

The south-west region of WA is an industrial powerhouse comprised of several important alumina refining, fertiliser manufacturing, cement production, mining and mineral processing operations. These industries are major drivers of economic activity and employment for both the State of Western Australia and Australia in general.

Unfortunately, these vital operations come with an onerous GHG emissions burden with the CO₂ emissions reported under the Safeguard Mechanism equating to >9 million tonnes CO₂-e during 2021 – 2022. Unabated, these emissions will require significant purchases of carbon credits to meet mandated reductions in CO₂ emissions. The ACCU market is relatively new and there is little market history to guide future price expectations and forecasts. The uncertainty in future price volatility can make fixed cost abatement technologies like CCS, commercially attractive propositions.

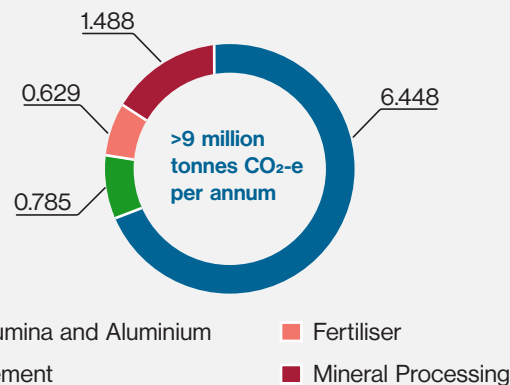
The Australian Government and Industry are establishing GHG emission reduction targets with a general goal to achieve net zero by 2050. Many tiered strategies for decarbonisation are under consideration, including CCS. Economies of scale can be achieved if several co-located facilities partner together to develop a CCS hub using shared infrastructure. The scale of the industrial CO₂ emissions, skilled workforce, deep water ports, and political support for industry and manufacturing in the south-west region of WA make it an ideal candidate for a CCS hub. A CCS hub in the south-west of WA would replicate a planned CCS project in Europe (the Northern Lights) which plans to gather CO₂ from a range of hard-to-abate industrial emitters and store the captured CO₂ permanently underground in a saline aquifer located offshore Norway.

The specific tasks to be completed during this CCS hub screening study are as follows:

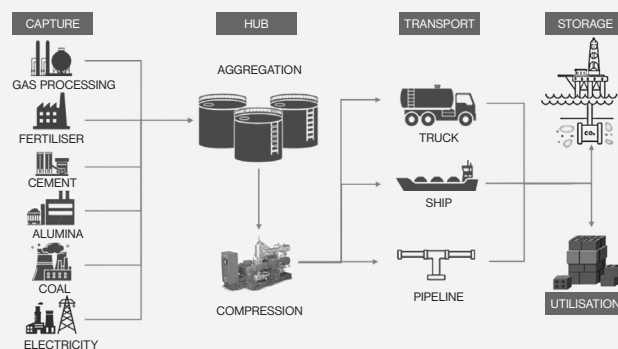
- Design and cost the CO₂ capture technologies specific to industrial process requirements.
- Design and cost a network gathering system to collect CO₂ emissions from multiple facilities into a common aggregation and surface storage facility.
- Design and cost the compression and transport requirements to send the captured CO₂ to several potential geological storage sites.
- Rank the potential CO₂ geological storage sites based on techno-economic criteria.
- Preliminary advice on the regulatory approvals' pathway to obtain a CO₂ injection license.
- Produce an indicative project roadmap to develop the preferred CCS hub solution with associated timeline.

The key deliverable from this screening study is to work directly with participants to assess the technical feasibility and commercial viability for a CCS hub to meet their decarbonisation targets.

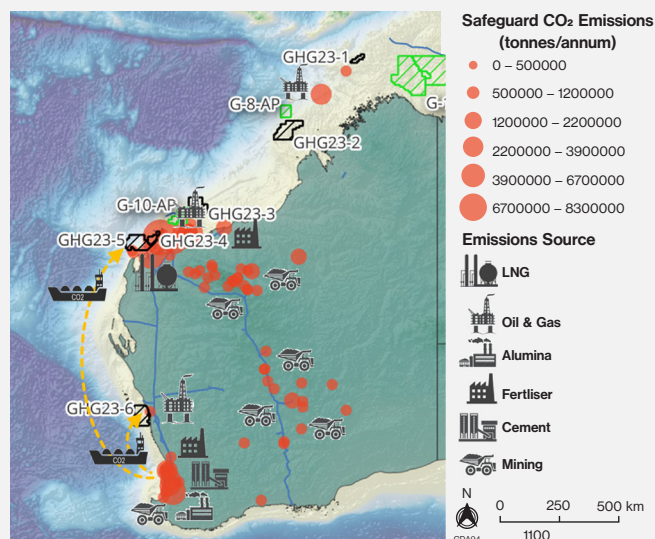
CO₂ emissions reported under the Safeguard Mechanism for industries located in the south-west region of WA during 2021 – 2022.



Schematic model of a CCS hub, showing aggregation of CO₂ emissions captured from individual facilities followed by transport and underground storage or utilisation.




Location and intensity of CO₂ emissions reported under the Safeguard Mechanism during 2021 – 2022 from WA industries.



Why CO2Tech?


CO2Tech has unrivaled practical experience in capturing CO₂ 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 CO₂ storage.

Practical experience in post-combustion capture and advanced, proprietary CO₂ capture technology HyCaps



Market

Low-cost post-combustion CO₂ 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 its 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 CO₂ capture technologies, CO₂ compression and different modes of CO₂ 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 CO₂ captured and CO₂ avoided.

Our clients



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