



## Northern Territory Low Emission Carbon Capture Storage and Utilisation Hub

# Identifying a future vision for a Northern Territory CCUS hub

CSIRO has been working with stakeholders to build a common understanding and vision of how a Carbon Capture Utilisation and Storage Hub could be developed in the NT.

This report comprises the first report of the Northern Territory Low Emission Carbon Capture Storage and Utilisation (CCUS) Hub Business Case project. The report identifies the vision of an NT CCUS hub and establishes a shared understanding across government and industry representatives of how a NT CCUS Hub could be developed. The report represents one of a series of reports which explore 3 broad topic areas:

- Macro-economic drivers, Northern Territory and regional emissions, low emission product markets, identification of key learnings from other low emissions hubs being developed globally (Reports 0-4).
- CCUS hub technical definition and technical risk reduction studies, including detailed studies on the infrastructure requirements for a CCUS hub, renewable power requirements, cross-sector coupling opportunities and road-mapping for CO<sub>2</sub> utilisation for existing and potential future industries (Reports 5-9).
- A business case to develop an appreciation of the scale of investment required to develop a Low Emissions Hub and the economic returns from doing so. This will lead to suggested business models and routes of execution (Reports 10-12).

### The low-emission opportunity in the Northern Territory

The Northern Territory's abundant natural gas, solar resources, and CO<sub>2</sub> storage potential, along with its proximity to international markets, make it a key player in energy exports and decarbonisation in Australia and the region.

The NT Government has adopted a 2050 net-zero emissions target and is seeking ways to rapidly decarbonise existing energy supplies and attract future zero-emission industries.

Capital city Darwin, a gateway to South-East Asia and the location of globally significant liquid natural gas (LNG) export and industrial activity, is the proposed site for a large-scale Low Emission CCUS Hub. Led by CSIRO, a collaboration is

underway on a business case project assessing the Hub's viability on the Middle Arm Peninsula.

If realised, the NT CCUS Hub could be one of the world's largest multi-user, multi-access hubs. One of the aims of the business case project is to identify transition pathways for industry in the region by sharing knowledge and experience that will help improve the likelihood of success. By taking a collaborative and regional view, an accelerated and sustainable industry transition can be explored.

### The Northern Territory CCUS business case project

- CSIRO is working to identify decarbonisation and transition pathways for existing and potential future industries that may be established in a Low Emissions Hub in the Darwin region of the NT.
- We are working collaboratively with the NT Government and industry on the business case project to assess the viability of a large-scale low-emission CCUS Hub on the Middle Arm of Darwin Harbour.
- This project is also investigating other decarbonisation opportunities as well as CCUS including sector coupling and renewable electrification.
- Task 0 of this project was designed to elicit from stakeholders a collaborative common Vision of Success, including value drivers and opportunity statements for a CCUS hub, which could be used to guide further activities within the project and provide a common frame for further development.
- The common CCUS hub vision has identified a pathway between 2025 and 2040 for capture and storage of CO<sub>2</sub> from existing and future industries, growing CO<sub>2</sub> storage from 5 million tonnes per annum to over 25 million tonnes per annum.

## The vision setting process

A clear, well developed business case supported by detailed reports and techno-economic models has guided investment decisions and facilitated the development of CCUS projects worldwide.

An important part of developing a business case for the NT CCUS Hub is collaboration with industry and government to understand their needs, drivers and strategic directions; this ensures that CSIRO’s research delivery is informed and relevant.

Industry and government stakeholders have extensive practical knowledge of technology implementation and policy and regulatory frameworks. Incorporating these perspectives helps provide an understanding of the steps required for CCUS Hub realisation.

The process of engaging with stakeholders to develop a vision for the NT CCUS Hub was divided into several sequential activities to gradually build understanding and inputs – first at an individual organisation level and then collectively.

Following a kick-off meeting with all stakeholders, individual framing workshops were then held with each of the collaboration partners to frame their vision of the Hub and identify their individual drivers.

The outcomes of these individual workshops were used to prepare a draft collaborative Low Emissions Hub vision, outcomes and schematics, and these were presented to a collaborative stakeholder workshop. Feedback and inputs were sought, and from here the collaborative stakeholder vision was identified and finalised.

