

Santos betting big on carbon capture in bid to drive down emissions

First project expected to be sanctioned within months, while a planned northern Australia CCS hub could start up as early as 2025

By Josh Lewis, Upstream Online, 18 August 2021

Australian independent Santos is preparing to take a final investment decision on its first carbon capture and storage (CCS) project, with company already planning an additional two CCS projects.

Santos is [ready to take an investment decision on its proposed Moomba CCS hub](#) in South Australia, pending legislation being passed by the Australian government that will qualify CCS projects to generate Australian Carbon Capture Units (ACCUs).

That legislation is expected to pass next month, which Santos says will clear the way for it to sanction the proposed US\$165 million Moomba CCS development.

The first phase of the development will initially look to capture and store 1.7 million tonnes of carbon dioxide in depleted reservoirs in the Cooper basin.

However, with the potential capacity to eventually store up to 20 million tpa of CO₂, Santos claims Moomba has the potential to be one of the largest CCS projects globally, as well as one of the lowest cost, with forecast lifecycle cost of just US\$24 per tonne of CO₂.

Already looking ahead

While Moomba will be the company's first CCS development, it is already at work planning additional projects, with work being carried out on two other potential hubs in Northern and Western Australia.

Santos said this week it had already commenced desktop studies to confirm the CO₂ injection capacity for the potential CCS development offshore Western Australia.

Its potential Northern Australia and Timor-Leste CCS hub is more advanced, however, with Santos identifying about 10 million tpa of storage capacity at its nearly depleted Bayu-Undan development in the Timor Sea.

Earlier this year, [Santos signed a memorandum of understanding with Italy's Eni](#) to collaborate on projects, including a potential CCS development at Bayu-Undan.

According to Santos, the existing wells at Bayu-Undan can be repurposed for CO₂ injection, while the pipeline that runs to the onshore Darwin liquefied natural gas (DLNG) plant is already capable of handling CO₂.

Reducing Barossa's carbon footprint

Santos is targeting start-up of the CCS project around the same time production starts at its [recently sanctioned Barossa development](#), which is currently scheduled for start-up in the first half of 2025.

On a call with analysts this week, Santos chief executive Kevin Gallagher was unable to provide cost guidance, as yet, on the proposed CCS hub, but did state that early work carried so far indicated it would be "very competitive".

"The reason for that is that much of the infrastructure is already in place; the pipeline, the offshore facilities et cetera. So there's a lot in place, and if everything is CO₂ compatible then that reduces a lot of costs," he said.

“So there's some plant that would be required at Darwin, but that could be offset with some reductions in plant requirements offshore at Barossa and with some changes to scope to the Barossa project that would sort of compensate some of those costs.”

Santos has previously estimated total CO₂ emissions from Barossa's floating production, storage and offloading facility, without carbon capture, at between 2.1 million tpa and 3.8 million tpa.

Instead of venting that CO₂ into the atmosphere, the CCS project would instead see Santos send the CO₂ to Darwin with the sales gas, where it would be separated and sent back up the existing Bayu-Undan pipeline for re-injection to the depleted reservoirs beneath the Timor Sea.

“What that would actually mean is that instead of the Barossa pipeline tying into the Bayu-Undan to Darwin pipeline we are turning it 90 degrees at the tie-in point and running alongside it back into Darwin,” Gallagher explained.

“So there will be an additional section of pipeline required to make that work and that's a very easy scope change.”

Gallagher added that would also result in further cost reductions for the Barossa development, as would it would eliminate the need to carry out subsea tie-ins to the existing pipeline, which in turn would offset the additional cost of the pipeline back to shore.

However, with three separate Santos-led joint ventures involved in Barossa, Bayu-Undan and DLNG, Gallagher admitted it raised questions over which joint venture would own the new pipeline.

“But I am not concerned about that, it's a case of whether you want to pay a toll or you want to pay for the pipeline at the end of the day, depending on who owns it,” he said.

Gallagher also clarified that under the current regulations, DLNG would be the entity that would qualify for ACCUs, with the Barossa reservoir emissions being taken back to Darwin to be captured before being sent offshore for injection and storage.

However, he noted the shifting of the reservoir emissions to DLNG would mean that Barossa would have “very, very little emissions”.

Emissions would also be further reduced at Barossa with less equipment needed on the floating production, storage and offloading vessel to separate the CO₂ from the sales gas, meaning a lower power load would be required offshore, which, in turn, would further reduce emissions.

Third party access

Santos anticipates to capture about 2.3 million tpa of CO₂ from Barossa and DLNG, however, with the project's anticipated 10 million tpa capacity, Santos sees opportunity to open up the proposed CCS development to third party access.

“We're looking at other projects in the region there and third-party access is an opportunity, and that can become a very lucrative opportunity, not only for oil and gas projects, but for other industries in the Darwin area that could or would be emitters,” Gallagher said.

“So we see that as a real exciting opportunity, a bit of work to do in that but all the studies so far are very encouraging. We have a number of MoUs with our partners both at Darwin and Bayu-Undan. We're working with Australia and Timor-Leste regulators on this project. I believe it's a very exciting project but a lot to go under the bridge yet on that one. But if we're able to get that up, I think that is a very exciting opportunity.”

Gallagher stated Santos wanted to make money out of CCS, while also reducing its overall emissions intensity as it targets net zero emissions by 2040.

“We've always said, once the government qualifies carbon capture and storage projects for ACCUs it's our belief that these projects will become very valuable projects and we'll see a lot more of them.