

Industry and government must act together on climate change

Carbon capture and storage technology is proven -- and safe

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Climate change has emerged as the foremost environmental concern of our times. As a significant emitter of carbon dioxide, industry understands the challenge at hand -- and is taking the lead in developing a potential technology-based solution.

A coalition of 14 major Canadian corporations, representing a variety of emitters, is working on a large-scale application of a technology known as carbon capture and storage. This process involves trapping carbon dioxide (CO₂) from industrial sources before it is emitted and storing it in deep geological formations. The proposed Integrated CO₂ Network (ICO₂N) holds the potential of reducing carbon dioxide emissions by up to 20 million tonnes per year -- the equivalent of removing four million vehicles from the road.

And, that's just a start. Successful implementation of the ICO₂N concept at targeted sites in western Canada could lead to expansion across the country, resulting in even greater CO₂ emissions reductions. By developing a carbon capture and storage network, Canada would become a global leader in addressing climate change.

None of this will come easily. While industry has advanced the ICO₂N concept, and is prepared to invest in its implementation, governments have a critical role to play. Making ICO₂N a reality will require policy and fiscal frameworks that encourage long-term investment and innovation.

Carbon capture and storage technology is proven and safe. Injecting CO₂ into oilfields to enhance oil recovery has been going on for more than three decades, primarily in the U.S. Carbon capture and storage projects are currently in operation in Norway, Algeria and Saskatchewan -- each eliminating about one million tonnes of emissions annually.

Experts consider Canada one of the best locations in the world for establishing extensive carbon capture and storage networks. In particular, British Columbia, Alberta and Saskatchewan are ideally positioned with large CO₂ emitters located in close proximity to prime geological injection and storage sites.

The companies involved in ICO₂N are from a variety of sectors. They include Agrium, Air Products Canada, Canadian Natural Resources, ConocoPhillips, EPCOR, Husky Energy, Keyera, Imperial Oil, Nexen, Shell Canada, Sherritt International, Suncor Energy, Syncrude and TransAlta.

Together, they are proposing a network that would capture CO₂ from sources in north-central Alberta -- including Fort McMurray, Fort Saskatchewan and the coal power plants near Wabamun Lake. The CO₂ would then be gathered and pipelined to suitable geological sites elsewhere in Alberta. Approximately 1,000 km of main pipeline and 400 km of small collector lines would be needed for this system which could be built up over a five- to 10-year period.

A network like ICO₂N requires substantial long-term investments in carbon dioxide capture, treatment, compression, pipelines and injection facilities. One way of offsetting some of these costs is to link supply with demand by developing an enhanced oil recovery market for CO₂.

Enhanced oil recovery (EOR) uses water, steam, CO₂ or natural gas liquids to push additional oil from the rock in underground reservoirs. A long-term supply of CO₂ would be attractive to oil producers due to its effectiveness in EOR.

In addition to helping offset some of the costs for the necessary infrastructure, pipelining CO₂ to improve oil recovery could have many other economic benefits.

These include creating new jobs and potentially generating increased government revenues.

Ultimately, though, more CO₂ will be captured than can be used for enhanced oil recovery. Significant volumes of CO₂ would also be stored directly in deep geological layers, where it would be retained safely for thousands of years. This approach is endorsed by the Intergovernmental Panel on Climate Change, the international voice on climate change science for almost two decades.

It's important to note that this "direct storage" option fails to generate any revenue to help cover

the costs associated with carbon capture and storage. In reality, there is no economic value to this activity, but there would be a significant environmental benefit in reducing Canada's overall greenhouse gas emissions.

Moreover, eliminating carbon dioxide at large industrial facilities in this way can be achieved at a significantly lower per-tonne cost than attempting to capture CO₂ from primary combustion sources such as automobiles and furnaces.

Industry is prepared to step up and contribute to the very significant capital and operating costs of this infrastructure.

But an opportunity of this magnitude will require industry and governments working in partnership. It will involve governments establishing long-term policies and incentives to lower the risks and encourage investment in large-scale carbon capture and storage.

The CO₂ network concept can be made viable through shared responsibility between government

and industry, along with appropriate regulations to ensure safe operation and verification of permanently stored CO₂. Details of this shared effort are yet to be clarified, but well-thought-out plans and policy development will be vital to an effective industry-government alliance.

For a long term vision like ICO₂N to advance in a timely and effective manner -- and for Canada to take its rightful position as a leader in this important method of addressing climate change -- industry and government must work together in new and creative ways.

The potential benefits, both environmental and economic, suggest the effort is well worth making.

The time to act is now.

Stephen Kaufman is steering committee chair of the multi-industry ICO₂N group. Since 2003 he has been Renewable Energy and Business Development Director at Suncor Energy. More information about carbon capture and storage is available at www.ico2n.com.