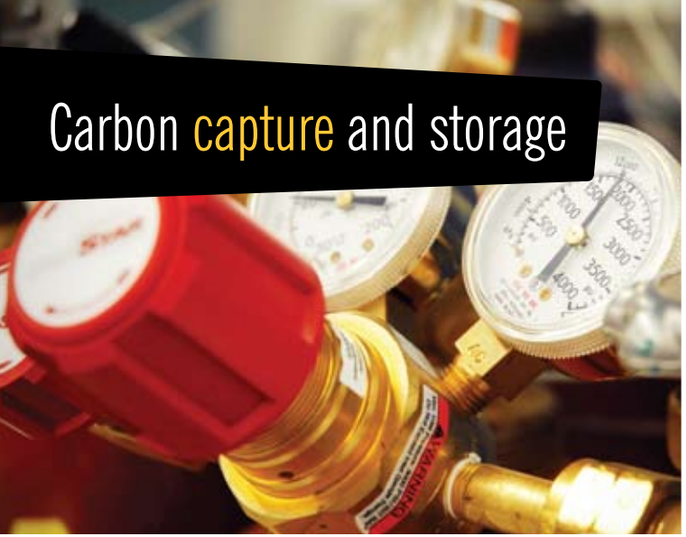
Carbon capture and storage



The University of Regina's International Test Centre for CO_2 Capture is one of the world's leading institutes for post-combustion carbon capture technology research and development.

Carbon capture units can be used to reduce emissions from industrial plants by 85 to 95%.

UNIVERSITY OF REGINA'S COMMITMENT TO MITIGATING CLIMATE CHANGE

Researchers at the University of Regina are committed to finding solutions to climate change.

The world's reliance on fossil fuels for energy will not disappear overnight. But there are ways to reduce our carbon footprint now, to capture and safely store large amounts of carbon dioxide (CO_2) from coal-fired power plants and lead the way in providing clean development of fossil energy. This is the role of carbon capture and storage (CCS).

INTERNATIONAL TEST CENTRE FOR CO_2 CAPTURE

The University of Regina is recognized as one of the leading institutions in the world for its innovative work on carbon capture at its International Test Centre for CO_2 Capture (ITC). Researchers conduct leading-edge fundamental and bench-scale capture research in the ITC's state-of-the-art laboratories. Our in-house facilities enable our researchers to test their technologies in our highly flexible, industry-relevant, CO_2 capture pilot plant.

In the field, pre-commercial testing and demonstration is conducted at the ITC's pre-commercial CO_2 capture plant, located adjacent to SaskPower's coal-fired Boundary Dam Power Station. This unit allows us to test our CO_2 capture technology in a wide range of weather conditions, so we know how our technology performs whether it's –40˚C or +40˚C outside. Our capture technology is currently being commercialized through the University's industrial partners.

INTERNATIONAL PERFORMANCE ASSESSMENT CENTRE FOR GEOLOGIC STORAGE OF CO_2

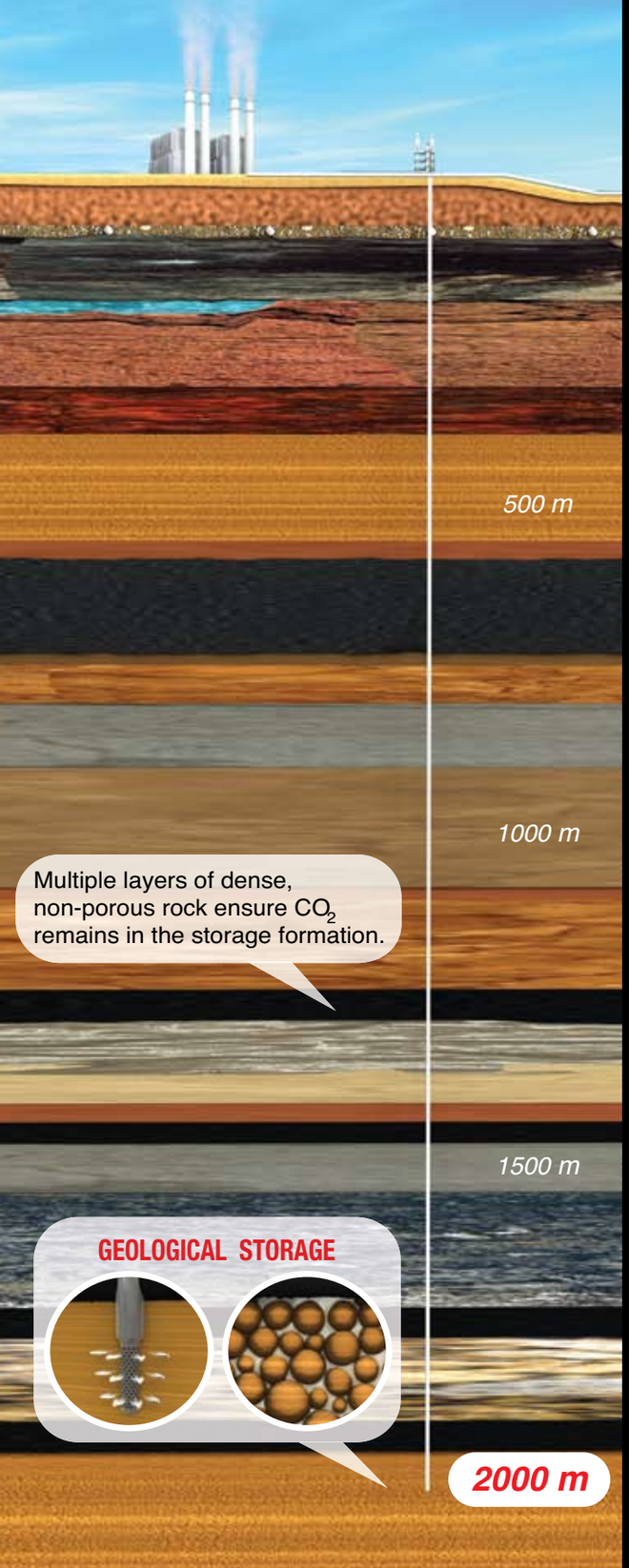
Understanding the safety of CO_2 geological storage is paramount to its acceptance and implementation. In 2008, the University of Regina helped found a new, independent institute called the International Performance Assessment Centre for Geologic Storage of CO_2 (IPAC-CO_2) that specializes in understanding storage risks. This center, with a secretariat at the University, provides and advances global expertise to benchmark, evaluate and advise on the performance of geological storage of carbon dioxide.

