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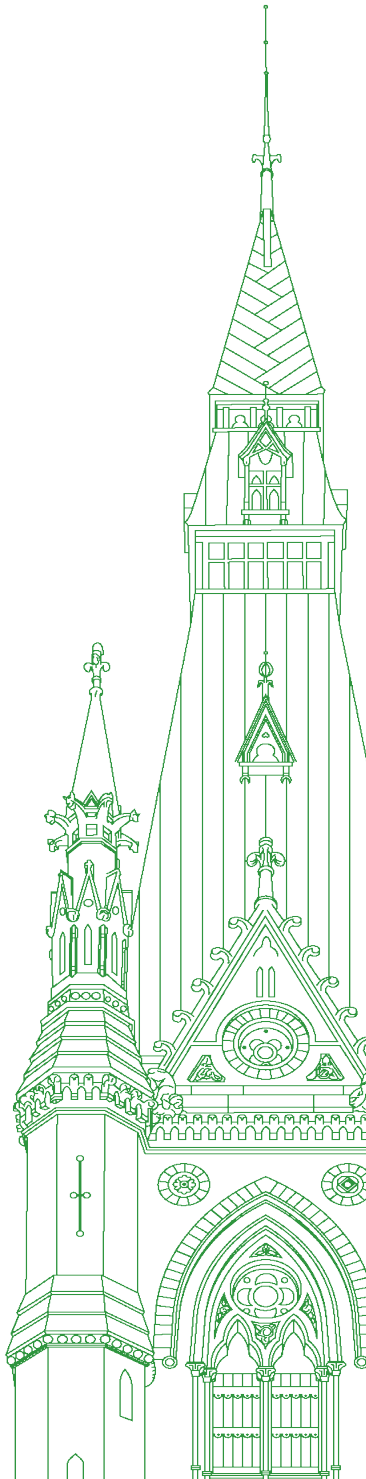
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Chair: Shannon Miedema

Standing Committee on Environment and Sustainable Development

Thursday, October 22, 2026

● (1535)

[*English*]

The Chair (Shannon Miedema (Halifax, Lib.)): I call the meeting to order.

Welcome to the 51st meeting of the Standing Committee on Environment and Sustainable Development.

For those here in person, as a reminder, follow the health and safety guidelines on the tables to prevent audio or feedback incidents for our interpreters.

Another reminder is to submit your recommendations for the carbon pricing report to the clerk as soon as possible. We talked about that on Tuesday.

There is one small item before we begin with witness testimony for the new study we are commencing today on carbon capture, utilization and storage. We have a proposed budget for this study in the amount of $16,700. Does the committee agree to the cost for this study?

Some hon. members: Agreed.

The Chair: That's wonderful. Thank you.

We are really excited to get going on this new study. We have witness testimony for both hours.

To begin, we have Annie Levasseur, a professor in environmental engineering at the Université du Québec, who is here with us in person. Online, we have Ed Whittingham, the principal of Advance Climate Solutions, and we have Na'im Merchant, the executive director of Carbon Removal Canada.

Welcome. Thank you very much for being with us here today.

You'll each have up to five minutes to give opening remarks, and then we'll go to questions from the members.

We'll begin with you, Madame Levasseur. The floor is yours for five minutes.

[*Translation*]

Annie Levasseur (Environmental Engineering Professor, Université du Québec, As an Individual): Thank you very much.

Thank you, everyone, for the invitation.

I will briefly introduce myself. I am a process engineer and professor at École de technologie supérieure. I hold the Canada research chair in measuring the impact of human activities on climate change. Also, in connection with the topic being discussed today, I will say that I participated in two expert committees on this issue, including one formed by the United States National Academies of Sciences, Engineering and Medicine, which released the report entitled "Developing a Research Agenda for Carbon Dioxide Removal and Reliable Sequestration".

The Intergovernmental Panel on Climate Change, or IPCC, is very clear: exceeding the 2°C warming threshold relative to the pre-industrial era would have very significant negative repercussions on the economy, human systems and natural systems. All the climate trajectory models that limit warming to below the thresholds recommended by scientists involve achieving net-zero emissions by 2050 and net-negative emissions after 2050.

To achieve net-negative emissions, it is important to target massive reductions in greenhouse gas emissions first. In fact, everything that can technically be eliminated should be eliminated. Then CO2 can be removed from the atmosphere and permanently stored. Some emissions can be very difficult to eliminate completely. That is what is referred to as residual emissions. Examples that come to mind are emissions associated with fertilizer application in the agricultural sector and certain industrial processes, such as those caused by the decarbonization of limestone for cement production. In the climate scenario modelling of scientists, some of these residual emissions persist and must indeed be offset through the capture and permanent storage of carbon.

The various capture and storage technologies are distinguished by criteria such as storage duration and method of capture. As for storage duration, there is sequestration in geological formations or mineral layers, where CO2 can, under certain conditions, be stored for millennia. Conversely, temporary sequestration involves soil or biomass storage, and CO2 can be re-emitted into the atmosphere in the fairly short term.

Nature-based techniques, as they are sometimes called, such as afforestation and the management of forest and agricultural soil carbon, are not considered permanent storage solutions, because the carbon will likely be re-emitted into the atmosphere in the short term through natural or human-caused disturbances. However, these solutions are nevertheless beneficial and should be deployed. They promote ecosystem quality, help the sector itself become a carbon sink rather than an emitter, as it is these days, and also play a role in adapting to climate change. However, they should not be used to offset those hard-to-eliminate residual emissions.

When it comes to carbon storage in geological formations, it does have physical limitations. We tend to think of it as limitless, but unfortunately, that is not the case. In an article published in Nature in 2025, researchers assessed the global storage capacity of geological formations within the limits of what is safe and feasible. The identified limit is 1,460 gigatonnes of CO2. To give you an idea, I would note that certain scenarios limiting global warming to 2°C with short-term overshoot are based on a storage capacity of 2,000 gigatonnes of CO2. It is therefore more than the available capacity. Conversely, scenarios involving the most ambitious climate action would reach the specified storage limit approximately 150 ears after achieving net-zero emissions. Unfortunately, the current situation is not bringing us closer to the more optimistic scenarios.

Geological carbon storage must be treated as a limited intergenerational resource. Its use should be prioritized in public policy as part of a global climate effort. Canada should assess the country's potential capacity for safe and feasible geological storage, and incorporate it into some sort of carbon budget road map that sets out emission reduction and carbon capture and storage pathways over time.

There are also other issues associated with these technologies. They are still not widely implemented, and the technical and economic feasibility of sufficient scale-up has not yet been demonstrated. Equity issues also come into play, since geological reservoirs are by no means distributed evenly around the world. Other risks to be considered are induced seismicity and potential impacts on ecosystems and human health.

In conclusion, carbon capture and storage technologies are essential according to scientists' scenarios. It is therefore necessary to support their development and the research to make them more effective and less costly, reduce their negative impacts, and eliminate barriers to their deployment. However, it is important to recognize that these technologies cannot be used to justify continuing to extract and burn fossil fuels rather than carrying out a real energy transition. They should be used to capture residual emissions and subsequently achieve net-negative emissions.

● (1540)

Thank you for your time.

The Chair: Thank you very much, Ms. Levasseur.

[*English*]

We'll now turn to Mr. Whittingham, who is online, for five minutes.

The floor is yours.

Ed Whittingham (Principal, Advance Climate Solutions): Thank you, Madam Chair.

Good afternoon, members of the committee. My name is Ed Whittingham. I'm the principal at Advance Climate Solutions, a climate advisory firm. We steward the Advance carbon removal coalition, an initiative of Carbon Removal Canada that's focused on strengthening demand for carbon removal right here in our beautiful country.

