the PEMBINA institute

Sustainable Energy Solutions

The Pembina Institute's Perspective on Carbon Dioxide Capture and Storage (CCS)

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Context:

- The Pembina Institute is a non-partisan, non-profit environmental organization. Our mission is to advance sustainable energy solutions through innovative research, education, consulting and advocacy.
- Pembina published its initial research and position on CCS in 2005, and since then has been actively engaged in the debates on CCS and completed various fee-for-service projects on behalf of a range of clients.
- The Canadian environmental NGO community has a range of perspectives on CCS. The Pembina Institute's views should not be considered representative of all NGOs.

Pembina's perspective in short:

The Pembina Institute considers CCS to be one available option among others for achieving the needed deep reductions in Canada's greenhouse gas (GHG) emissions. But we believe that development and deployment of CCS in Canada should be conditional on

- a massive scale-up of energy efficiency and low-impact renewable energy,
- the regional context of application of CCS, notably the availability of more sustainable options,
- the geological and regulatory context of carbon dioxide (CO_2) disposal, and
- a fair distribution of investment between taxpayers and polluters.

When and where should we turn to CCS?

- CCS is an "end-of-pipe" waste disposal option for GHG pollution created by the combustion of fossil fuels. Our preference is for "end-THE-pipe" solutions where we can shift from fossil fuel combustion processes to low-impact renewable energy options. Accordingly, we believe that:
  - Government policy should ensure CCS is applied only in conjunction with a massive scale-up of energy efficiency and low-impact renewable energy.
  - Approval of new electricity generation facilities using CCS should be conditional on showing that future electricity demand and supply cannot instead be balanced by maximizing energy efficiency and low-impact renewable energy.
  - Approval of CCS in conjunction with other new industrial facilities (e.g., in the oil sands) should be conditional on showing that they are in the public interest.
  - Approval of CCS retrofitted to existing facilities should be conditional on showing that the public interest would not be better served by their closure.

Geologically, where should CO_2 be disposed of?

- We believe that Canada's strategy for CCS should be focused on permanent "disposal," not temporary "storage" of GHG pollution. Accordingly, based on our review of the current scientific literature and consultation with leading experts, our current perspective is that:
  - The most reliable and secure location for CO_2 disposal is deep saline aquifers.
  - The use of CO_2 for enhanced oil recovery (EOR) is <u>not</u> a disposal solution but a use that may or may not result in a reduction in global GHG emissions. Given the uncertainty of the net environmental benefit of using CO_2 for EOR, EOR should not be a priority for Canada's strategy for CCS.
  - In most parts of Canada, including Ontario, insufficient geological information is currently available to determine whether CO_2 disposal will be acceptable.
- We believe that implementation of a strong regulatory framework to ensure permanance, public safety, adequate monitoring and clear attribution of liabilities is essential before any CCS operations are approved.

Current conclusion on location

- For now, based on the above considerations of regional and geological contexts, we consider Alberta to be the only jurisdiction in Canada where development and implementation of CCS should be pursued, subject to the conditions specified above.

Where should the burden of cost lie?

- We believe that emissions reduction policy should be based on both the polluter-pays and ability-to-pay principles. As a result, large industrial facilities should be required to transition, as quickly as possible, towards shouldering the full cost of eliminating GHG emissions (including adequate monitoring of their elimination) as a cost of doing business.[1]
- We believe that this objective should be achieved through a sufficiently strong system of GHG regulations and emissions trading for large industry, or an equally effective alternative emissions pricing policy. Unfortunately, the currently proposed federal regulatory framework does not meet this standard. In particular, it would not put a high enough price on emissions to ensure that industry pays for CCS.
- In the absence of a sufficiently strong emissions pricing policy, and in light of the scale of investment required for CCS and the urgency of deep reductions in Canada's GHG emissions, we will accept provincial and federal governments investing taxpayer dollars in CCS as long as taxpayers are assured a reasonable financial return on their investment (e.g., government could retain equity in CCS infrastructure).
- We cannot accept and will actively oppose any explicit or concealed subsidy or hand-out to industry to deploy CCS.

[1] For example, based on our research, the Pembina Institute believes that the oil sands sector has the capacity to become carbon neutral (net zero GHG emissions) by 2020.