

PEER STRATEGY

Inpex Leads Santos for First North Australia CCS Hub

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- The Inpex-led Bonaparte offshore carbon capture and storage (CCS) project is moving ahead, with start-up eyed for 2030.
- But Santos' competing Bayu-Undan CCS in the Timor Sea seems stalled as East Timor prioritizes gas and LNG.
- Pulling the plug on Bayu-Undan would further pressure Santos' under-fire CEO, Kevin Gallagher.

The Issue

In contrast to many other parts of the world, CCS is moving forward in Australia. Geology, policy and pressure to decarbonize fossil fuel projects have created a drive for the nascent business. All new LNG projects and new fields that supply existing LNG projects must have net-zero carbon emissions in Australia, while existing LNG projects must reduce their direct (Scope 1) emissions by 4.9% annually from the 2023/24 fiscal year through to 2029/30, or offset any excess. Japan's Inpex, with partners TotalEnergies and Woodside Energy, is the favorite to successfully develop northern Australia's first offshore CCS hub. A competing project, led by Santos, appears to have lost momentum. Industry sources say there isn't room for two large CCS hubs in the region, even though northern Australia needs decarbonization solutions for several LNG export schemes.

Why Australia, Why Now?

Australia has emerged as a global leader in CCS, with two operational projects and many more in various stages of development. While far from trouble free, Chevron has been operating its Gorgon CCS project for more than four years, while Santos last year successfully commissioned the onshore Moomba facility, with a designed capacity of 1.7 million tons per year.

Other energy players are also pursuing CCS as the Australian government pressures the country's gas and LNG producers to rein in their CO₂ emissions. Australia's "safeguard mechanism" mandates high-emitting industrial facilities, including new gas developments, to have net-zero emissions, which is helping CCS deployment. While Gorgon's technical woes have caused the project to underperform – fueling CCS skepticism – Chevron has recently started drilling new wells in an effort to improve CO₂-storage rates at the LNG development, with work expected to be completed in 2026.

Last month, the Inpex-led Bonaparte CCS joint venture (JV) announced it has started preliminary front-end engineering design (Feed) work to support development of the Bonaparte CCS project, located in the Bonaparte Basin, about 260 kilometers offshore Darwin in northwest Australia.

Inpex is the operator of the planned hub with a 53% stake, together with partners Total (26%) and Woodside (21%).

Inpex's Bonaparte CCS Advances

The CCS JV was formed in 2022 to appraise the awarded greenhouse gas (GHG) storage assessment acreage title G-7-AP. In Australia, GHG acreage refers to designated offshore areas released by the federal government for the exploration and development of CCS projects.

Inpex's decision to move to pre-Feed follows the successful completion of both the selection of engineering concept and a comprehensive appraisal program, which included 1,800 sq km of new 3-D seismic surveying and two CO₂ storage appraisal wells. The appraisal program confirmed the presence of a high-quality saline aquifer reservoir considered suitable for safe and permanent long-term carbon storage, Inpex announced last month.

"The Bonaparte CCS appraisal results are outstanding and have exceeded our expectations. The G-7-AP acreage is proving up to be one of the most promising CO₂ storage sites globally," Inpex Australia's managing director, Tetsu Murayama, said recently.

Bonaparte CCS has a potential storage capacity of more than 10 million tons/yr, which would make it one of the largest globally. The Ichthys 9.3 million ton/yr LNG project in Darwin is expected to be the anchor customer, added Murayama.

Inpex operates Ichthys LNG with a 67.82% stake, along with partners Total (26%), Taiwan's CPC (2.625%), Osaka Gas (1.2%), Kansai Electric Power (1.2%), Jera (0.735%) and Toho Gas (0.42%).

"With a plan to commence CO₂ injection around 2030, the proposed Bonaparte CCS project could substantially contribute to decarbonizing northern Australia and potentially the wider Indo-Pacific region," Murayama said.

Inpex has previously said the proposed hub could store third-party CO₂ from other countries as well as industries in Australia's Northern Territory.

The Bonaparte CCS JV is now carrying out a detailed analysis of the reservoir appraisal data to support its application for a GHG injection license.

"Inpex CCS probably was always the only game in town," a former Santos executive told Energy Intelligence