I've worked in carbon management for about 25 years, from different sides of the table. I led the Pembina Institute. I advised Shell Global's executive team during the early years of Quest, which is the first commercial-scale CCS project attached to the oil sands. For that project, I even ran town halls in the community closest to the project's injection wells. I built a big-tent coalition that helped win the federal CCS investment tax credit, and I chaired the steering committee that led to the start-up of Carbon Removal Canada and the hiring of my fellow witness today, Na'im Merchant.

The carbon removal work I'm proudest of is the creation of the Advance Carbon Removal Coalition with Na'im and his colleagues at Carbon Removal Canada. Our nation has nearly 100 carbon removal companies but only about a dozen operating projects. There's a gap.

What's missing? It isn't suppliers. It's buyers willing to sign long-term contracts that make projects bankable. Our coalition launched this March, and Minister Dabrusin helped launch it. It has a goal of mobilizing $100 million for Canadian carbon removal projects by 2030. Our founding members are BMO, RBC, Vancity, Shopify, Climify, NorthX and the Government of Canada.

I want to underline that last one. The federal government's decision to join as a founding member, backed by a $10-million procurement pledge, is helping to anchor 10 times that amount in private activity. The second cohort is soon to join. This shows the catalyzing power of public procurement and strong government leadership.

This brings me, Madam Chair, to the one thing I most want you to take from my testimony today: extending the CCUS investment tax credit to carbon mineralization.

First, what is carbon mineralization? In simple terms, you take reactive rock, grind it into fine particles and pile it up so it draws carbon dioxide out of the air and locks it away permanently as a stable mineral. Because it typically relies on conventional mining equipment, it arguably has the steepest cost decline of any carbon removal pathway, from several hundred dollars a tonne at small scale to under $100 per tonne at full scale. That's a key threshold for all carbon removal to reach. It also brings real cobenefits, such as destroying the asbestos fibres and old mine tailings in places like Thetford Mines, recovering nickel and cobalt for critical minerals supply chains and strong support from communities that want to turn their waste into value.

When it comes to carbon mineralization potential, Canada is exceptionally well placed. After a global search, Frontier, a coalition of major carbon-removal buyers—not unlike the Advance carbon removal coalition—shows Thetford Mines, Quebec, as the best place in the world to start scaling this technology. Its 450 million tonnes of historical mine waste could deliver hundreds of millions of tonnes of carbon removal. I'll leave the rest of the exciting Thetford Mines story to Na'im. I'm sure he'll speak about it in his comments.

Now, the next logical step Canada can take is to extend the CCUS investment tax credit, or ITC, to carbon mineralization. It does exactly what the credit is designed to reward: capture carbon and store it permanently. It's a narrow fix with no new credit, no new rates and no new capital-cost class.

As an aside, I just came out of a meeting with an ADM at NRCan named Frank Des Rosiers, who got to visit Thetford Mines last week. He came away very excited about local support, its technology potential and how the ITC can help.

The payoff to moving on the ITC would be immediate. Frontier is negotiating a $132-million purchase for the first commercial mineralization project in Thetford Mines, but that deal is conditional on the project's qualifying for the credit. Without it, the capital can, and will, go elsewhere.

In the spirit of transparency, my firm is supporting Stripe Climate and Frontier on this proposal.

We've briefed all the relevant ministries, the PCO and the PMO. All have been supportive. However, as the finance minister's officials told us, inclusion in budget 2026 will come down to competing priorities.

● (1545)

If you want Canada to capture these benefits, I'm asking you to please encourage Minister Champagne and the Prime Minister to include language supporting the amendment in their budget.

November 5 is really the moment to do so, and I ask the committee to reach out to your colleagues in support. It's a critically important short-term step that Canada can take to turn a legacy mining liability into a world-leading carbon removal industry.

Thank you. I look forward to your questions.

The Chair: Thank you, Mr. Whittingham.

All right. We'll go over to you, Mr. Merchant, for five minutes.

Na'im Merchant (Executive Director, Carbon Removal Canada): Thank you, Chair and members of the committee.

My name is Na'im Merchant. I'm the executive director of Carbon Removal Canada.

Carbon Removal Canada is an independent non-profit working to scale up the carbon removal sector. We are philanthropically funded, and we can act as a neutral partner, ecosystem convenor and policy expert.

To understand carbon removal, imagine the atmosphere as a bathtub filling with water. Emissions reductions and carbon capture turn down the tap. The carbon removal pulls the plug on what's already there. We need both, but there's a limit to how far the tap can be turned down. There are industries like cement, steel, aviation and agriculture that we cannot realistically bring to zero emissions by 2050. Carbon removal is the tool that balances what's left. That's why any credible net-zero pathway includes it. Carbon removal is the “net” in net zero.

Here's what I want you to take away: Carbon removal is not a stand-alone industry. It can be built into the sectors that already drive our economy, including mining, forestry, energy and agriculture, and it can improve their bottom lines while cutting emissions.

Take mining: Canada has one of the largest mining sectors in the world. Our mine tailings, once seen as a liability, can remove carbon from the atmosphere. At Thetford Mines, Quebec, we are opening a demonstration hub, and the tailings there could remove more than 400 million tonnes of CO2 over their lifetime. That's equivalent to 6.5 billion trees being planted and grown for 10 years, or 2.5 times the annual emissions of the province of Ontario. That's just one example of a mining company and a community turning a retired mine's environmental liability into an economic asset.

Forestry offers a similar opportunity. Pulp and paper mill residues can fuel bioenergy centres that generate electricity while capturing and storing the carbon. That gives companies a new revenue line.

That's the model behind the north star project in Saskatchewan. It's majority-owned by Meadow Lake Tribal Council, and it's selling carbon credits from the project to Microsoft. Research we commissioned finds that a scaled sector could support 300,000 jobs and add $70 billion a year to Canada's GDP by 2050. It also finds that carbon removal is one of the most economically efficient paths to net zero.

Catalyzing this sector can also help diversify Canada's trade. Governments of every partisan stripe, federal and provincial, have worked to reduce our reliance on any one market. Today, that effort runs through the EU and parts of Asia. Buyers there increasingly tie market access to the carbon intensity of what they import. Carbon removal integrated into supply chains could help a Canadian mine, mill or steel plant compete and thrive in a world with carbon border adjustments.

It can also become an export in its own right. The federal government has announced that it is working on a framework for article 6 transactions. That's the agreement mechanism that lets countries trade emissions reductions and removals. This will let the carbon removal sector create jobs, investment and revenue that stay in Canada, while helping our allies meet their climate goals.

To seize that opportunity, we have to close the gaps at home. Demonstration projects in Canada are too large for start-up funding and too new for conventional project finance, and too many of these projects never reach their full potential. Buyers and investors lack a clear demand signal, which makes it hard to raise capital, and our policy framework hasn't caught up with the sector. Canadian projects cannot yet benefit from our existing carbon markets.

I ask the committee to recommend four actions.

First, create a new call within Natural Resources Canada's energy innovation program to fund carbon removal demonstration projects. We have identified more than 20 Canadian carbon removal companies ready to build. A call in the range of $40 million would move them forward.

Second, send a clear market signal. The government recently launched a program to buy carbon removal credits from Canadian projects to balance hard-to-abate emissions from the air force. Expanding it would give companies the revenue certainty they need to raise capital and move from demonstration to commercial operation.

Third, integrate carbon removal into the clean fuel regulations. That way, Canadian carbon removal companies can compete and scale in this critical market, not just American biofuel producers.

Fourth, publish an update of Canada's carbon management strategy. Carbon removal was only starting to enter the policy conversation when it was released. A focused update should set out how we build capacity in today's policy environment. It should cover every stage of the commercialization pipeline, and it should position Canada to open new export markets.

