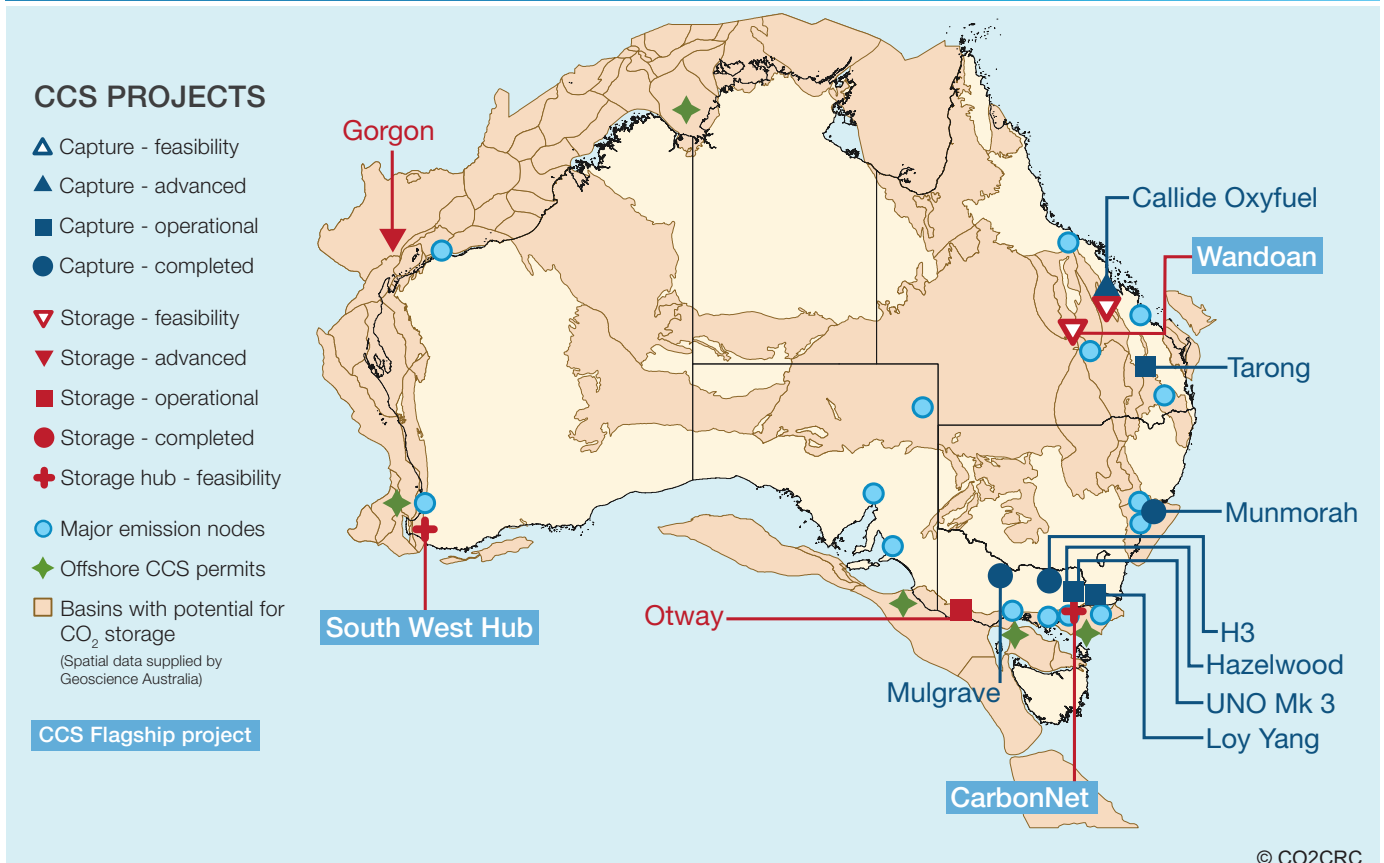


Decreasing carbon dioxide emissions from major stationary sources is firmly on the Australian agenda and carbon capture and storage (CCS) is seen as a vital part of the national mitigation portfolio. There are now a number of CCS demonstration projects underway or planned and several major commercial CCS projects proposed for Australia.

The Australian Government has begun a process for permitting offshore CO₂ storage.



Australian CCS Projects

Callide Oxyfuel Project, Queensland

This demonstration project involves conversion of an existing 30MW unit at Callide A. Generation of electricity by oxy-firing is due to start in April 2012, with capture of CO₂ commencing later in the year. A second stage of the project may involve the injection and storage of captured CO₂. Cost estimate is A\$206 million. The project involves CS Energy, IHI, Schlumberger, Mitsui & Co, J-Power and Xstrata, with extra funding from the Australian Coal Association (ACA) and the Australian, Queensland and Japanese Governments.

