CO2Tech
A CO2CRC Company

Is CCS an option for Newcastle and Sydney?

A low impact option to support growth and decarbonisation in Newcastle and Sydney

Newcastle and Sydney are proud industrial hubs that has supported Australia and regional industry as a key player in creating critical materials and local employment, in:

- Cement
- Aluminium
- Steel
- Ammonium Products.

Unfortunately, these vital products and activities come with an onerous emissions burden, the immediate Gladstone area represents ~10 million tonnes of CO_2 emissions per annum by facilities entrained by the Safeguard Mechanism alone. Unabated, these emissions will likely require significant purchases of carbon credits that will make carbon capture and storage (CCS) collaboration an economically attractive proposition and support offsetting irreducible emissions in some sectors.

Newcastle, Sydney and its industries are pragmatically preparing themselves for a low-carbon future by establishing the components of becoming a renewable energy and future fuels hub, however, these elements are not without their risks in deployment.

A potential option that this study proposes to analyse is the viability of a CCS hub with export routes for Newcastle and Sydney. Newcastle and Sydney could create CCS hubs that would support existing local industry and drive further investment and job creation by derisking decarbonisation futures and providing an immediate, practical method of removing CO_2 emissions, gathering them and transporting them to sites that can safely and permanently host them underground with a small footprint and impacts. Its modular nature would allow low-carbon future fuels to participate.

CO2Tech will provide:

- A fast paced screening study on the techno-economic fundamentals for carbon capture, gathering and export of CO_2 utilising shared infrastructure amongst commercial partners
- Techno-economic feasibility of viable export routes and transport methods of CO_2 to advanced storage projects.

A Newcastle-Sydney CCS hub would replicate a CCS program in Europe known as the Northern Lights which gathers CO_2 from a range of hard-to-abate industrial hubs emitters and stores them permanently underground offshore.

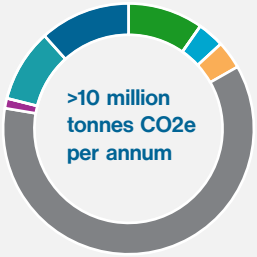
Newcastle and Sydney have limited local underground storage options and a statewide ban on CO_2 storage means transporting to offshore basins is the most likely cost-effective method of disposing of CO_2.

The industrial emissions, skilled workforce, deep water port and political support for industry and manufacturing in the Bell Bay region make it an ideal candidate for a CCS hub.

Policy in Australia is beginning to crystalise around the importance of onshoring emissions, decarbonisation and shared infrastructure (Net Zero, Future Made In Australia, Critical Minerals, Safeguard Mechanism). CCS hubs sit at the nexus of these complimentary policies, strategies and targets.

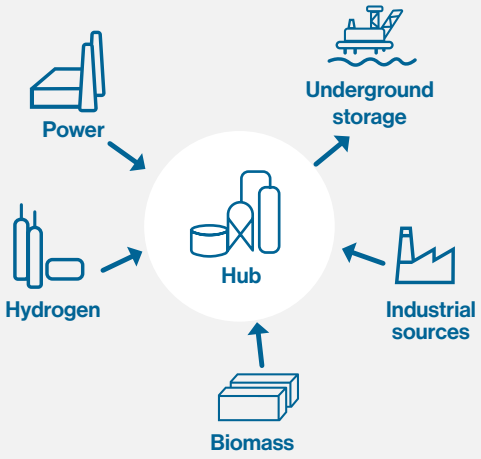
CCS projects take time to mature and begin with pre-feasibility studies. Preparing a low-footprint CCS decarbonisation option in parallel with existing options is key to ensuring delivery aligns with stated other underground storage projects in Australia.

Newcastle-Sydney emissions and industry mix.

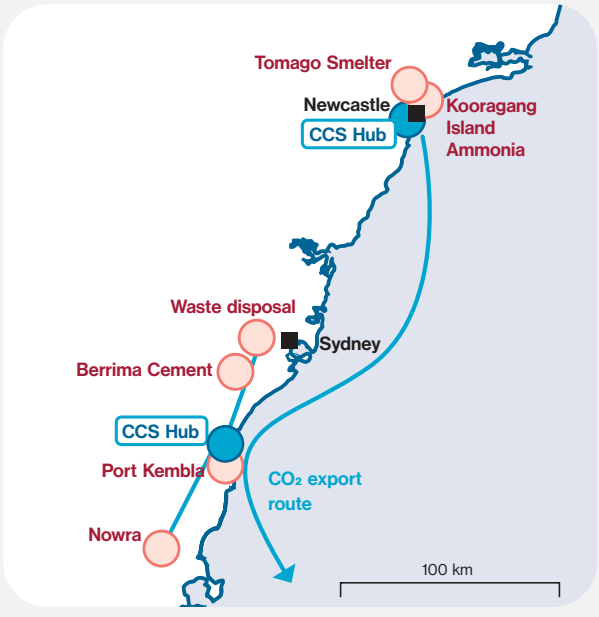


Cement
Plastics
Wheat
Steel
Waste
Ammonium
Aluminium

A CCS hub consolidates emissions from various industries and prepares for transport and storage underground.



Schematic representation of possible emissions sources, CO_2 gathering network to temporary storage hub and CO_2 export route from Newcastle-Sydney.



CO2Tech is proposing a fast paced, screening study with a consortium approach to reduce costs and build collaboration amongst regional industries. This is a scoping proposal that can be developed with prospective clients' specific needs if required, this study could be the first phase of a techno-economic investigation that may lead to more detailed studies subject to outcomes. The study is expected to take approximately 9 months.

Why CO2Tech?

CO2Tech has unrivaled practical experience in capturing CO_2 from industrial emissions in Australia. It can leverage its unique access to advanced storage projects providing the crucial connection between carbon capture and permanent underground CO_2 storage.

Practical experience in post-combustion capture and advanced, proprietary CO_2 capture technology HyCaps

Market

Low-cost post-combustion CO_2 capture from power, industry, oil and gas, and hard-to-abate sectors.

Novelty

Features

- Hybrid technology.
- Combine solvent absorption and membrane in a single process.
- Solvent regeneration without phase change.

Benefits

- Lower energy requirement.
- Modular design, easy to scale up.
- Ability to operate on any liquid solvent.
- Suitable for retrofit and greenfield applications.
- Lower footprint, OPEX and CAPEX.

COSMIC – Costing Model for Integrated Carbon Capture and Storage

CO2Tech hosts a unique techno-economic evaluation software called COSMIC, that leverages it's proprietary subsurface database and expertise.

Market

Applicable to all sectors considering CCUS solutions.

COSMIC has an easy-to-use Graphic User Interface (GUI) that provides options for various CO_2 capture technologies, CO_2 compression and different modes of CO_2 transport. Fossil fuel based or renewable energy can be selected to meet the energy requirements for the CCS chain.

COSMIC uses simple mass and energy balances to determine the type and size of equipment required. Equipment costs are estimated using published/literature data, CO2CRC costing data base, scaling law and the use of Lang factors. The model also calculates the mass of CO_2 captured and CO_2 avoided.

Our clients

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