



environmental
defence



December 20, 2024

Pathways Alliance CO2 Transportation Network and Storage Hub Project

Impact Assessment Agency of Canada

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To whom it may concern,

Re: Project Reference Number: 89090

Support for Request for Designation under the Amended Impact Assessment Act (“IAA”) of Pathways Alliance’s Pathways CO2 Transportation Network and Storage Hub Foundational Project in Alberta (“Pathways Project” or the “Project”)

Environmental Defence and Alberta Wilderness Association understand that on December 3, 2024, a group of First Nations who are impacted by the Pathways Project have filed a [request](#) with the federal Minister of Environment to designate the Project as requiring a federal impact assessment under the recently amended IAA. The request was filed by Beaver Lake Cree Nation, Cold Lake First Nations, Frog Lake First Nations, Heart Lake First Nation, Kehewin Cree Nation, Onion Lake Cree Nation, and Whitefish (Goodfish) Lake First Nation #128 (collectively, the “**Requesting Nations**”).

The Requesting Nations’ request outlines the following potential non negligible adverse impacts within federal jurisdiction such as impacts to the Requesting Nations’:

- health, safety, social and economic conditions;
- traditional land use and cultural integrity;
- safety of the surrounding waterways, plants and animals; and
- Reserve lands and traditional territories.

Environmental Defence and Alberta Wilderness Association wish to express our support for the Requesting Nations. We share the same concerns raised by the Requesting Nation’s regarding the gaps in Alberta’s regulatory and consultation process when it comes to this project.

To date, the environmental footprint and safety and health hazards associated with the Pathways Alliance CCS infrastructure have been largely overlooked. In addition to the foregoing, in support of the designation, we wish to express the following concerns we have with the Project and its potential adverse impact on our community:

- **Impacts on water usage:** Carbon capture infrastructure requires significant amounts of water to cool the equipment and for the capture process, which will be taken from the Lower Athabasca watershed, adding to the existing and significant cumulative impacts on water quantity and navigability in the region. For example, it has been estimated that retrofitting a coal-fired power plant with post-combustion CCS with amine absorption would increase the power-plant water

intensity by 55%.¹ No publicly available studies have been done on the water requirements of equipping oil sands facilities with CCS.

- **Risk of groundwater contamination:** One of the risks of geologic carbon sequestration is the leakage of injected CO₂ into overlying groundwater resources. If CO₂ encounters a high permeable pathway, it will leak into the overlying formation, given that it is less dense than the formation fluids. If CO₂ comes into contact with groundwater, it produces carbonic acid which increases the acidity of the water. This can cause toxic metals (e.g. lead and arsenic) to leach into the water, creating an environmental and health hazard if drinking water sources are affected.² With the permanent storage of CO₂ being relatively new, there is limited data available on the frequency of these leaks. However, in 2024 there was a leak at the first commercial CO₂ storage site in the United States, due to corrosion.³ In response, the Environmental Protection Agency ordered the company to halt operations. It is for this reason that the Government of Queensland has banned carbon sequestration in the country's largest groundwater aquifer.⁴
- **Impacts on cumulative emissions:** CO₂ capture technologies are energy-intensive processes, and can impose an energy burden of 10–40% depending on the project.⁵ Oil sands facilities will most likely use natural gas to power the capture and compression equipment. This will have air emissions that will impact local air quality and contribute to climate change.
- **Public health and safety risks:** Carbon dioxide is an asphyxiant. At low concentrations, it can cause disorientation, confusion or mental clouding, difficult breathing. At high concentrations, CO₂ can cause rapid loss of consciousness and can be lethal. When compressed and transported in a pipeline, CO₂ is put under higher pressures than natural gas or oil pipelines, making it highly volatile.⁶ Carbon pipelines are prone to “running ductile fractures” which are a type of particularly dangerous fractures in which the pipeline “unzips” for extended distances exposing great lengths of the buried pipeline.⁷ Carbon dioxide plumes can spread significant distances from the point of release. This creates a high risk of dangerous explosions, which endangers nearby communities, other pipelines in a shared right of way, and the surrounding environment. Furthermore, carbon dioxide pipelines have been shown to be more prone to small leaks than natural gas pipelines. This could result in smaller magnitude but more prolonged releases, ones that may be harder to detect in buried pipelines.⁸ CO₂ in pipelines can become dangerous when it mixes with water and other common impurities. For example, water mixing into a CO₂ stream can form carbonic acid, which is corrosive to the carbon steel that most pipelines are made of. The United States is home to most of the world's carbon pipelines. Since 2010, there have been 76 incidents involving CO₂ pipelines reported to Pipeline and Hazardous Materials Safety Administration.⁹ When a carbon dioxide pipeline ruptured in Mississippi in 2020 as the result of a heavy rainfall – releasing 41,000 barrels of CO₂ with enough force to create a 40-foot crater – 300 people were evacuated and 45 people had to be hospitalized before it was finally shut off four hours later.¹⁰ Since carbon dioxide is colourless