CarbonNet Project, Victoria (CCS Flagship Project Proposal)

This bid for a storage hub in the Latrobe Valley co-ordinated by the state of Victoria aims to collect and store 3-5 Mtpa of CO₂ from Latrobe Valley industry, including coal-fired power plants, and may involve both pre- and post- combustion capture.

South West Hub Project, Western Australia (CCS Flagship Project Proposal)

This proposal, which is being co-ordinated by the state of Western Australia, aims to initially store up to 2.4 Mtpa of CO₂ captured from industry and power plants southwest of Perth. A\$52 million of funding under the Australian Government's CCS Flagship Program will be used for a detailed storage viability study of the Lesueur sandstone formation in the onshore Perth Basin and a community consultation program. Partners in the project are the West Australian Government, Perdaman Chemicals and Fertilisers, Verve Energy, The Griffin Group, Wesfarmers Premier Coal, BHP Billiton and Alcoa.

CO2CRC Otway Project, Victoria

This is Australia's only operational storage demonstration project. In 2008, 65,000 tonnes of CO₂-rich gas was injected into a 2km-deep depleted gas field. A major program of monitoring and verification has been implemented. In 2011, researchers developed the world's first single well test to determine storage capacity in deep saline formations by completing a series of injections via a new well to test residual trapping. The A\$60 million project, which is supported by 15 companies and 7 government agencies, involves researchers from Australia, New Zealand, Canada, Korea and the USA. Partners include major gas, coal and power companies, research organisations and governments. Additional financial support is provided by the Australian Government (RET), the Victorian Government and the US DOE through Lawrence Berkeley National Laboratory.

Gorgon Project, Western Australia

Chevron (operator), Shell and Exxon are in advanced planning for a major sequestration project linked to the Gorgon LNG Project. The separated CO₂ will be injected under Barrow Island to a depth of about 2.4km, with injection of 3.3 million tonnes of CO₂ per year. A total of 120 million tonnes will be injected over the life of the project. A data well has been drilled and a major study of the subsurface is underway. All government approvals have been granted and the final investment decision for the project to proceed has been made. A contract has been awarded to GE for the injection units. The storage component of the project will cost approximately A\$2 billion.

International Power Carbon Capture Plant, Victoria

A post-combustion capture plant is operating at the International Power GDF Suez Hazelwood Power Station. The solvent capture plant began operation in 2009 and is capturing and chemically sequestering CO₂ at a nominal rate of 10,000 tpa of CO₂. This project is partly funded by the Australian and Victorian Governments.

H3 Capture Project, Hazelwood, Victoria (Completed)

This project, led by CO₂CRC, was based at the International Power GDR Suez Hazelwood plant and exploited synergies with the Hazelwood Carbon Capture plant. CO₂CRC has tested a range of solvents and different process configurations using the solvent post-combustion capture plant. In addition, post-combustion techniques using adsorbent and membrane technologies were developed using two purpose-built rigs.

Loy Yang Project, Victoria

A CSIRO mobile pilot post-combustion capture facility has begun operation at Loy Yang Power Station and is capturing around 1000 tpa of CO₂. The facility is investigating a range of solvent technologies for CO₂ capture.

CO₂CRC/HRL Mulgrave Capture Project, Victoria (Completed)

CO₂ emissions were captured from HRL's research gasifier at Mulgrave in a pilot-scale CO₂CRC pre-combustion capture project by CO₂CRC. Three capture technologies were evaluated to identify which are the most cost-effective for use in a coal gasification power plant. Partners included CO₂CRC and HRL with funding from the Victorian Government.

CO₂CRC Uno Mk 3 Project

CO₂CRC is using a dedicated capture plant at the International Power GDF Suez Hazelwood Power Station to develop CO₂CRC's innovative potassium carbonate capture system. Funding from the Victorian Government and BCIA supports the project.

Munmorah PCC Project, New South Wales (Completed)

This research scale pilot project investigated the post combustion capture ammonia absorption process, and the ability to adapt it to suit Australian conditions. Tests to capture up to 3000 tonnes of CO₂ have been successfully completed. Partners involved in this project were Delta Electricity, CSIRO and the ACA. A larger scale demonstration project, incorporating geological storage, is under consideration.

Tarong PCC Project, Queensland

CSIRO and Tarong Energy have installed a post-combustion capture pilot plant using an amine-based solvent at Tarong Power Station near Kingaroy, Queensland. The pilot plant will capture 1000 tpa of CO₂ over a two-year research program. The plant became operational in December 2010. The cost of the project is A\$5 million.

Wandoan Project, Queensland (CCS Flagship Proposal)

Stanwell and Xstrata Coal are seeking to identify suitable storage sites in the Surat Basin of Queensland.