Canada has the resources, the industries and the workers to lead this critical new industry. Right now, though, the policy needed to turn that potential into projects does not exist. We need to position ourselves to lead this sector globally. With targeted policy to attract private capital, we can cut emissions, grow our industrial base and build a strong and independent Canada.

Thank you. I welcome your questions.

● (1550)

The Chair: Thank you, Mr. Merchant.

Thank you all for your opening statements.

We'll now turn to questions from members. We will start with Mr. Leslie for six minutes.

Branden Leslie (Portage—Lisgar, CPC): Thank you, Madam Chair.

I'd like to start with you, Mr. Whittingham. When you talked in the past about the Canada-Alberta MOU, you raised the possibility that, even if government covered all the costs of a carbon capture project, companies still might not proceed because of the ongoing operating costs, which can be quite high. Is that not a significant warning sign?

Ed Whittingham: Well, frankly, it's not great. I don't know whether to sugar-coat it or not.

The Pathways project is a leading CCUS project that's well supported by the current government. The project economics, to be frank, are very challenging. Even, as I said, if you had an ITC that covered 100% of the capital, you still have expensive projects to operate and a carbon market that's been, to date, fickle.

Now, having said that, the Prime Minister has been very clear that, as part of this MOU, the carbon price will rise. I think it was $130 or $140 per tonne by 2040, with an interim step in 2030, but I may have those numbers wrong. That will help.

It's also worth noting that the companies themselves won't do this for free. With any carbon capture project, companies need to have some return on the capital they employ. You have to make sure that the scenarios you're running don't assume a 0% return on invested capital for the companies, because—

Branden Leslie: Thank you, Mr. Whittingham. I want to jump in and continue on in this vein.

Ed Whittingham: Sure.

Branden Leslie: It is a very fair point. My question is, if taxpayers are the ones who are helping build these facilities, how do we prevent companies from coming back after and asking taxpayers for more money to continue to operate them to make sure that they have that bottom line met and well beyond it?

Ed Whittingham: Sure. The best way to prevent that is to have a robust, well-functioning carbon pricing system that allows them to monetize the credits they generate from the project.

Branden Leslie: When we see these delays in projects coming online, we often hear that government needs to offer more financial support to get them moving, but how do we distinguish between a project that's delayed because of government red tape and regulatory uncertainty and one that's delayed because the economics of it simply aren't working?

Ed Whittingham: We need to factor out Pathways from this conversation. It's really hard to tease the two apart. It has been caught up in pipeline politics, and that accounts for a lot of the delays.

With other projects—and as I've made the case for an investment tax credit—I really think that the government support is up front. That's going to allow project developers to then save on the capital costs they need to invest, by having something that is immediately refundable. Then, after that, they don't need ongoing subsidy cheques. What they will need are properly functioning carbon markets.

Branden Leslie: Pathways aside, and recognizing that, yes, it's fair to say, because of the economics you outlined, there are still challenges with the progress made on other big projects, how do we...? Shouldn't government be required to demonstrate that the problem can't be solved on their end before they go straight to the money solution?

Ed Whittingham: I'm sorry, but what do you mean by "the problem can't be solved on their end"?

Branden Leslie: You're saying that we can fix it from a credit market perspective, but it seems as though there are still other challenges with the overall burden of the system itself, outside of direct funding on capital cost allowance or other grants. Collectively, I think there's going to be a lot of money, through multiple mechanisms, going into these projects. Is there a better way to decipher how government can allow them to move forward quickly and confidently without involving direct government subsidies?

● (1555)

Ed Whittingham: Let's take the CCUS ITC or any of the ITCs. A company applies for it and that's.... There are two guardians. There's the guardian of financial integrity, which is held by the finance department, and then there's the guardian of technology and environmental integrity, and that's Natural Resources. They go through a rigorous screening process to see whether the project meets the criteria that they're looking for, whether it's going to live up to what the companies are claiming and whether it's in the national interest. I have a lot of confidence—knowing the folks on the ground in both of those departments—that they're making the right decisions.

Branden Leslie: Okay. I'd like to move over to Ms. Levasseur.

A carbon capture facility might claim to capture 90% of emissions, but there are emissions that stem from the operations themselves. Should we be judging these projects by the total emissions prevented, rather than by just the amount captured?

Annie Levasseur: I'm not sure I understand.

Branden Leslie: I mean the total net.

Annie Levasseur: Do you mean the total net for one given technology?

Branden Leslie: Yes.

Annie Levasseur: Most of these projects, to be carbon-neutral and carbon-negative, rely on renewable energy so that they capture CO2 but don't emit any. In the meantime, some of them will have a cost in terms of CO2, which should be subtracted from the total amount of carbon that is captured.

Branden Leslie: There are a lot of tax dollars going toward capture, broadly speaking. How do we best go about measuring how much taxpayers are paying for every tonne of emissions reduced, rather than every tonne captured?

Annie Levasseur: When you have a good carbon pricing market, basically the idea is that the emitter is going to pay for this carbon, and that money could be used to favour the technologies that will capture it. We were discussing why these technologies cannot be profitable. It's basically because the benefit is externalized. The benefit is for society and the government, because if we remove carbon from the atmosphere, it will cost less in terms of health care and in terms of damage when we have flooding or extreme weather events.

The Chair: Thank you very much, Mr. Leslie.

[*Translation*]

Mr. St-Pierre, you have the floor for six minutes.

[*English*]

Eric St-Pierre (Honoré-Mercier, Lib.): Thank you.

Mr. Whittingham, I want to thank you for all the work you do and for your leadership around carbon management. Thank you for also raising the Thetford Mines example. I believe it's Arca, which is a company I've met with recently. I'm always happy to highlight a carbon removal project in my own province.

There are many folks who—sometimes rightly so—confuse CCUS with CDR. I know I'm using acronyms here. Can you very quickly differentiate between carbon capture, utilization and storage and carbon dioxide removal?

Ed Whittingham: I would be happy to.

In effect, CCUS takes an existing waste stream of CO2 that otherwise would be vented to the atmosphere and captures some part of that. Then it could be utilized for some purpose—thus the "utilization" in CCUS—or more likely, it will be stored. Think of it as making a project that has emissions less bad, whether that project or facility is one of the oil sands, an upgrader like the Quest project, an ammonia plant or a cement plant. That's critically important. As we know, Canada needs to reduce its emissions through technologies that deal with big industrial facilities. CCUS can often be an important tool in that tool box.

Carbon removal is something different. That is taking CO2 out of the atmosphere and, in that way, turning back the clock on climate change. It's absolutely necessary. Why? If we achieve net zero by 2050, it's going to be no good to anyone if we end up locked in an unacceptable level of warming. Environment Canada recently projected that. Not only do we need to decrease emissions, but we have to drop CO2 in the atmosphere, or else Canadians and many people around the world will be impacted. Carbon removal does that by removing CO2 and storing it underground, in rocks, in trees and even in oceans.

● (1600)

Eric St-Pierre: Thank you, Mr. Whittingham.

You mentioned our government's $10-million procurement program to purchase durable carbon dioxide removal credits. I'm wondering if you can quickly comment on this. Is it sufficient? Should we scale that? Where is it at?

Please take less than a minute to answer.

Ed Whittingham: It's a great start that can be built upon. I am very encouraged that this $10-million commitment is going forward. We're now seeing it moving over to the DND side of the budget ledger. That's tremendously positive.

I would eventually like to see that number times two, three and five, because, as I said in my comments, you see the catalyzing impact it has on private capital. When we get government leadership, we have the companies moving as fast followers.

Yes, let's make it bigger.

Eric St-Pierre: Thank you.

Mr. Merchant, how many companies are in the carbon management space within Canada? Also, maybe speak a little about the economic opportunities that lie before Canada.

