



Northern Territory Low Emissions Carbon Capture Storage and Utilisation Hub

Regional understanding and context

As part of the Northern Territory CCUS Business Case Project, CSIRO has published a report that provides a regional understanding of economies, industries and emission sources.

This report has been delivered as part of the Northern Territory Low Emissions Carbon Capture Storage and Utilisation (CCUS) Hub Business Case project.

It provides insights into the economies, industries and emission sources of the Northern Territory's key trading partners: China, Japan, Singapore, South Korea and Taiwan.

In particular, the report focuses on emission sources and the changes required in the region to meet both long term energy needs and emissions reduction goals.

The low-emission opportunity in the Northern Territory

The Northern Territory's abundant natural gas, solar resources, and CO₂ 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. These include including sector coupling and renewable electrification.
- Task 2 of this project was to develop a regional understanding and provide context for future product demand from the Northern Territory.
- The report reviews the current state of the economies of the NT's key trading partners, their historical performance, the influence of key industrial sectors on their historical emissions, and how the decarbonisation of these industries may contribute to a regional CO₂ market.

Regional understanding

Darwin holds a unique position within Australia as a key trading partner for Asia.

In the year to September 2023, Northern Territory exports were valued at \$16.2 billion, with energy products (LNG and petroleum) accounting for over 85% and metalliferous ores and metal scrap comprising more than 6%.

The majority of these exports went to five key jurisdictions: Japan (45.9%), China (14.3%), Taiwan (13.5%), Singapore (10%), and South Korea (7.3%).

The demographics, industrial profiles, energy mixes, and emissions reduction targets of these regional neighbours, each of which is a signatory to the UNFCCC Paris Agreement, will influence their future reliance on the Northern Territory for energy and energy transition products.

This dynamic will also shape the business case for the proposed CCUS Hub in Darwin, which means developing a broad understanding of regional context is an important step in the process.

Where possible, publicly available data has been used to conduct this review, and the report has been developed to be accessible to a general audience.

Key findings

Economic growth forecasts for the Asia-Pacific region indicate moderated but sustained growth that will continue to drive demand for energy and products.

Across the region, the energy mix is expected to shift increasingly towards low-emissions sources, although CO₂ emissions from the energy sector and hard-to-abate industry sectors will persist.

An analysis of current emissions in the Asia-Pacific region, mapped with reference to Darwin, identified 10 billion tonnes of CO₂, with 3 billion tonnes potentially accessible for liquefied CO₂ transport by vessel.

Applying International Energy Agency (IEA) roadmaps to emissions from the Northern Territory's five key trading partners revealed a serviceable obtainable market of approximately 3 Mt of CO₂ in 2030, increasing to 72 Mt by 2050.

While this estimate is based on a number of assumptions, and is intended only to identify the potential magnitude of emissions accessible to a Northern Territory CCUS Hub, it highlights a significant opportunity for CO₂ importation.

Further detailed analysis will be required if the NT CCUS Hub advances to the next phase of development.

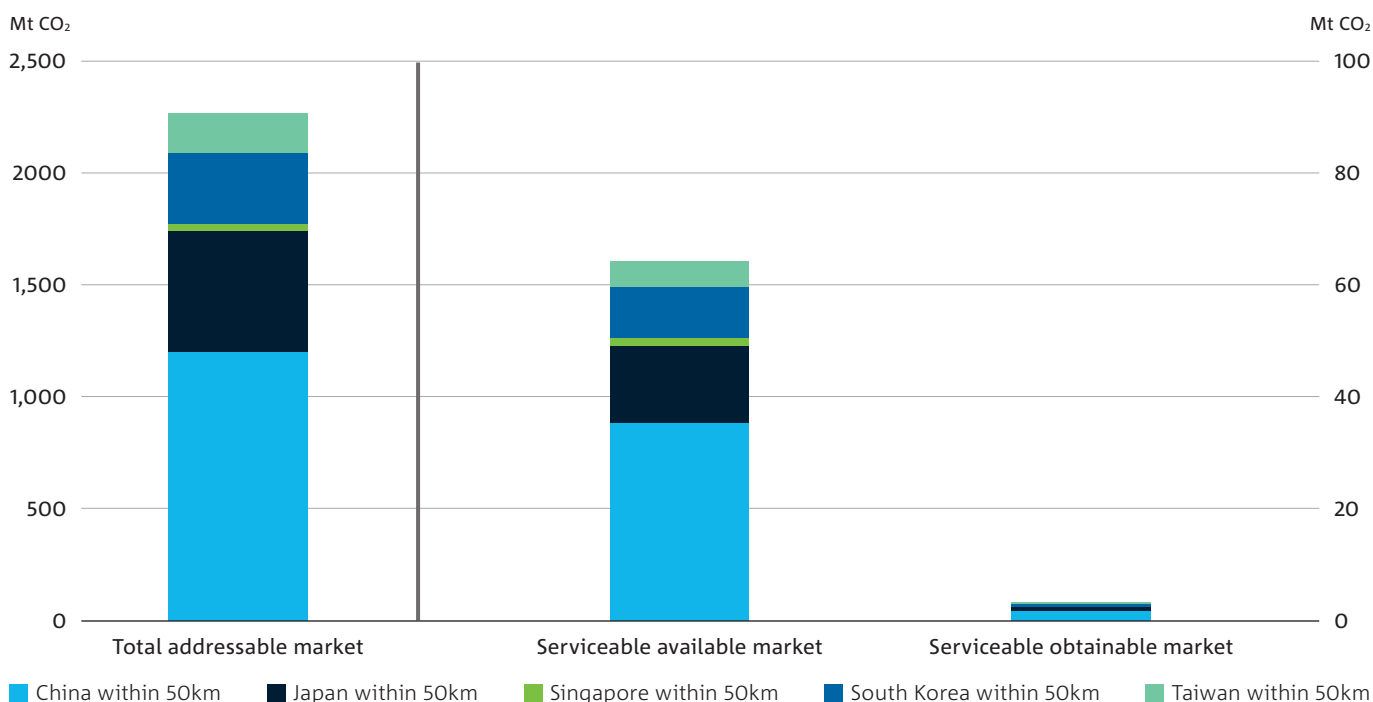


Figure 1: 2030 CO₂ market estimate for five key Northern Territory trading partner countries

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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