## A shared vision for the NT CCUS Hub

The stakeholder inputs gathered throughout the process allowed the identification of a collaborative common Vision of Success, including value drivers and opportunity statements.

They also enabled the collaborative development of a ‘technical definition basis’ and a reference case for a CCUS Hub that comprises base, near-future and far-future cases.

These cases identify a pathway between 2025 and 2040 for capture and storage of CO<sub>2</sub> from existing and future industries, growing CO<sub>2</sub> storage from 5 million tonnes per annum to over 25 million tonnes per annum.

This future vision has been used to understand the steps required for CCUS Hub realisation; has identified a number of knowledge gaps and information requirements that need further investigation and analysis; and has provided valuable context for CSIRO’s research delivery within the CCUS business case project.

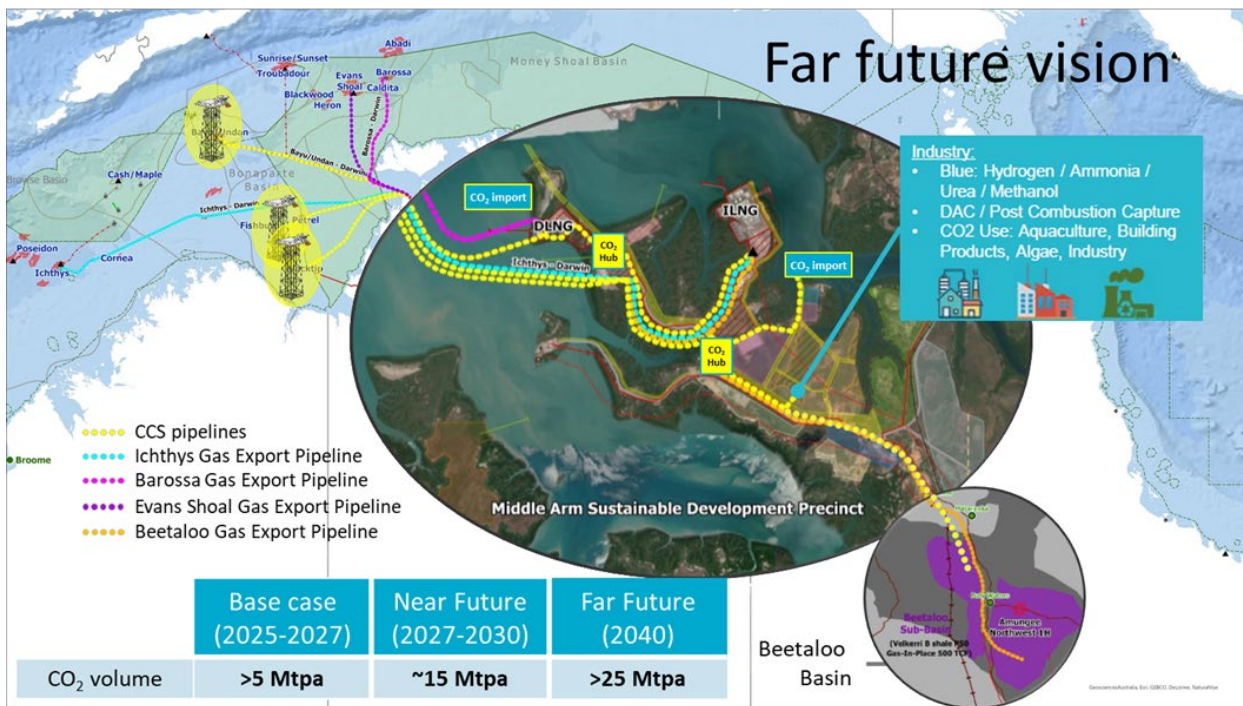


Figure 1: Collaborative Hub Future Phase (2040)

The CCUS business case project includes inputs from the wider Northern Territory Low Emissions Hub (NT LEH) collaboration group, whose current members include the Northern Territory Government, Xodus, INPEX, Santos, Woodside Energy, Eni, Total Energies, SK E&S and Tamboran Resources. CSIRO has sought feedback from government and industry on the technical content of the report, CSIRO has sole discretion on including such feedback.

## More information

[Read the report](#)

Learn more about the [NT Low Emission Hub Research](#)

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