I'm curious to know if you have any reports from Carbon Removal Canada that you could potentially submit to this committee to back up some of that economic data you mentioned during your five-minute testimony.

Na'im Merchant: Absolutely. Thank you, Mr. St-Pierre.

We are in touch with all the projects that are happening in the carbon removal field. We don't cover carbon capture, utilization and storage but rather companies that are involved in permanent carbon removal. We are tracking over 90 companies working in carbon removal in Canada. As I mentioned, the economic opportunity for Canada is quite great.

A research report that Carbon Removal Canada commissioned Navius Research to undertake demonstrated 300,000 jobs and a $78 billion increase to GDP per year by 2050 if we continue to scale this sector to meet our needs in Canada. That's where it lands right now, and I can share that research report with you and with the committee to get more into the detail on the economic opportunities and job creation potential across the country by supporting this sector.

Eric St-Pierre: Great. It would be excellent if you shared that. As you know, we have a national electricity strategy where we're planning on doubling our grid by 2050. Very recently, we announced some significant energy efficiency measures around heat pumps with $2 billion worth of grants there.

I'm curious if you could speak to carbon removal and whether you see that as a major economic opportunity for our country. Maybe speak about Canada's competitiveness. Where does CDR, direct air capture or nature-based solutions—you name it—fit in with Canada's competitiveness?

Na'im Merchant: We are watching a major reindustrialization of our economy, an increase of our industrial base, and that's going to increase our emissions. However, it can also create a massive economic opportunity if we can embed carbon dioxide removal technologies into key industries such as mining, forestry, agriculture and energy. If we can do that, we can reduce the carbon intensity of our products, and in doing so, increase their favourability in markets such as Japan, Korea and across the European Union, as we increase our trade ties with those jurisdictions. They increasingly care about the carbon intensity of products entering their countries. If we can reduce the carbon intensity of our products by integrating carbon removal, that can be a massive economic opportunity.

Canada has the longest coastline in the world, which means we're really well set up to do marine-based carbon removal. We have one of the largest mining industries in the world, so we can do things like carbon mineralization to a scale that no other country can. We have massive agriculture and forestry sectors. Carbon removal really builds on the strengths that we have in our existing industries. It's not something we have to build new. It's something we have to embed within existing industries that we have in our country and that we are already world leaders in. It can enable us to make sure that we can protect these critical industries by ensuring that they can compete in a low-carbon global economy.

The Chair: Thank you very much.

[*Translation*]

Mr. Bonin, you have the floor for six minutes.

Patrick Bonin (Repentigny, BQ): Thank you, Madam Chair.

Ms. Levasseur, thank you for your presentation and your responses.

I would like to talk a bit about the Pathways project involving Canada's major oil sands companies. It's a carbon capture and sequestration project. Basically, the idea is to justify increased gas production, among other things. In fact, Canada wants to triple its current gas production, double oil sands production, as the minister says, and build a pipeline that will cost $43 billion, funded largely by public money.

In your view, can the Pathways project justify this increase in oil and gas production, the pipeline construction, and so on?

● (1605)

Annie Levasseur: In my opinion, the answer is no.

As I explained, we have until 2050 to achieve net-zero emissions and eliminate all fossil fuel emissions. Developing pipeline projects creates what are known as carbon lock-ins. A pipeline is infrastructure that takes time to build and then has a long service life. Continued—even increased—fossil fuel production is necessary to justify these projects.

It is obvious that we will not achieve net-zero emissions by 2050 with these types of projects. They are completely contrary to the various climate scenarios we should be working towards.

Patrick Bonin: In your view, could the use of carbon capture—which, to my knowledge, has not yet been demonstrated on a sufficient scale in Canada—be considered greenwashing, given that the government refers to green oil and decarbonized oil? In your opinion, is this greenwashing?

Annie Levasseur: Yes, in a way. There are some carbon capture and storage projects that have proven effective, particularly in the oil sector. Actually, that is where the technology has been used the most. However, given everything I said, it really isn't the way forward, because we should move away from fossil fuels. Moreover, it ultimately delays the transition. It is not easy to completely move away from fossil fuels. There are a lot of people who rely on the sector.

Sectors that are incompatible with a decarbonized society need to be supported, so they can participate in the transition and develop in a different way. Many studies have shown that several sectors could grow, create jobs, and generate significant economic activity around the transition. Increasing production, unfortunately, delays that, which means we will further exceed the limits recommended by scientists.

Patrick Bonin: In this context, do you think it's appropriate that the government is prepared to give, at a minimum, nearly $10 billion in tax credits to businesses for this type of project? We are talking about a 50% tax credit for a project that was estimated at $20 billion the last time I checked.

Does it make sense to you that a government would do that?

Annie Levasseur: In my opinion, no. That should not be part of a strategy to combat climate change. We should instead help emitting sectors reduce their emissions as much as possible and transition to other sectors.

Patrick Bonin: Does this type of project have an impact on emissions related to oil and gas combustion?

Annie Levasseur: That depends. If these fossil fuels are exported, their combustion is not monitored afterwards. If they are used in Canada, for example, for transportation, we cannot eliminate…. The fossil fuels will ultimately emit carbon, whether in Canada or elsewhere and whether or not it is counted in our inventory, depending on the circumstances.

Patrick Bonin: I want to come back to the Pathways project, which is the major project that's been proposed. How effective is this type of project in practice? Should it be assessed based on the full life cycle or just on production?

Annie Levasseur: Yes. I think that all public policy decisions should actually be made based on the entire life cycle. In Canada, we are fossil fuel exporters, but when making choices, we should indeed consider the life cycle, particularly because of the carbon lock-in effect, which entails very long-term repercussions.

Patrick Bonin: Therefore, the technical-economic feasibility hasn't really been demonstrated. I think that is what you said, right?

Annie Levasseur: There are projects that exist and that are being developed. The sector needs support to develop everything related to the removal of carbon dioxide and the capture and storage of carbon, so that these processes can be used in the sectors where they are needed. This development by the industry should therefore be supported, because we will need the technology. However, it should not be used to increase the number of fossil fuel projects by reducing their emissions.

Patrick Bonin: Can government tax credits for carbon capture and storage projects, such as the Pathways project, be considered fossil fuel subsidies?

Annie Levasseur: Yes.

Patrick Bonin: If I understand correctly, you're saying that this money should instead be invested in other solutions for combatting climate change, right?

Annie Levasseur: Yes.

Patrick Bonin: Okay.

Are there projects of the same scope as the Pathways project being deployed elsewhere in the world?

● (1610)

Annie Levasseur: Yes, there are some. As I said, it was first developed in the fossil fuel industry, which has a strong command of carbon capture processes. The industry started by reinjecting the CO2 into old oil wells, so, yes, it has been demonstrated. However, it can also be used very effectively to reduce residual emissions from cement plants or to produce bioenergy—this is known as bioenergy associated with carbon capture and storage.

[*English*]

[*Translation*]

The Chair: Thank you, Mr. Bonin.

[*English*]

Now we'll go to Mr. Rowe for five minutes.

Jonathan Rowe (The Eastern Peninsulas, CPC): Thank you.

My first question is for Mr. Whittingham.

You talked about carbon capture through mineralization and how there's an opportunity to use existing mine sites and the tailings and waste from there. I'm curious. How does that work in the sense of net carbon emissions? Wouldn't we spend more carbon emissions using all of this equipment that's diesel-operated and all these crushers, whether they're hooked up to the grid or hooked up through diesel, to crush all this waste material and put it through the system?

Is there a net-positive relationship between how much carbon we put into the air while we're trying to capture it?

Ed Whittingham: Absolutely, there can be a net-positive relationship. In terms of the mineralization, it depends on the technique you use.

