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**PERTAMINA, Osaka Gas, JGC Holdings and INPEX Sign  
Joint Study Agreement on Bio-methane Derived Clean Gas Project**

PT PERTAMINA  
Osaka Gas Co., Ltd.  
INPEX CORPORATION  
JGC Holdings Corporation

PT PERTAMINA (Pertamina), Osaka Gas Co., Ltd. (Osaka Gas), JGC Holdings Corporation (JGC) and INPEX CORPORATION (INPEX) (together hereinafter, “parties”) announced today they have entered into a joint study agreement on exploring the feasibility of a clean natural gas and liquefied natural gas (LNG) project in Indonesia involving the production of bio-methane<sup>1</sup> from palm oil mill effluent (POME). The project is expected to support the Asia Energy Transition Initiative<sup>2</sup> (AETI), a plan unveiled by the Government of Japan in 2021 that aims to help achieve sustainable economic growth and carbon neutrality in Asia through energy transitions.

Indonesia is the world’s largest producer and exporter of palm oil, and Indonesia’s palm oil industry is a key industry that supports the employment of approximately three million persons and generates 4.5 percent of the country’s GDP. POME is known to contain large quantities of organic material resulting in significant methane emissions, which is generally said to have 25 times larger impact on global warming compared to CO<sub>2</sub>. The project is intended to contain POME-derived greenhouse gas emissions by sequestering methane and converting it to biofuels, contributing to the supply of clean energy in a sustainable manner.

Through this joint study initiative, the parties will jointly conduct a study on the feasibility of the project, including cooperation on the research and development of technologies and solutions pertaining to the production of bio-methane from POME resources located in Sumatra and Kalimantan and supplying to consumers in Indonesia, including Java. The aim of the project is to supply bio-methane through the existing gas grid, meet growing natural gas demand and contribute to the reduction of Scope 1<sup>3</sup> emissions of gas consumers in Indonesia. The parties will also jointly assess opportunities for the project to leverage carbon crediting mechanisms and bio-methane certification schemes to secure carbon neutrality. Finally, the joint study will also involve identifying bio-methane/bio-LNG and bunker fuel marketing opportunities, including bio-LNG export to Japan and/or other countries.

Pertamina positions this collaboration as a continuation of several green energy development projects it has developed so far as part of a more comprehensive effort to reduce GHG emissions by 30 percent before 2030. In addition to developing New and Renewable Energy

(NRE), this collaborative project helps overcome environmental challenges especially by turning palm oil waste into environmentally friendly energy.

In this joint initiative, Pertamina will provide several facilities and locations with good accessibility to raw material sources in Kalimantan and Sumatra. In addition, the output from the initiative is expected to help meet the natural gas demands of the industrial sector and general consumers, and expand the development of Pertamina's natural gas network.

This study is in line with the Daigas Group Carbon Neutral Vision (CNV) announced in January 2021. Aiming to become carbon neutral by 2050 under CNV, Osaka Gas will continue to develop technologies and services that contribute to a decarbonized society and solve social issues such as climate change. To expand the use of bio-methane in Indonesia and to reduce CO<sub>2</sub> emissions in both Indonesia and Japan, Daigas Group will contribute to this collaboration through the technology of bio-methane production from bio-gas, the experience of bio-methane pipeline injection, and the knowledge of natural gas marketing.

As outlined in its Long-term Strategy and Medium-term Business Plan (INPEX Vision @2022) announced in February 2022, INPEX seeks to proactively engage in energy structure reforms towards the realization of a net zero carbon society by 2050 while responding to the energy demands of Japan and other countries around the world. In line with this strategy, the company aims to work closely with its partners to build a business framework contributing to climate change response and explore opportunities to provide clean LNG bunkering solutions at the Bontang LNG Terminal in Bontang, Indonesia.

JGC group recognizes this program as an important strategy to unlock the clean transition fuel interests in the Asian region to achieve its medium-term management plan, "Building a Sustainable Planetary Infrastructure 2025." JGC will contribute to this collaboration by delivering its core competencies in program management and delivering world-class engineering capabilities acquired through its rich track records in building gas processing facilities in Indonesia.

1. A biofuel with a methane concentration of over 90% produced by refining biogas resulting from anaerobic fermentation of organic waste derived from living organisms; widely considered as an alternative fuel to natural gas due to properties that are very similar to fossil fuel-based natural gas.
2. [https://www.meti.go.jp/english/press/2021/0528\\_002.html](https://www.meti.go.jp/english/press/2021/0528_002.html)
3. Direct greenhouse gas emissions from owned or controlled sources.

## Bio-methane project scheme in Indonesia

