

Science behind carbon storage validated

The CO2CRC Otway Project at Nirranda South in southwest Victoria, Australia, has provided verification of the underlying science of geological carbon dioxide storage.

The journal paper ***Safe storage and effective monitoring of CO₂ in depleted gas fields***, published this week in the Proceedings of the National Academy of Sciences of the USA, provides an overview of the science behind the project, led by the Cooperative Research Centre for Greenhouse Gas Technologies (CO2CRC).

“The Otway Project has confirmed that storage in depleted gas fields can be safe and effective, and that these structures could store globally significant amounts of carbon dioxide,” said Dr Charles Jenkins from CSIRO, lead author of the paper and monitoring program manager.

“Since April 2008, CO2CRC researchers used a natural source of carbon dioxide at the site to inject, store and monitor over 65,000 tonnes of CO₂-rich gas, two kilometres underground in a depleted natural gas reservoir.

“The work has been a major scientific and logistical exercise covering risk assessment, monitoring and verification, reservoir modelling, regulation and community relations and has produced a huge amount of scientific and practical information on CO₂ storage and monitoring.

“The research included the world’s first measurement of storage efficiency for CO₂ storage, lending weight to the conclusion that depleted gas fields have enough storage capacity to make a significant contribution to reducing global CO₂ emissions.”

Monitoring of the stored CO₂ has been a major part of the project, allowing researchers to finetune a wide range of monitoring and verification procedures, including air, water, soil and sophisticated subsurface monitoring and sampling techniques. These showed that large-scale geological storage can be monitored to ensure safety, to confirm the stored CO₂ does not escape gradually back to the atmosphere and to underpin CO₂ trading mechanisms.

The paper’s authors include CO2CRC partners from CSIRO, Geoscience Australia, Lawrence Berkeley National Laboratory (USA), Simon Fraser University (Canada), Curtin University, The University of Adelaide and Schlumberger Carbon Services.

A second highly significant stage of research at the project has just been completed, providing insights into the CO₂ trapping mechanisms at play in deep saline formations.

The CO2CRC Otway Project involves researchers from Australian universities and research organisations as well as researchers from the United States, Korea, Canada and New Zealand. The Project has been financially supported by the Australian Federal Government, through the Cooperative Research Centre Program, the Victorian State Government and the US Department of Energy, as well as CO2CRC members.

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Images and video of the Otway Project are available at co2crc.com.au



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CO2CRC collaborates with leading international and national CCS experts to conduct world-class research into carbon capture and storage. Organisations participating in CO2CRC research include CSIRO, Geoscience Australia, the Universities of Adelaide, Curtin, Melbourne, Monash, NSW, Queensland and Western Australia, GNS Science (NZ), Simon Fraser University (Canada) and Lawrence Berkeley National Laboratory (USA).

Industry and State core partners supporting CO2CRC are ANLEC R&D, Anglo American, BG Group, BHP Billiton, BP Australia, Brown Coal Innovation Australia, Chevron, INPEX, NSW Trade & Investment, KIGAM, Ministry of Science and Innovation (NZ), QER, QLD Department of Mines and Energy, Rio Tinto, Sasol, Schlumberger, Shell, Solid Energy, Stanwell, Total, the Victorian Department of Primary Industries, WA Department of Mines and Petroleum and Xstrata.