Take these ultramafic tailings. It's akin to microwaving them and agitating them, and that takes a lot of energy. There are other ways, in which you're dealing with them in situ and you're essentially farming the tailings. It can be like farming equipment passing over them. That has much less of an energy input—

Jonathan Rowe: Is anybody doing this yet?

Ed Whittingham: Yes. We have demonstration projects happening, including in Canada.

Thetford Mines is exciting because of the volume they can do and, ultimately, the cost economics they think they can achieve.

Jonathan Rowe: You mentioned that there are only 100 companies that you know of that are in carbon capture. I don't believe that all 100 of those are in carbon capture through mineralization. You said there are 12 removing it.

Why are there 88 companies simply thinking about being carbon capture removal companies and not doing it yet?

Ed Whittingham: I'm sorry, sir; that's to Na'im, I think.

Na'im Merchant: There are, yes, a dozen or so projects that are operating at a meaningful scale, and it comes back to my earlier point. There's a lack of funding available for this missing middle, essentially, in which you have companies working in labs and developing technologies that can drive down the cost, drive down energy needs and simplify supply chains. They are innovating in a really exciting way, but the demonstration funding that they need is more than what they could get from venture capital, for example.

It's still too risky for conventional project finance. That's why we've advocated for demonstration funding through the energy innovation program to support projects such as this. This would get first-of-a-kind facilities off the ground and get more projects developed to turn their innovations into something that is operating and that they can learn from to get the cost down over time.

Jonathan Rowe: You're saying that the difficulty is getting the money, and that's my next question.

Where is the money coming from for those 12 that are currently operating? Is it coming from government—taxpayers?

Na'im Merchant: Of the companies that are operating, many are supported by private sector buyers that are buying carbon removal credits. Some of them are banks in Canada, Stripe, Shopify or Google. They are major tech companies, typically, companies that are expanding their operations. Maybe they're trying to deal with their carbon footprint, and they've been relatively profitable and have bought carbon credits at a higher price to support these companies, but it only goes so far—as you pointed out—and it's the reason we have only a dozen or so projects operating when we need so many more.

Jonathan Rowe: The need for carbon capture is as much as what people want for carbon capture, and I'm not sure why we would continue to try to keep going without being able to make those private investments and getting people involved.

I'll move on to another question that I have. We're talking about the tax credits here, and it seems that the government's going to be reducing the carbon tax credits for this after 2040.

After 2040, when these carbon capture tax credits are reduced by half, do you think that the industrial carbon tax should also be reduced because we won't need to take that money and give it to the carbon capture industry?

● (1615)

Na'im Merchant: The industrial carbon price is going to be necessary to support companies in the sense that it creates a committed revenue stream for the sector so that they'll be less dependent on such things as tax credits and subsidies in the future.

If we have a highly functioning industrial carbon price and industrial carbon pricing system, then companies have a revenue source that allows them to attract private capital to grow as opposed to requiring government subsidies.

Jonathan Rowe: I've only got 10 seconds left, so I'd like to ask you a really quick yes-or-no question.

Do you think the Liberals and Mark Carney are planning to put back the carbon tax on fuel, and should they?

The Chair: I'm sorry. You're out of time, Mr. Rowe. There's time for a quick yes or no from Mr. Merchant.

Na'im Merchant: I don't know.

The Chair: We will now go to Mr. Malette for five minutes, please.

Chris Malette (Bay of Quinte, Lib.): Thank you, Madam Chair.

My first question is for Madame Levasseur.

You addressed this earlier with my friend Mr. Bonin, but how can we ensure that carbon capture, utilization and storage technologies projects can deliver a genuine net reduction in greenhouse gas emissions once the energy required for capture, transportation and storage is taken into account?

Annie Levasseur: First, it depends, of course, on the technique. When you do direct air capture, it requires more energy than if you capture it at the chimney of a cement plant, for instance.

That's also why I talk about a road map. We need to do this at the same time as we decarbonize our energy system so that the energy used to do that will be decarbonized electricity, for instance. If we do that over several decades, then this will be beneficial. Still, the total energy required does not emit as much CO2 as the CO2 that is captured.

Chris Malette: Do you have any thoughts, then, on what standards the federal government should use to measure independently and verify the amount of CO2, further to that, that is actually captured and permanently stored?

Annie Levasseur: I'm not an expert in these standards, but they exist. With the National Academy of Sciences, in the committee I was talking about, we discussed in the report how we should do the verification and follow-up to make sure that these projects really provide the intended results.

Chris Malette: Thank you very much, Madame Levasseur.

Mr. Whittingham, what safeguards should the government put in place, in your estimation, to ensure that federal tax credits and subsidies for carbon capture, utilization and storage technologies deliver the measurables, rather than simply subsidize projects that companies would undertake anyway?

Ed Whittingham: First, it's important to recognize that for any company [*Technical difficulty—Editor*] to receive one of these tax credits [*Technical difficulty—Editor*] where they operate, in the case of the CCUS ITC, there has to be a corresponding provincial protocol that then provides some of the insurance around monitoring, reporting and verification, as I mentioned, on the environmental integrity side to make sure that they're delivering.

As I mentioned before, the folks in the tax policy division, and then extended to the CRA, do a pretty good job of these applications, diving into project economics to make sure that, yes.... The last thing anyone wants is some sort of windfall profit on it, but I'm really confident that this is not the case.

Let's face it. Whether it's carbon removal or carbon capture, it's really expensive. It's integral to our climate objectives, but it is expensive. That's why we need these tools to get these projects over the FID line.

Chris Malette: You touched on this earlier with the tax incentives as well. What combination of those incentives, carbon pricing, infrastructure investment and private sector financing would most effectively accelerate carbon capture, utilization and storage technologies without creating an excessive burden on taxpayers?

Ed Whittingham: That's a good question.

Ultimately, you need a system that works together with good federal stacking limits. Stacking limits, as the members will know, set a limit on how much federal and provincial support any one company can get for a project. The federal stacking limits for these CCUS and carbon removal projects are entirely appropriate.

As I mentioned, you need a well-functioning carbon pricing market. If you have that upfront support that helps with the capex and then you have that downstream support with carbon pricing that helps with the opex, those are ultimately the two most important levers you need to pull to get this decarbonization capital off the sidelines. Let's face it. That's the problem Canada faces today. We have too much decarbonization capital sitting on the sidelines right now.

● (1620)

The Chair: Thank you very much, Mr. Malette.

[*Translation*]

Mr. Bonin, you have the floor for two and a half minutes.

Patrick Bonin: Thank you, Madam Chair.

Ms. Levasseur, do you understand why private companies currently do not pay for all of their projects and apply for tax credits, which are 50% federally and 10% in Alberta, for example?

Annie Levasseur: Are you referring to the projects being discussed today?

Patrick Bonin: I am referring to carbon capture and sequestration projects, such as the Pathways project.

Annie Levasseur: Okay.

Actually, that is quite normal. We are talking about two ways to make a bit of money from this. Carbon credits can be sold, which can be done in the short term when there is a good carbon pricing market. There can be a trading system, and that makes it possible to fund it. As we move forward and get closer to complete decarbonization, carbon credits will disappear.

Those businesses' profits are not internalized, just as the costs generated by polluters are not internalized in the price of products. It is society, it is the government who pays for this, through the investments that have to be made because of the negative effects of climate change. Those effects are very costly, whether they involve the health care system or the destruction caused by extreme events.

In a way, then, it is normal for governments to support these projects, because society as a whole benefits from removing this carbon dioxide from the atmosphere.

Patrick Bonin: This is how I look at it: If it is not the company that pays, it is the government that pays, and it is also citizens who will pay for the impacts of climate change caused by pollution. That internalization of costs is not currently happening.