¹ <https://www.sciencedirect.com/science/article/abs/pii/S1364032120307978?via%3Dihub>

² <https://doi.org/10.1533/9781845699581.3.324>

³ <https://www.eenews.net/articles/first-us-co2-injection-well-violates-permit-epa/>

⁴ [https://www.nrm.mrd.qld.gov.au/mining-exploration/initiatives/greenhouse-gas-storage-in-queensland#:~:text=On%2012%20June%202024%2C%20legislative,Great%20Artesian%20Basin%20\(GAB\).](https://www.nrm.mrd.qld.gov.au/mining-exploration/initiatives/greenhouse-gas-storage-in-queensland#:~:text=On%2012%20June%202024%2C%20legislative,Great%20Artesian%20Basin%20(GAB).)

⁵ <https://energysustainsoc.biomedcentral.com/articles/10.1186/s13705-018-0146-3#ref-CR12>

⁶ <https://pstrust.org/carbon-dioxide-pipelines-dangerous-and-under-regulated/>

⁷ <https://www.ciel.org/wp-content/uploads/2021/07/Confronting-the-Myth-of-Carbon-Free-Fossil-Fuels.pdf>

⁸ <https://doi.org/10.1016/j.ijggc.2023.103889>

⁹ <https://news.oilandgaswatch.org/post/data-shows-denburys-carbon-pipelines-leak-more-than-any-other-co2-pipeline-companys>

¹⁰ https://www.huffpost.com/entry/gassing-satartia-mississippi-co2-pipeline_n_60ddea9fe4b0ddef8b0ddc8f

and odourless, it escapes easy detection and makes leaks from pipelines or storage sites harder to observe and avoid. Because CO₂ displaces oxygen, internal combustion engines would be rendered inoperable near a leak or rupture, interfering with emergency responses. The Pathways Alliance has not published any of their plume modelling or emergency response plans.

- **Financial liabilities:** The financial and liability risks related to carbon storage are highly likely to be transferred from the private sector to the public. There are long term concerns for who is responsible for the carbon once it is stored underground, including monitoring storage sites, remediating CO₂ leaks to the extent possible, providing financial security, and paying for any harm to the climate, environment, human health, etc. in the event something goes wrong. Governments in Canada are already struggling to deal with enormous unfunded financial liabilities of the oil and gas sector.
- **The use of federal public funding for this project.** Projects receiving federal funding and carry such extensive risks must undergo federal assessment, as was the case for Shell Canada's Quest Carbon Capture and Storage Project, which was required to undergo a joint federal and provincial EIA in 2010. It is notable that the Pathways Alliance project is the largest CCS project that has been proposed in Canada. The project will receive federal support through the CCUS investment tax credit, Natural Resource Canada's Energy Innovation Program – FEED Studies for Carbon capture, utilization and storage¹¹ and is likely to receive support through the Canada Growth Fund.
- **The project will facilitate continued oil sands development** that will have environmental, economic, social, and cultural consequences, including impacts on Aboriginal and Treaty rights. For example, continued oil sands operations mean continued expansion of tailings ponds. While they are indirect, these are significant and adverse consequences of the project that must be assessed in an EIA.

The project must be carried out in a manner that is safe and does not have significant adverse impacts – both project-specific and cumulative - on the environment or human health. It must also result in the permanent storage of this CO₂ underground, which will require extensive monitoring over a large area and a long period of time.

Pathways Alliance has not provided much information about the complexity of the project or the technology to be employed. However, it is readily apparent that undertaking a carbon capture, transportation, and storage project – particularly of this magnitude - is a complex activity that requires a comprehensive impact assessment, which the Government of Alberta has refused to undertake.

We hope that a federal impact assessment would ensure a thorough, comprehensive and transparent process to identify, assess and accommodate impacts to Treaty and Indigenous rights, and support inclusion and consideration of broader interests and potentially affected parties.

Thank you for your consideration,

Sincerely,

Julia Levin, on behalf of Environmental Defence Canada

Phillip Meintzer, on behalf of Alberta Wilderness Association

¹¹ <https://natural-resources.canada.ca/science-and-data/funding-partnerships/opportunities/current-investments/oil-sands-ccus-pathways-alliance/25237>