

Canada needs to cut carbon, not try to capture it

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Credit: James Wheeler from Pexels

When the federal government released the budget in April 2021, it proposed creating a [new tax credit for private firms that make investments in carbon capture, utilization and sequestration projects](#).

But in January, shortly after the consultation period closed, more than [400 Canadian climate scientists, academics and energy system modelers urged](#) the government to cancel its plan. The letter attracted significant [media attention](#), including pointed responses in favor of the tax credit from [business journalists](#) as well as [industry representatives](#) and [lobbyists](#).

As a [climate policy scholar](#) and one of the many academics opposed to this new tax credit, I'm concerned by the misleading arguments made by the tax credit's supporters. The credit would divert millions of dollars from cheaper and safer climate solutions, and into [fossil fuels](#). It's time to clear the air about the reality—and the risks—of [carbon capture](#) as a means of climate policy.

Carbon capture demystified

Carbon capture, utilization and sequestration (CCUS) comes in two main types. The first seeks to [capture the concentrated carbon dioxide in smokestacks](#) from hard-to-decarbonize industries like oil and gas, steel and concrete before it is emitted to the atmosphere. The second seeks to capture dilute [carbon](#) from the air—called [direct air capture](#)—after it has been emitted.

Both types bury captured carbon underground, and [both types require enormous amounts of additional energy](#) to do so. Historically, the "energy penalty" of CCUS—the additional energy required to operate CCUS per unit of energy generated by a power plant for basic consumption—was [assumed to be 25 percent, but recent data suggest it could be as high as 49 percent](#).

The purpose of CCUS is to keep [carbon dioxide](#) out of the air to slow global warming. Presently, however, [over 80 percent of CCUS is actually used for a process called enhanced oil recovery](#), where the

captured carbon is used to extract additional oil and gas from reserves that are otherwise impossible to mine.

For both types of capture to achieve their stated purpose, the additional energy used must not emit any carbon—it must come from renewable energy sources. If it weren't being used here, this zero-carbon energy could otherwise be used to directly meet our energy needs, making [carbon capture technology inefficient](#) and [highly expensive](#).

Prolonged fossil fuel production

The letter to Deputy Prime Minister and Minister of Finance Chrystia Freeland emphasized three points:

1. [Carbon capture doesn't work at the scale required](#).
2. [It's prohibitively expensive](#) compared to non-polluting renewable energy.
3. Government subsidies to support CCUS will only [lock-in the production of fossil fuels](#) in Canada and further delay the transition to decarbonization.

Supporters of subsidizing carbon capture responded by arguing:

1. [Carbon capture is necessary to reduce emissions from Canada's oil and gas sector](#).
2. The transition to cleaner technology won't happen overnight.
3. According to the [UN Intergovernmental Panel on Climate Change](#) (IPCC), every scenario that keeps the planet from exceeding 1.5 C requires [large-scale removal of carbon from the atmosphere](#).

These responses are misleading. Global fossil fuel production must start declining immediately and steeply to limit long-term warming to 1.5 C,

according to a recent report from the [UN Environment Program](#). Investing in unproven and expensive carbon capture technology [creates a "moral hazard" that risks prolonging fossil fuel production](#), not reducing it.

The risks and costs of carbon capture

Investing even more public funding into carbon capture is throwing good money after bad. Canadian oil and gas companies are already receiving federal and provincial subsidies for carbon capture technology, including [\\$329 million in the 2021 federal budget](#). Most of Canada's existing carbon capture pilot projects have largely been funded by governments, including \$865 million from Canada and Alberta for [Shell's Quest project, which emits more carbon than it captures](#).

Carbon capture technology is but one carbon dioxide removal option, and because of its risks and costs, it's not the preferred option either, according to the [IPCC's Special Report on 1.5 C](#) or in the broader academic literature on climate policy.

Because large-scale carbon dioxide removal faces multiple feasibility constraints, the IPCC recommends "significant near-term emissions reductions and measures to lower [energy](#) and land demand." One of its pathways to limiting global warming to 1.5 C shows that [afforestation](#)—planting trees where there were previously none—is the only carbon dioxide removal option required. Under this precautionary scenario, carbon capture and sequestration of fossil-fuel emissions isn't necessary.

Safe and sustainable emissions reductions

This approach of prioritizing emissions reductions and relying as little as possible on emissions removals has broad support from [academics who](#)

[study climate policy](#). [Drastically scaling down and phasing out fossil-fuel use](#), coupled with enhancing forest management and land-use planning, avoids the [moral hazard](#) of entrenching a business-as-usual approach to fossil-fuel use.

It also entails fewer trade-offs and offers multiple co-benefits, such as [restoring a wide range of habitats across different landscapes, conserving biodiversity and protecting against forest fires and flooding](#). Canada has room to improve on this front. Land use and forestry have historically been a sink for carbon emissions, but they have been a [source of carbon emissions since 2015](#).

These lessons are especially relevant to Canadian climate policy. Climate Action Tracker, an independent think tank based in Germany, rates Canada's climate policy as "highly insufficient overall," with its current policies in line with a destructive 4 C of global warming. It notes that "for every step forward, Canada also seems to take two steps back."

As Canada creates its [first emissions reduction plan](#) under the [Canadian Net Zero Emissions Accountability Act](#), an important first step toward aligning its policies with the Paris Agreement's 1.5 C temperature limit, Canada cannot afford to take another two steps back by further investing in an unproven "[magical technology](#)" and [risk further entrenching carbon lock-in](#).

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