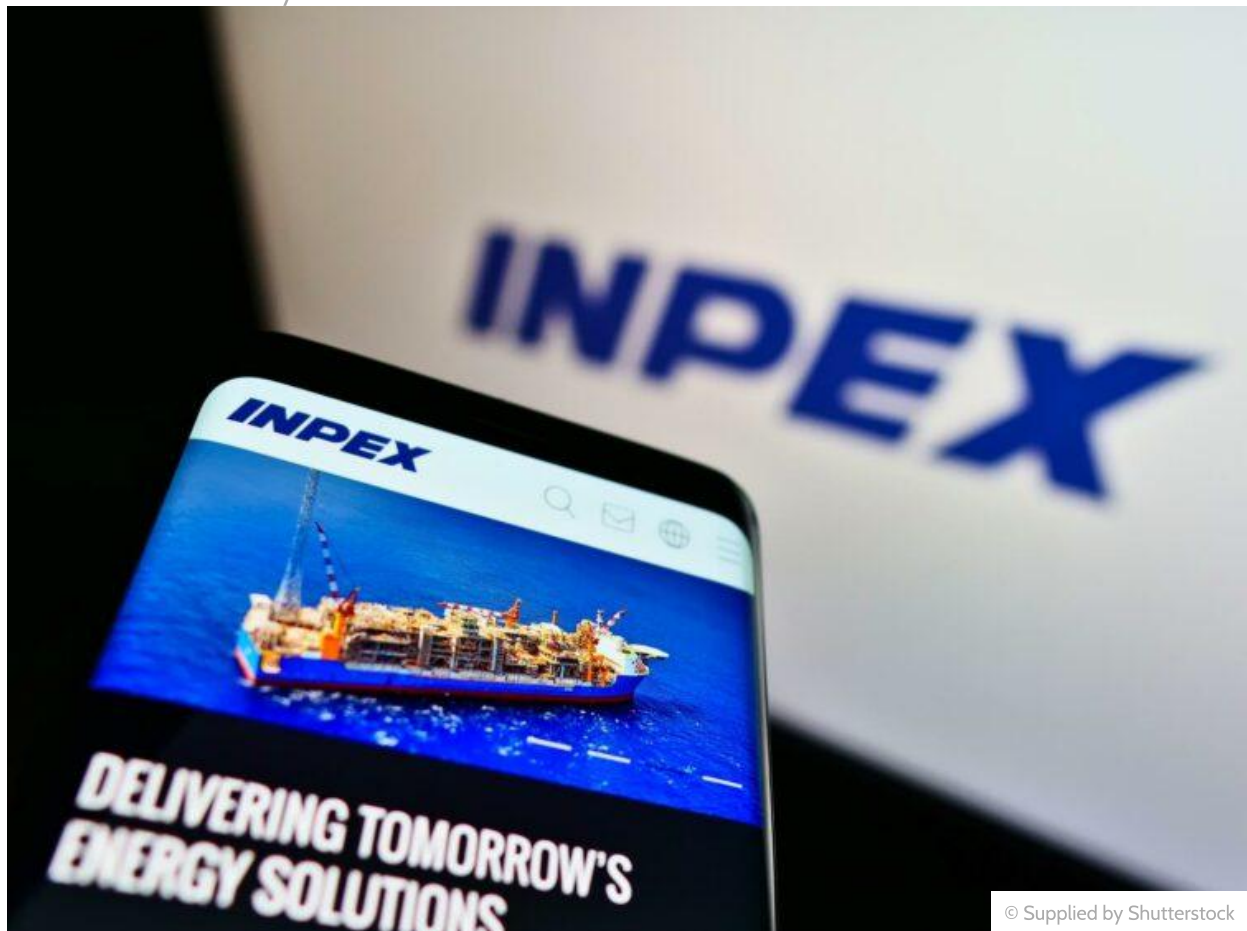


JERA, Tokyo Gas, Inpex to join Santos-led Bayu Undan CCS project

Japan's three energy companies – JERA, Tokyo Gas and Inpex – plan to join the proposed giant carbon capture and storage (CCS) project led by Santos (ASX:STO), at Bayu Undan offshore East Timor. The trio's total investment could reach as much as 100 billion yen (\$748 million) reported the Nikkei Asia.

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Inpex is one of three Japanese energy companies exploring CCS options offshore East Timor

The three Japanese energy companies plan to store carbon dioxide (CO₂) emitted during the production of liquefied natural gas (LNG) at projects in northern Australia and they also hope to eventually transport CO₂ from Japan by ship. Japanese companies, including JERA, Mitsubishi Heavy Industries, as well as Mitsui O.S.K. Lines, are considering developing dedicated ships to transport liquid CO₂.

JERA and Tokyo Gas will calculate the cost of transporting emissions from their own power plants and LNG terminals to assess whether the Bayu Undan CCS project will be commercial. The cost to process 1 tonne of CO₂ at the proposed Bayu Undan CCS hub is around 8,000 (\$59.3) to 10,000 (\$74) yen, according to the Nikkei, a business publication.

JERA, the largest power generation company in Japan, and the world's biggest buyer of LNG, is a partner in the Santos-led Barossa gas development offshore northern Australia that will backfill the Darwin LNG export plant. Given the high CO₂ content at the Barossa field, Santos plans to capture the carbon and send it to the depleted Bayu Undan field offshore East Timor for storage. This is driving momentum behind the CCS hub.

Tokyo Gas and Inpex are partners in the Santos-operated Darwin LNG terminal.

