles – [Best Practice Guide](#) (Case Study 11).

2. Methane information

Methane intensity: 0.03% (by weight of marketed gas products)

OGMP data quality: OGMP2.0 Level 2/3/4

Woodside Initiatives



Facility attributes

- Large conventional LNG facility. Integrated system design facilitates improved utilisation, reliability, and operating efficiency, as well as emissions reductions.
- Long standing focus on reducing methane leaks which would be a loss to our production and a potential safety hazard if they occurred at sufficient volume.
- Delivery of methane emissions reduction projects in design and operation, informed by methane studies. For example:
 - Minimising running equipment spares, optimising plant efficiency, eliminating continuous venting and reducing flaring.
 - Recovery of acid gas removal (AGRU) gas and redirection to the fuel gas and flare systems during normal operation and startup.
 - Utilisation of dry gas seals and wet seals with losses routed back into the process, reducing the methane leaked to the atmosphere.
 - Installation of a waste heat recovery unit (WHRU) to utilize waste heat in the LNG process.

AGRU skimming procedure optimisation

Operational best practice

The issue

- Acid gas removal units (AGRU) are used in the LNG industry to strip sour gas (H_2S , CO_2) with solvents, prior to the cryogenic liquefaction process. The acid gas is typically vented to the atmosphere, containing a small percentage of hydrocarbon (methane).
- A manual skimming procedure is conducted periodically to remove impurities from the AGRU solvent, during which methane can be vented under certain conditions.

The approach

- Control logic was implemented to precisely automate the skimming procedure, reducing operations resourcing input, improving efficiency, and reducing methane emissions.

Outcome

- Mitigation of 180 tpa of methane.



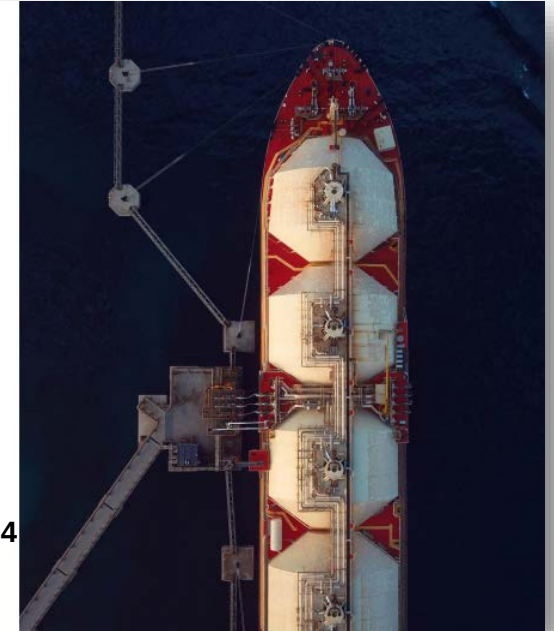
Coalition for
LNG
Emission
Abatement toward
Net-zero



Annual Report

October 2024

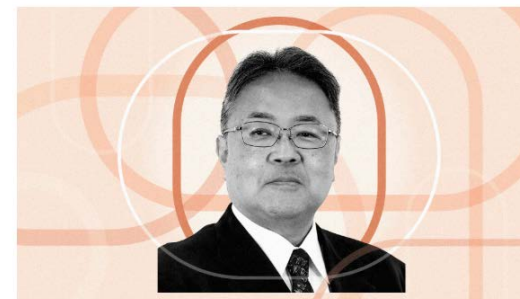
CLEAN
Annual Report 2024
Accessible in PDF



Hiroyuki Mori

EVP, Japan Organization for Metals and Energy Security

2 MINUTE READ



(Photo: Illustration for TIME (Source: Image: Getty Images/Marka Media)

11 OCTOBER 2024

11 OCTOBER 2024, 11:00 AM (GMT+9)

Hiroyuki Mori, the executive vice president of the Japan Organization for Metals and Energy Security's (JOGMEC) energy portfolio, has rallied

TIME100 CLIMATE 2024



CLEAN Partners



CLEAN Participants



Acknowledgements

Contents

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3 Technical Cooperation with Regional Partners



CLEAN and Methane Emission Management Projects

- Technical cooperation with PETRONAS, Pertamina and Woodside.
- Actual measurement project with methane emission reduction activities is undergoing.
- Collaborative work launched to establish the first-of-its-kind Methane Emissions Technology Evaluation Center in the ASEAN region (SEA METEC).



Thank you for your attention!



***Producers and consumers,
shaping one future together.***