Annie Levasseur: No, not at all.

Patrick Bonin: Society not only pays for climate damage, air pollution and so on, but also pays for billion-dollar companies making astronomical profits, record profits. We can't afford to pay for that, and many people say that we shouldn't pay for it. Companies should be the ones paying to reduce their emissions.

Annie Levasseur: Yes, if we are talking about projects that are directly associated with emitters, I completely agree with you. I was referring more to projects aimed solely at removing carbon dioxide from the atmosphere, such as direct air capture projects.

I completely agree with you, because, in fact, we want emitters to internalize the cost of the pollution they generate. If an emitter implements such a project to offset its emissions, it should indeed be the responsibility of the private sector.

The Chair: Thank you very much, Mr. Bonin.

[*English*]

Mr. McLean, it's over to you for five minutes.

Greg McLean (Calgary Centre, CPC): Thank you, Madam Chair.

I have some questions for my old friend Mr. Whittingham about his testimony today.

Mr. Whittingham, you told us that you were instrumental in the new enhanced oil recovery...the government just put into its spring economic statement.

Can you explain why you've put the enhanced oil recovery tax credit at half of what that enhanced oil recovery tax credit is worth in the United States, where we're competing for projects?

Ed Whittingham: Mr. McLean, it's a good question.

We had extensive conversations back in the early days. This coalition I built is trying to get a 45Q-style tax credit here in Canada. To be clear, that's a production tax credit rather than an investment tax credit. It pays once tonnes are sequestered underground. It pays the company sequestering them.

Why is it half the rate, Mr. McLean? That's difficult for me to answer. Compared with 45Q credits.... We're talking about apples and oranges, to a degree. Our investment tax credits tend to be a little less compared with what happens with the value of the credits in the U.S. The Canadian government's response is that we have carbon pricing, and that provides an extra incentive. When you combine the two, you get something like a levelized cost of carbon comparable to the one in the U.S.

Greg McLean: Thank you.

Mr. Whittingham, you'll recall that we had extensive discussions in 2021 on a tax credit that we could implement in Canada that mirrored the effective cost credit that would be part of a 45Q. In a private member's bill, we were trying to make sure the companies developing carbon capture technologies did not find the impetus to move to the United States. Since 2021, most of those technology companies, including some you're associated with, have moved to the United States because that's where the economics work better.

Do you see that, perhaps, we should have continued with the industry leadership we had before this government came to power?

● (1625)

Ed Whittingham: That's another good question.

To be clear, this drift across the border was the great fear of the government and the finance minister of the day. Her deputy was Michael Sabia. From my perspective, I'm seeing the opposite when I look at carbon removal. We're seeing the erosion of supports in the United States and an unprecedented level of interest in Canada, partly because Canada is building the most effective regulatory framework for incentivizing carbon removal anywhere in the world.

In my role, I receive a lot of inbounds from companies and buyers here and elsewhere that are interested in what we're doing. A big difference is that we have policy stability and more certainty than the U.S. does.

Greg McLean: I think most people would differ with the policy stability point, Mr. Whittingham.

You've been at the centre of this debate for quite some time now. You used to be with Pembina Institute.

What years were you with Pembina?

Ed Whittingham: It was from 2005 to 2017, and I was executive director from 2011 to 2017.

Greg McLean: Before the Liberal government came to power in 2015, Pembina Institute received very little support from the federal government. Since then, from 2017 to 2023, it got over $11 million in grants from the federal government. Some of that might have found its way through to your organization.

Is your organization funded differently than the Pembina grants that have effectively made it a subsidiary of the federal government, if you will?

Ed Whittingham: I can't speak to the funding that the Pembina Institute has received since I left. No, my organization doesn't receive money through the Pembina Institute.

Greg McLean: Is your organization funded entirely by the federal government?

Ed Whittingham: No, I don't receive any funding from the federal government. I have clients who hire me to provide them with advisory services. We have, as a member, the Advance carbon removal coalition, which is supported both by philanthropy and member fees. Each member pays a nominal amount to be part of it. Then there are some philanthropic foundations that support my work too.

Greg McLean: Thank you. Congratulations on those clients.

Tell me about the $10 million and how you think the government's prepurchasing is going to lead to 10 times as much investment in carbon removal in Canada as the government's invested, because I think that's a bit of a speculation. I'd like to see that land. If you can give us more illustration of that, I think the committee would appreciate it.

The Chair: Give a short answer, please, as the member's time is up.

Go ahead, Mr. Whittingham.

Ed Whittingham: In simple math, the feds committed $10 million, and then we brought in a whole bunch of companies to commit to a total target of $100 million. That's the 10 times number.

The Chair: Thank you very much.

Lastly, we will turn to Mr. Greaves online for five minutes.

Will Greaves (Victoria, Lib.): Thank you, Madam Chair, and good afternoon, colleagues. Thank you to our witnesses for joining us.

I'd like to stay with Mr. Whittingham for my first question.

Thank you for joining us, sir.

I think we can hear, coming from some of our colleagues' questions, shades of how previous climate change policies initiated during the last 11 years have had some of the empirical basis undermined and questioned. I'd really like to give you the chance, Mr. Whittingham, to elaborate on the economic benefits that you see associated with carbon removal. You've said on the record that carbon removal is one of the greatest economic opportunities that Canada has. You've been very positive today.

Can you put a little more colour on how you see those benefits being generated and, in particular, whether you see carbon removal technologies as offering more dispersed benefits to communities across the country rather than perhaps being as heavily concentrated in a single location, as certain CCUS projects would lead us to expect?

● (1630)

Ed Whittingham: I'm happy to, Mr. Greaves.

I'll go back to the Thetford Mines example because I think it's particularly exciting, and that's part of the reason that the local community is so supportive of it. It fits in with the initiative DuGrisAuVert, which is looking at what you do with these mine tailings sitting on the landscape that now are, in effect, environmental insults, and how you turn them from a negative to a positive.

From the modelling that Stripe has generated.... Again, Stripe and Frontier have a $132-million offtake announcement that's hanging in the wings. It's waiting in the wings if we can get a positive indication on the carbon mineralization ITC. From the numbers that we've run, for about $140 million of avoided tax revenue—that's the cost to the government—it's going to generate $14 billion in investment in that area alone in carbon mineralization.

While it's not a trillion dollars, and I know the federal government—I joke—doesn't get out of bed unless it's $100 billion these days, that's still not chump change, especially in an industry that's still young, with lots of growth potential.

Will Greaves: Thank you for that additional detail.

Turning to you, Mr. Merchant, I'll say that it's good to see you again. Thank you for joining us today. In your opening remarks, you said something that caught my attention. There are two particular pieces I'd like to flag.

The first is a very succinct summary of the importance of carbon removal technologies as essentially being the net in net zero. That is really a useful tool for people to understand both sides of the accounting ledger, so to speak, and both sides of the carbon ledger that goes into the broad discussions around net zero, which of course is the climate target that Canada remains committed to.

The other comment you made that got my attention as the member of Parliament for Victoria, representing an island and a coastal community, was on the opportunities for marine-based carbon removal. I'd love to ask you to expand on that point. What opportunities do you see that are specifically related to the marine environment and coastal communities in this country?

Na'im Merchant: Canada leads the world right now in innovation and research around marine carbon removal, that is, helping the ocean accelerate its natural process of removing carbon dioxide from the atmosphere.

The ocean is the largest carbon sink in the world right now, and there are companies that are enabling it by adding alkalinity to rivers or ocean areas at small scale. They are seeing that it reduces the acidity of those marine environments. In rivers, it can bring back salmon habitats. It's been used for decades to counter the impact of acid rain on our rivers, and it turns out that it removes CO2 from the atmosphere.