Earlier this year, Japan's Inpex (TYO:1605) confirmed it aimed to lead an effort to build a CCS facility near Darwin, Australia, as it strives to decarbonise its business. It was proposing its own CCS hub to store emissions from its Ichthys LNG development in northern Australia. However, it might prove more economic for Inpex to join Santos' CCS project, which is designed to handle 10 million tonnes of CO₂ per year and is more advanced than Inpex's own proposal.

Australia's second largest oil and gas producer, Santos, plans to take a final investment decision on the CCS hub offshore East Timor, also known as Timor Leste, in 2023.

Analysts expect the CCS facility to cost over \$1.7 billion.

East Timor hopes to host the first merchant CCS scheme of its kind in Asia Pacific. Indeed, it could be one of the world's largest. The ultimate vision is a multi-user infrastructure hub for receiving and storing carbon dioxide from multiple sources and industries across the region.

"Given that the wells and the facilities are already in place, Bayu-Undan CCS could be a low-cost, large-scale, commercial CCS project that could store CO₂ from regional projects, including any future Timor Leste developments," Santos said on Tuesday

CLIMATE CHANGE

JERA, Tokyo Gas, INPEX to join carbon capture project in Australia

Nikkei Asian Review, June 9, 2022. By Ryo Mikano

TOKYO -- Japan's three energy companies -- JERA, Tokyo Gas and Inpex -- plan to join what could become the world's largest carbon dioxide capture and storage project in Australia, Nikkei has learned, with their total investment expected to reach as much as 100 billion yen (\$748 million).

The companies are turning to the project to bury carbon dioxide emitted during the production of liquefied natural gas, hoping to transport CO₂ from Japan by sea for disposal in Australia.

Australian oil and gas company Santos is leading the project in the north of the country. JERA is a joint venture between Tokyo Electric Power Co. Holdings and Chubu Electric Power.

Three processes are required to bury carbon dioxide emitted by resource development: CO₂ capture, transportation and storage. This technology chain, often referred to as CCS, is seen by some as a powerful tool in the push to curb greenhouse gas emissions to zero by 2050 -- a goal set by Japan, the U.S., European nations and some other countries.

It is necessary to store just over 5 billion tons of CO₂ per year to achieve that target. However, current storage capacity is roughly 150 million tons per year, with the amount of carbon dioxide actually stored each year coming in at around 40 million tons.

The planned CCS plant in northern Australia could store up to 10 million tons of carbon dioxide a year, aiming for operation around 2025. It is expected to be one of the largest CCS bases in the world, accounting for the equivalent of 25% of the total storage capacity of CCS facilities that are working globally.

Japanese trading house Mitsubishi Corp. and Mitsui & Co. are planning CCS projects in the U.S., although these will only be able to store up to 2 million tons. Major electricity and gas providers' participation in one of the world's largest CCS projects is likely to further accelerate the move toward decarbonization.

Offshore gas fields near Darwin in northern Australia are expected to run dry within a few years, with the new project aiming to store CO₂ there. The project will handle carbon dioxide transported from another nearby gas field, as well as considering the capture of CO₂ emitted from Japanese factories and power plants.

Companies and power plants need to pay processing costs to the CCS company when they transport CO₂ by sea. JERA and Tokyo Gas will calculate the cost of transporting CO₂ emitted from their own power plants and LNG terminals, and determine whether they can commercialize the project. If so, they will ask other Japanese companies to join them.

It is estimated that the cost to process 1 ton of CO₂ at the CCS base is about 8,000 to 10,000 yen, including around 1,000 yen in transportation. Although transporting CO₂ by pipeline is the current norm, shipping is cheaper when the CO₂ collection sites are 100 to 200 kilometers away from a storage point. Using ships is also more efficient when collecting CO₂ from multiple locations.

In the Emissions Trading System, based on EU regulations, the price of a carbon credit has been hovering around 80 euros (\$85) per ton since the beginning of 2022, in some cases exceeding the cost of the CCS. As such, it is necessary to improve the efficiency of CO₂ separation and capture process which accounts for approximately 70% of the cost, to lift its competitiveness. Japan's Mitsubishi Heavy Industries is one of the companies that are improving their technologies in an attempt to halve the cost of capture process within a few years.

Under the London Convention, which regulates the dumping of waste at sea, an amendment was adopted in 2009 to allow overseas exports of CO₂ for the purpose of storage. However, the amendment has not yet come into effect. The Basel Convention, which regulates the movement of waste across nations, does not cover the transfer of CO₂.

The transportation of CO₂ remains an issue, since it is too huge in gas form to be transported in large volumes. To transport CO₂ by sea, it needs to be liquefied under high pressure to reduce its volume. JERA is eyeing the development of dedicated ships for CCS, and Japanese shipping companies are also moving to build such vessels. Transporting CO₂ from Japan will open up opportunities to carry it from Southeast Asia and India.

Mitsubishi Shipbuilding, a unit of Mitsubishi Heavy Industries, and Japanese shipper Nippon Yusen announced that they will jointly develop a large ship to carry liquefied CO₂ in November. Mitsui O.S.K. Lines is also considering a joint development of liquefied CO₂ carriers with Malaysian state oil giant Petronas, while investing in Norway-based Larvik Shipping, aiming to start transportation by 2024.

There were 135 CCS projects in development worldwide as of last year, around double the number 20 years ago, according to Australia-based Global CCS Institute.

Over the last few years, governments have provided more subsidies to CCS projects, making it easier for companies to break even and leading to a rise in the number of projects. The project led by Santos is also expected to be subsidized by the Australian government.