

September 25, 2023

Detailed Study Begins for Biomethane Supply Project in Indonesia

PT Perusahaan Gas Negara Tbk
JGC Holdings Corporation
Osaka Gas Co., Ltd.
INPEX CORPORATION

PT Perusahaan Gas Negara Tbk (hereinafter PGN, a natural gas supplier and subsidiary of Indonesian national oil company PT PERTAMINA, hereinafter Pertamina), JGC Holdings Corporation (hereinafter JGC), Osaka Gas Co. Ltd. (hereinafter Osaka Gas), and INPEX CORPORATION (hereinafter INPEX) have started detailed discussions on commercialization of biomethane¹ derived from palm oil mill effluent (POME) in Indonesia.

Pertamina, JGC, Osaka Gas and INPEX have been jointly studying use of POME-based biomethane for some time. Recently, a decision was made regarding use of PGN natural gas pipelines, which, along with the memorandum of understanding for feedstock procurement concluded with palm plantations and the expressions of interest received from customers, has led the participants to begin in-depth discussions. This phase will involve technical assessment of supply chain development, and biomethane production and supply, assuming that biomethane production would begin in southern Sumatra in 2025.

Although Indonesia is the world's largest producer and exporter of palm oil—a key domestic industry generating 4.5 percent of the GDP and employing nearly three million people—POME is rich in organic material that is associated with significant emissions of methane, a gas estimated to have a greenhouse effect 25 times greater than that of CO₂.

The proposed project would recover methane gas currently released into the atmosphere from POME, refine it into biomethane, and supply it to customers in Indonesia via natural gas pipelines and other existing infrastructure. In addition to reducing methane gas emissions, other potential benefits include meeting the country's rising natural gas demand and reducing consumer CO₂ emissions by shifting from fossil fuels to biomethane. In the future, the scale of these operations are expected to expand across Sumatra and to Kalimantan as project participants also will consider supplying bio-LNG liquefied from biomethane as a bunker fuel, exporting bio-LNG to Japan and elsewhere, and other potential business.

This project was also introduced at the Asia Zero Emission Community (AZEC) Ministerial Meeting in March 2023 as an initiative contributing to carbon neutrality in Asia.

PGN as Gas Subholding under Pertamina, plays a role during Indonesia's energy transition phase toward Net Zero Emission (NZE) by 2060. This project is expected to contribute to solving environmental

challenges along with the development of New and Renewable Energy (NRE) by using POME as an environmentally friendly energy source. In this project, PGN will provide pipeline injection facilities and natural gas pipelines that have good access to POME as a raw material. The biomethane produced from the project is expected not only to meet industrial and consumer demand in Indonesia, but also to further expand Pertamina's natural gas network.

JGC has accelerated its energy transition initiatives, working toward carbon reduction and decarbonization in line with the May 2021 long-term management vision and the medium-term business plan (2040 Vision and BSP 2025). To date, the Group has built an extensive track record in Indonesia in plant construction for LNG and other purposes. JGC will contribute this experience along with project management capabilities honed through many past projects to guide this collaboration.

Osaka Gas also stands united in developing technologies and services that support decarbonization and in working to address climate change and other social issues, having announced their Carbon Neutral Vision (CNV) in January 2021 and Energy Transition 2030 in March 2023. Working with local natural gas supplier PGN and others in this project, the Group will apply biogas refining technologies supporting biomethane production, experience in biomethane pipeline injection, and expertise from natural gas sales activities to promote biomethane in Indonesia and reduce CO₂ emissions in both Indonesia and Japan.

INPEX, in line with its Long-term Strategy and Medium-term Business Plan (INPEX Vision@2022) announced in February 2022, proactively engages in energy structure reforms towards the realization of a net-zero carbon society by 2050 while responding to energy demand in Japan and other countries around the world. With the other participants, INPEX will promote efforts to establish business responsive to climate change and provide clean energy supply in Indonesia.