IPAC-CO_2's Collaborative Community of Practice will provide on-line information management and research support services for sharing, exchange and development of best practices, standards and tools for mitigating any risks associated with CO_2 storage.

STRONGER TOGETHER

Since 1988, the University has formed partnerships with companies and research institutes who share an interest in producing cleaner energy. The Office of Energy and Environment (OEE) was created to facilitate these relationships and liaise with industry and government on the University's Energy and Environment portfolio.

Through its partnership with the Petroleum Technology Research Centre (PTRC), the University has established research expertise in petroleum engineering that includes a range of applications associated with CO_2 geological storage. The University's Faculty of Engineering and Applied Science is a major research provider for the PTRC, which manages numerous geological storage projects, such as the IEA GHG Weyburn-Midale CO_2 Monitoring and Storage Project – the world's first and largest CO_2 geological storage project. An estimated 40 million tonnes of CO_2 will be stored over the project's lifetime.



www.uregina.ca/oee

CARBON CAPTURE AND STORAGE: A CLIMATE CHANGE SOLUTION

- On a global scale, approximately 31 billion tonnes of CO_2 are emitted per year into the atmosphere.
- Power generation accounts for 41% of global energy-related CO_2 emissions.
- Carbon capture units can capture 85 to 95% of CO_2 emissions from the exhaust gases of major facilities such as coal- and gas-fired power plants, oil refineries and steel plants.
- During the storage process, CO_2 is injected at least 1,000m (1km) deep into rock formations in the subsurface.
- For storing CO_2, each geological site must contain multiple trapping mechanisms such as caprock, a dense rock that is impermeable to CO_2, which surrounds the storage area and acts as a seal to stop any upward movement of CO_2.
- Post-combustion capture, the most advanced form of carbon capture technology, has been used by natural gas facilities for approximately 50 years to separate CO_2 from industrial gas streams.
- Research on commercial-scale CO_2 storage projects is being carried out around the world – such as the Sleipner project in Norway, the In Salah project in Algeria, and the Encana and Apache projects in Canada (IEA GHG Weyburn-Midale CO_2 Monitoring and Storage Project) – and all indicate CO_2 can be safely stored underground.

FOR MORE INFORMATION
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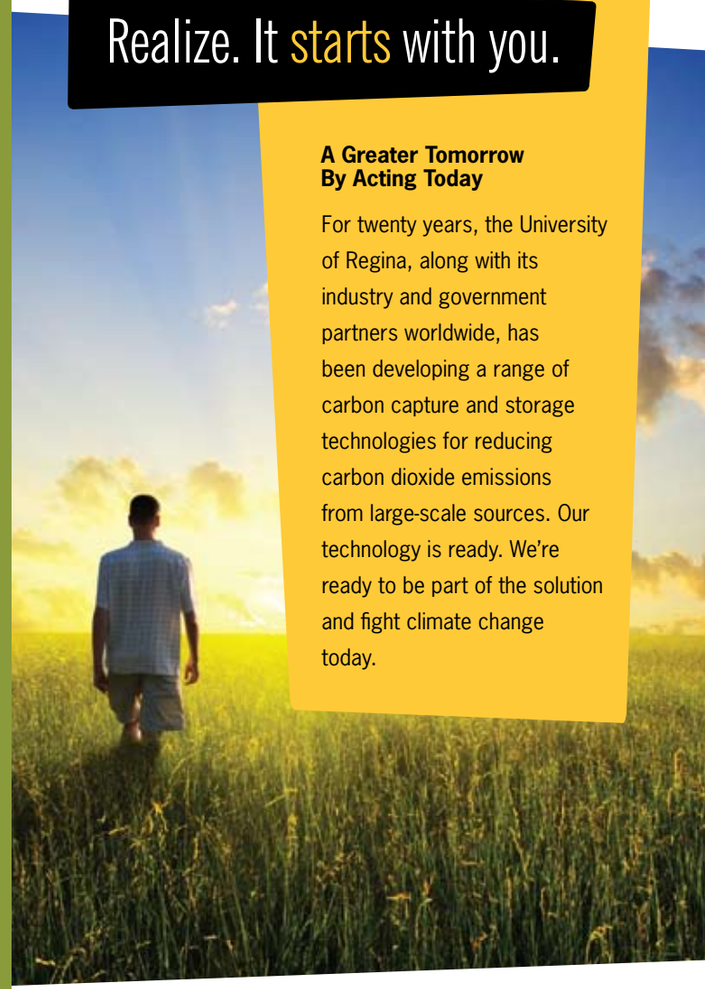
office of energy + environment



Realize. It starts with you.

A Greater Tomorrow By Acting Today

For twenty years, the University of Regina, along with its industry and government partners worldwide, has been developing a range of carbon capture and storage technologies for reducing carbon dioxide emissions from large-scale sources. Our technology is ready. We're ready to be part of the solution and fight climate change today.

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