

National Geosequestration Laboratory

The National Geosequestration Laboratory (NGL) is a national research and development facility established to develop innovative solutions for government and industry to minimise the risk and uncertainty regarding geological storage options for carbon dioxide.

Purpose

As a national research and development facility it aims to provide and evaluate research required to enable commercial scale carbon capture storage (CCS) in Australia, in an attempt to reduce greenhouse gas emissions.

It supports the Australian Government's national research priorities for an environmentally sustainable Australia, and its policy to reduce greenhouse gas emissions by 80% over the next 40 years.

The Department of Industry, Innovation, Science, Research and Tertiary Education (DIISRTE) has provided \$48.4 million to develop the NGL's infrastructure and equipment.

Expertise and capabilities

The NGL brings together leading expertise and capabilities from the three research partners to deliver essential research and technology to assist in the development of commercial scale CCS projects.

The NGL infrastructure will house world-class facilities to support the collective research partner capabilities, which can be applied to the complete value chain, including:

- carbon storage site characterisation and evaluation
- capacity and containment assessment
- injectivity
- monitoring and verification, and
- transport and processing.

Education, training and community outreach are also important components of the NGL's research focus and capability development. The NGL will provide a training ground for researchers to further knowledge and understanding, to enable the identification of safe and secure underground storage for carbon dioxide and setting benchmark health, safety and environmental standards for future commercial carbon storage projects.

The NGL is a collaboration between CSIRO, The University of Western Australia (UWA) and Curtin University as part of the Federal Government's Clean Energy Initiative CCS Flagship and Education Investment Fund (EIF) Programs.





Facilities

The NGL infrastructure will initially support the South West Hub and other CCS projects. The design of the NGL's infrastructure will make it suitable for testing other storage sites and other technologies, such as geothermal energy generation, petroleum and coal seam gas development.

The NGL hub will be based at the Australian Resources Research Centre (ARRC) in Perth, Western Australia, with satellite laboratories at other Australian sites forming part of the national facility. The first NGL research node will be built on the UWA campus to house a CCS gas processing and geophysics research facility.

Examples of other new facilities will include:

- specialised CO₂ core flooding equipment to capture critical data for understanding residual saturation and CO₂ storage capacity.
- specifically designed triaxial cells for testing rock properties, essential for predicting long-term security and containment of CO₂ underground.
- new sensor technologies that can trace CO₂ and its proxy species for monitoring and verification programs.



Research collaborations

The NGL collaboration complements and builds on the successes of the Western Australian Energy Research Alliance joint venture between CSIRO, UWA and Curtin, as well as the partnership with the Western Australian Department of Mines and Petroleum who lead the pre-competitive phase of the South West Hub Flagship project.

The NGL acts as a research facility to provide tools and methods to assist decision-making for CCS activities in Australia and overseas. It provides opportunities for large-scale collaboration on a local, national and international scale between government, industry and the community.

The research partners already provide CCS advice and support to:

- Western Australia Department of Mines and Petroleum (DMP)
- Australian Government Department of Innovation, Industry, Science, Research and Tertiary Education (DIIS RTE)
- Australian Government Department of Resources, Energy and Tourism (DRET)

Key contacts

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