AUSTRALIA AND EAST TIMOR: SELECT CCS PROJECTS

Facility (Operator)	Operational Year	Next Milestone	Industry	Estimated Capture Capacity (million tons CO ₂ /yr)	Storage Reservoir Type
Operational					
Gorgon (Chevron)	2019	Improve water injection, hit target capture rate	Natural Gas/LNG	4.0	Deep saline formation
Moomba (Santos)	2024	Sustained injection after start-up	Natural Gas/LNG	1.7	Depleted oil and gas field
Facility (Operator)	Targeted Operational Year	Latest/Next Milestone	Industry	Capture Capacity (million tons CO ₂ /yr)	Storage Reservoir Type
Advanced Development					
Bonaparte (Inpex)	2030	Pre-Feed	Natural Gas/LNG	2.0-10.0	Deep saline formation
Cliffe Head (Pilot Energy)	2026	FID	CO ₂ Transport/Storage	0.7	Depleted oil and gas field
Victorian Government CarbonNet (Victoria and federal governments)	2027	FID	CO ₂ Transport/Storage	6.0	Deep saline formation
Bayu-Undan (Santos)	2028	FID 2025?	Natural Gas/LNG	2.3-10.0	Depleted oil and gas field
Reindeer (Santos)	2028	Feed	CO ₂ Transport/Storage	5.0	Depleted oil and gas field
Early Development					
South East Australia Carbon Capture Hub (Exxon Mobil)	2026	On hold	CO ₂ Transport/Storage	2.0	Depleted oil and gas field
CStore1 (deepC Store)	2030	Feasibility study	CO ₂ Transport/Storage	1.5 - 7.5	Under evaluation
Otway (Beach Energy)	Under evaluation	On hold	Natural Gas/LNG	0.2	Depleted oil and gas field
Browse (Woodside Energy)	Under evaluation	FID	Natural Gas LNG	4.0	Under evaluation
Angel (Woodside Energy)	Under evaluation	Select concept	CO ₂ Transport/Storage	5.0	Depleted oil and gas field
Geovault (Buru Energy)	Under evaluation	TBA	CO ₂ Transport/Storage	2.0	Under evaluation

Source: Global CCS Institute, EnergyQuest, Energy Intelligence

While Bayu-Undan Stalls

Bonaparte CCS' progress is likely to be a setback for Santos' plans to develop Bayu-Undan CCS, especially as its initial business case depended on having Ichthys LNG as a key customer.

Santos' proposed CCS project is aimed at repurposing the depleted Bayu-Undan gas field, located in a maritime area straddling East Timor and northern Australia, into a large-scale carbon storage facility. The scheme has a potential CO₂ storage capacity of around 10 million tons/yr.

Santos operates the Bayu-Undan JV with a 36.5% stake with partners SK E&S (21%) of South Korea, East Timor state company TimorGAP (16%), Inpex (9.6%), Eni (9.2%) and Tokyo Timor Sea Resources (7.6%), which is jointly owned by utilities Tepco and Tokyo Gas.

The motivation for the development is to decarbonize Santos' Barossa gas project, which is on track to produce first gas in the third quarter of this year and will backfill its 3.7 million ton/yr Darwin LNG plant. With a CO₂ content between 16% and 20%, Barossa will be Australia's most carbon-intensive feedstock for LNG, making CCS essential.

Santos operates the Barossa gas field with a 50% share. Its partners in the development are SK E&S (37.5%) and Jera (12.5%).

Santos was targeting FID on Bayu-Undan CCS this year, with initial CO₂ injections planned to start in 2028. Santos has previously said it will use carbon offsets for Barossa's CO₂ emissions until a CCS solution is available.

However, analysts say Bayu-Undan CCS has lost momentum, with one industry source telling Energy Intelligence the project is "hanging by a thread."

However, in its recent first-quarter 2025 earnings, Santos said, "Feed for the project is 97% complete." Efforts remain centered on working with the national government of East Timor to establish the necessary regulatory and fiscal frameworks, approvals, government-to-government agreements (with Australia) and commercial agreements to advance the project toward FID readiness.

But there seems to be a lack of alignment between the national governments and various companies to progress the numerous and complex agreements required to progress the project, say industry sources.

Too Much Dili-Dally?

Among the agreements needed for the scheme to progress is a unique regulatory solution between the two countries that would allow Santos to produce CO₂ in Australian waters at Barossa and store it under East Timor's seabed.

Significantly, while Canberra is supportive, the Dili administration may prove to be the biggest hurdle for Santos, as CCS is not a priority for the East Timorese government, which is focused on monetizing its share of offshore gas resources.

The East Timor government hopes that the Chuditch gas field, located south of the Woodside-operated Greater Sunrise project, could improve the economics of the latter and help bring an LNG export project to East Timor.

In Timorese eyes, such a development would involve gas exports from Chuditch and Sunrise through a new pipeline to the Bayu-Undan infrastructure, then to a proposed onshore LNG facility in East Timor.

“The Timorese are not going to rush into CCS commitments at Bayu-Undan if it might jeopardize their bigger goal of developing an LNG export project,” said a source close to the projects.

Ultimately, it doesn’t make sense commercially, or from a demand perspective, to have two large CCS hubs offshore northern Australia, analysts and industry experts told Energy Intelligence.

Although Santos’ Moomba CCS facility has been operating since last September, pulling the plug on Bayu-Undan will prove another blow for the company, which has struggled to convince investors it has a coherent strategy.

TIMOR SEA: CCS-LINKED GAS FIELDS AND LNG FACILITIES