As a country with more lakes, rivers and ocean coastline than anywhere else in the world, this is an area in which we should be leading in British Columbia and in Atlantic Canada.

While we're doing a lot of innovative research and development in this area, we need to do larger demonstrations. We need to make sure that companies have regulatory sandboxes to do larger demonstrations of this really promising technology that can do carbon removal at large scale and low cost and that can de-acidify marine environments across the country.

Will Greaves: Yes. Thank you for that.

One thing I have encountered in this role that is related to marine carbon storage is the cobenefit potential that exists for marine, riverine and coastal ecosystems. I'm wondering if you could speak to what I understand are some of the cobenefits that natural carbon storage solutions offer, particularly in tidal regions, to help the government and local communities meet other important goals related to conservation, ecological restoration and so forth.

The Chair: Give a short answer, please, as we're out of time.

Na'im Merchant: I'll say that some of the demonstration funding should go toward proving out those cobenefits, because those are really important. They matter to the community, and we should be putting money toward making sure that we can verify those ecological and community benefits. That's part of the demonstration funding we've been advocating for.

Will Greaves: Thank you, Madam Chair.

The Chair: Thank you very much.

Thank you very much to all of our witnesses. That concludes our time with you this afternoon.

We will suspend briefly to switch to the next set of witnesses.

Thanks, everybody.

● (1630)

_____(Pause)_____

● (1640)

The Chair: Okay, everybody. Can we get started with our second hour of witness testimony for the carbon capture and underground storage study that we're kicking off today?

Thank you to our witnesses for joining us to share your insights.

Today, we have with us Etienne Rainville, vice-president for central Canada of Clean Prosperity, along with Chloe McElhone, research manager.

Welcome, both of you.

We also have, online, Julia Levin, associate director, national climate, from Environmental Defence Canada.

Welcome, Julia.

In person, we have Breanne O'Reilly, chief operating officer of the International CCS Knowledge Centre.

Thank you. We look forward to hearing from you.

Each organization will have five minutes to give some opening remarks, and then we'll turn to members' questions. I do have a little reminder for when your time is up, should you need it. We'll try to have a good, efficient hour.

I will begin with Mr. Rainville.

The floor is yours for five minutes, please.

Etienne Rainville (Vice-President, Central Canada, Clean Prosperity): Madam Chair and members of the committee, thank you very much for the invitation to appear today.

My name is Etienne Rainville. I'm the vice-president, central Canada, at Clean Prosperity, a non-partisan, not-for-profit climate policy organization focused on market-driven solutions that reduce emissions and grow Canada's low-carbon economy. I'm joined by my colleague Chloe McElhone, our research manager, who will be providing our remarks.

Chloe McElhone (Research Manager, Clean Prosperity): Thank you, Etienne.

Thank you, Madam Chair and members of the committee, for having us here today.

Carbon capture utilization and storage represents a significant opportunity for Canada to attract low-carbon investment while also decarbonizing industry. This is an opportunity that Canada is uniquely positioned for because of both—

The Chair: I'm sorry. We need to pause for one moment. I hear we don't have interpretation. I will pause your time.

Are we okay?

I'm sorry. Go ahead.

Chloe McElhone: This is an opportunity that Canada is uniquely positioned for due to both its ample underground storage potential and a regulatory framework that's poised to incentivize projects. However, that advantage is not guaranteed. Other countries are competing to attract the same investments, and Canadian projects are stalling at final investment decisions.

Canada is already a world leader in CCUS, with significant facilities and infrastructure already in operation today. Those include Entropy's Glacier, Shell's Quest, Nutrien's Redwater, the Sturgeon Refinery—all of these are in Alberta—and SaskPower's Boundary Dam. There are more under construction in Alberta, including Enhance Energy's sequestration hub and Dow's Path2Zero project.

The most common technology in Canada to date is point-source capture: removing emissions before they reach the atmosphere by way of permanent underground storage or for use in other processes, such as enhanced oil recovery. Today, Canada has almost four million tonnes of annual capture capacity from point-source projects. The technology is proven, and existing projects show that the real bottleneck is economic.

For many industries in Canada, carbon capture is one of the only paths to deep emissions reductions. In 2024, Canada's large industrial facilities reported over 30 million tonnes of process emissions. These are emissions coming from chemical reactions rather than burning fuel, which means they can't be eliminated through switching out fossil fuels or through electrification. These make up about two-thirds of emissions in the cement sector and more than a third in fertilizer and other chemical industries. Even in sectors in which fuel switching and efficiency options exist, carbon capture is often among the most cost-effective ways to reduce emissions on a per-tonne basis.

Canada has built strong capital support for carbon capture, and projects need this. The federal investment tax credit covers half the cost of capture equipment, and Alberta adds an additional 12% grant.

What holds up investments?

Well, carbon capture projects are unique when you compare them with most other low-carbon investments. A wind farm sells electricity, and an energy-efficiency project helps pay for itself through reduced fuel costs. A carbon capture project only has one benefit: reducing or avoiding a tonne's worth of carbon emissions. That tonne has no value unless policy gives it one. In Canada, the policy that pays for those emissions and those tonnes being captured year after year is industrial carbon pricing. Every tonne that a facility captures either lowers its compliance costs with respect to regulation or earns a credit it can sell.

In theory, that's exactly the incentive a carbon capture project needs. In practice, three things get in the way of relying on that revenue. First, carbon credits trade at a discount to the headline carbon price. Second, the carbon price rises slowly, reaching $140 by 2040. Lastly, carbon capture projects are large capital expenditures that run upwards of 20 years and beyond, so ongoing revenue needs certainty over a long time frame.

The recent memorandum of understanding with Alberta provides clear support for this in the form of an effective minimum credit price of $130 by 2040. Our modelling suggests that, today, the average carbon capture project needs around $120 per tonne after taking into account those capital incentives. At $130, many projects can reach viability, although inflation will take a bite out of that every year. This is in line with the U.S.'s 45Q tax credit, which pays about $115 Canadian per tonne stored from day one. That said, it's important to reach a strong credit price as soon as possible. Every year that it takes to reach $130 is another year of uncertainty. Carbon contracts for difference can help bridge that gap by locking in the future value of credits today.

Carbon pricing isn't the only source of ongoing support. Oil and gas accounts for about 30% of Canada's national emissions. When those facilities capture carbon, they lower the carbon intensity of their fuels and can earn credits under the clean fuel regulations, adding an important layer of second operating revenue to these projects.

None of this is to say that capital support doesn't matter, because it does. However, ongoing revenue is essential to get carbon capture projects built and to keep them running. If we get that right, Canada can turn this opportunity into a reality.

Thank you. We look forward to your questions.

● (1645)

The Chair: Thank you very much to both of you.

We will now turn to Ms. Levin for five minutes.

The floor is yours.

Julia Levin (Associate Director, National Climate, Environmental Defence Canada): Good afternoon. Thank you to the committee for this opportunity to share the perspective of Environmental Defence.

My name is Julia Levin. I'm the associate director of our national climate program.

Environmental Defence is concerned about the significant amount of public funds being earmarked for carbon capture and storage, as well as how the Pathways project is being used to greenwash the Pacific link pipeline and expanded oil and gas production.

Despite decades of research and development, CCS remains expensive and energy-intensive, with limited potential to deliver significant cost-effective emissions reductions at scale. CCS overpromises and underdelivers. The vast majority of planned CCS projects, both around the world and here at home, never make it off the ground. Those that do struggle to meet their promised targets.

In Canada, there are fewer than 10 commercial CCS projects currently operating, and they capture only 0.05% of national emissions. Global carbon capture capacity stands at around 50 million tonnes of CO2 per year, less than 0.1% of annual global carbon emissions, which is a number that has barely increased over the last decade.