- 1: Biomethane: A biofuel made from a biogas (consisting mainly of methane and CO₂) produced by anaerobic POME fermentation. Methane purity is enhanced at a refinery by removing CO₂. With characteristics closely matching those of fossil-based natural gas, biomethane has been viewed by many as a viable alternative.
- 2: Press release dated April 25, 2022 :
https://www.jgc.com/jp/news/2022/20220425_01.html

Image of the Project

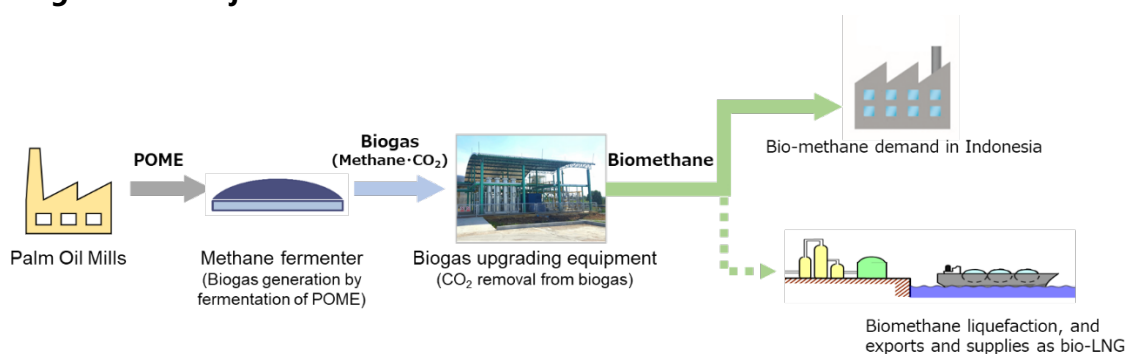
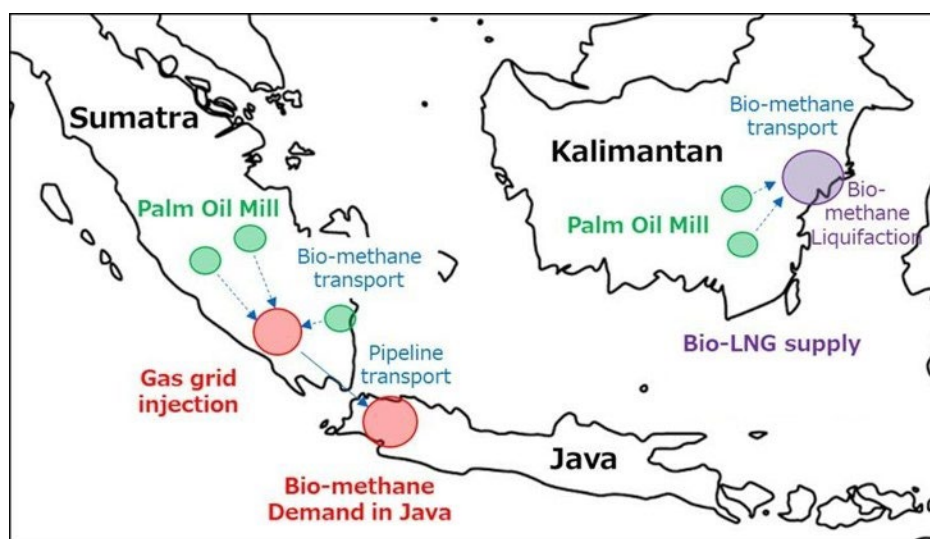


Image of business area in Indonesia



Overview of participating companies

■ PT Perusahaan Gas Negara Tbk (PGN)

Head office	Jl. KH. Zainul Arifin No. 20 Jakarta 11140, Indonesia
Establishment	May 13, 1965
Representative	Rachmat Utama – Corporate Secretary

■ JGC Holdings Corporation

Head office	2-3-1 Minato Mirai, Nishi-ku, Yokohama, Kanagawa
Establishment	October 25, 1928
Representative	Masayuki Sato Representative Director, Chairman and CEO

■ Osaka Gas Co., Ltd.

Head office	4-1-2 Hiranomachi, Chuo-ku, Osaka
Establishment	April 10, 1897
Representative	Masataka Fujiwara Representative Director and President

■ INPEX CORPORATION

Head office	5-3-1 Akasaka, Minato-ku, Tokyo
Establishment	April 03, 2006
Representative	Takayuki Ueda Representative Director, President and CEO