



Carbon Capture and Storage

Context

Carbon capture and storage (CCS) is a way to reduce atmospheric emissions of carbon dioxide (CO₂) for a variety of industrial sources. Geological storage of CO₂ involves injection and long-term storage of CO₂ inside deep porous rock formations, such as depleted oil and gas reservoirs or saline aquifers.

Systematic monitoring of CO₂ storage sites is a regulatory requirement that is designed to ensure both the safety and long-term security of stored CO₂ and the safety of potable groundwater. The objective of the project is to design, adapt and test geophysical methods of monitoring CO₂ storage. The project will also use the data collected to determine the exact subsurface distribution of injected CO₂.

The methods being tested include satellite monitoring systems, both on the surface and inside the wells, and draw on seismics, electromagnetism, gravimetry, GPS, radar interferometry, and inclinometer networks. These monitoring methods are developed and tested at the Aquistore CO₂ storage site in Saskatchewan. CO₂ is captured from the coal-fired power plant at the Boundary Dam near Estevan and injected into the base of a Cambrian sandstone formation at a depth of 3,000 metres. Specialized tools will be designed as a result of the monitoring methods used and will serve the requirements of future CO₂ storage monitoring programs.

Expected outcome

Expected medium-term results are:

- To establish a knowledge base that will help with assessing the applicability and economic importance of traditional and non-traditional methods of CO₂ storage monitoring;
- To improve the effectiveness and efficiency of measurement, monitoring and verification (MMV); and
- To recommend appropriate MMV protocols for CCS regulatory frameworks.

Expected long-term results are :

- To contribute to the large-scale implementation of CCS technologies in Canada by providing effective MMV strategies;
- To help coal power plants with the use of CCS so they can meet various Environment and Climate Change Canada performance standards; and
- To position Canada as a world leader in CCS and MMV technologies.

Partners

The CCS project is underway in Saskatchewan and includes the following industry and university partners: Petroleum Technology Research Centre, Carleton University, University of Alberta, University of Saskatchewan, University of Manitoba, Institut national de la recherche scientifique, Lawrence Berkeley National Lab, Korean National Oil Co., Japan Oil, Gas and Metals National Corporation, SDT-Canada, goGreen Saskatchewan, Enbridge, SaskPower, Consumers' Co-operative Refineries Limited, Schlumberger Carbon Services, GFZ-Potsdam, Scintrex, BP, Chevron and EERC.

Contact

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