Most carbon capture is used for enhanced oil recovery to reach oil deposits that otherwise would not have been recoverable. This is not a climate strategy. It's an oil production strategy. More oil production means more wildfires, droughts and floods, which in turn means worse health outcomes for Canadians, uninsurable homes and higher food prices.

Despite this, the Government of Canada is now in the process of expanding the CCUS investment tax credit to include enhanced oil recovery—or EOR—projects. When the tax credit was first introduced despite the objections of over 400 of Canada's leading experts, the government defended it by insisting it would not be used for EOR. The Prime Minister has since reversed that promise, and Canada will now be subsidizing oil production, a violation of the country's inefficient fossil fuel guidelines, as even government officials admit.

We are especially concerned about the enormous amounts of public funds that are being promised to the Pathways CCS project. Pathways is being proposed by the Oil Sands Alliance, which represents five of the largest oil sands companies operating in Canada. It would require more than 650 kilometres of high-pressure CO2 pipelines to move captured carbon from various oil sands facilities to an underground storage hub near Cold Lake, Alberta.

The Oil Sands Alliance has stated that the Pathways CCS project could cost up to $30 billion to build, a large increase from previous estimates. Canadian and Albertan taxpayers are already on the hook to pay a significant portion of that, up to $20 billion. Oil Sands Alliance companies could pay most of those costs with their profits from just one quarter, given the windfall profits they are earning this year.

Nonetheless, oil and gas companies keep asking for larger handouts. Clearly, all of their lobbying is paying off, given that the government has said that they will also cover the project's ongoing operational costs. This could cost Canadians up to another $1 billion per year for the lifespan of these projects.

At the same time, the project's promised emissions reductions have dropped significantly. Initially, the companies involved said that the project would cut 10 megatonnes to 12 megatonnes of CO2 per year by 2030 and up to 40 megatonnes a year by 2050. Now, they're saying it will only capture six megatonnes per year and only starting in 2035. Even if Pathways achieves its target, which is unlikely given the track record of these projects, that's a meagre 6% of oil sands emissions and only 3% of the sector's entire emissions. For context, the Pacific link pipeline, which CCS Pathways is being used to greenwash, would itself lead to nearly 30 megatonnes of additional greenhouse gas pollution.

Meanwhile, on the ground, communities in Alberta are frightened about this project's safety and health hazards, which have largely been overlooked by decision-makers. Through the No to CO2 coalition, many of the affected community members, including landowners, farmers and indigenous groups, have been raising concerns about pipeline safety, groundwater, indigenous rights and emergency preparedness. I know they'd be very happy to speak to the committee on this issue as well and bring that local perspective.

In closing, I'll note that Canada is lagging behind in the global clean electricity transition. The key elements of the energy transition include transition off fossil fuels; scaling up renewable energy and storage options; direct electrification of transportation, homes and industry; and significant improvements in energy efficiency.

Cost-effective, proven and reliable solutions are readily available today for large-scale deployment. These technologies aren't just climate solutions. They are also solutions that are more affordable, reliable and secure for Canadians. While our peers around the world are moving in that direction, this government's decisions are keeping Canada locked on a sunsetting industry. Unless we change direction, Canadians will continue to get left behind, and Canadians will pay the price.

● (1650)

Once again, thank you for this opportunity. I look forward to your questions.

The Chair: Thank you very much, Ms. Levin.

I'll now turn to Ms. O'Reilly, for five minutes. Thank you.

Breanne O'Reilly (Chief Operating Officer, International CCS Knowledge Centre): Thank you, Chair and committee members, for having me today.

I am Breanne O'Reilly, the chief operating officer at The International CCS Knowledge Centre.

The Knowledge Centre exists to de-risk and advance CCUS and engineered removals by technical, strategic and policy support, as well as by sharing lessons learned both domestically and internationally.

Carbon capture is not a universal solution, but it is an important option for meeting our climate ambitions. We know it works. Our challenges are around deploying it economically and reliably at scale.

Canada is a leader in CCUS. We have been demonstrating monitoring and verification of long-term storage at the Weyburn-Midale site in Saskatchewan for over 25 years. Boundary Dam has been capturing and storing CO2 for 12 years, and Quest has been capturing for 11 years. We have also developed substantial transportation infrastructure with the Alberta carbon trunk line, and there are other projects in development or operations across the country.

Canada is internationally recognized for this experience and expertise. Our engineering, subsurface characterization, monitoring, regulatory frameworks and project integration are sought internationally.

There is that value, as well. I recently came back from the Philippines, where I spoke at the ASEAN Energy Business Forum, meeting with government officials and business officials, helping them walk through challenges that Canada has already addressed.

Despite this expertise, it is challenging to deploy new projects for a number of reasons. Capturing the CO2 is the first step in the value chain. We then have to compress, transport, store or use and monitor that CO2. Projects are expensive, long-term investments, and they require coordination and risk management across that entire value chain in order to be commercially deployable.

Just because one technology works in one application, this doesn't mean that it will necessarily work as well in every application. Challenges with integrating into different industrial processes include challenges with CO2 concentration or impurities in the flue gas, energy and water requirements, the footprint needed, transport and storage access, and balancing those capital and operating costs.

Demonstration projects are really important in producing the data to address those challenges and inform future projects. Public investment helps address those barriers. Canada's research and demonstration funding has helped improve technical uncertainties. The CCUS ITCs help address upfront costs. Industrial carbon pricing provides value to avoided emissions. Carbon contracts for difference address uncertainty over time. Infrastructure development and regulatory frameworks support coordination, permitting and long-term certainty. All of these mechanisms complement one another, and no single measure addresses every barrier.

Companies exist to produce the energy materials and products that Canadians depend on. Many are important to Canada's energy security and international competitiveness. CCUS is one tool they can use to reduce emissions and to deliver value. However, investments have to make sense alongside their core business operations, particularly when they compete in global markets.

To support further deployment, we need to maintain predictable investment decisions. These projects operate for decades and require significant capital. Decisions need confidence in the regulations and the economic value of emissions reductions. We need to connect demonstration funding to industrial deployment, supporting demonstrations that identify industrial challenges, generate performance data and create pathways to commercial projects. We need to continue to support coordinated infrastructure development. Shared transportation and storage costs can serve multiple projects and reduce costs dramatically, but they require coordination of investments, capacity and development timelines.

Canada has decades of carbon management experience, and we've already invested substantially in the industry. The opportunity now is to use what we know to support competitive Canadian industries, deliver emissions reductions and create internationally valuable projects and capabilities.

The next phase depends not only on advancing individual projects and technologies but also on making emissions reductions work within the industries and the economics that depend on them.

● (1655)

The Chair: Thank you very much, Ms. O'Reilly.

We'll now turn to questions from members. We'll begin with the Conservative Party and Mr. Leslie for six minutes.

Branden Leslie: Thank you, Madam Chair.

I'll start with you, Ms. O'Reilly.

Minister Dabrusin was just in China, praising closer environmental co-operation with the CCP government there. Meanwhile, China began construction of another 25 gigawatts of coal power production in the first six months of this year alone. There's no requirement in China to have any sort of carbon capture technology associated with this.

I understand the work that you guys, as an organization, have done. We are well placed, but what do we do about engagements with countries that are clearly producing far more? How do we best go about encouraging the Communist Party in China to take on Canadian technologies like this?

Breanne O'Reilly: China is interesting, specifically because.... Yes, you're right. It's increasing power production. It's also one of the fastest-deploying CCUS countries today.

Is it looking at Canadian technologies? No. At this point in time, it is not. It's done a lot of its own research and development on amines. However, it has employed a lot of Canadian expertise in how to operate and scale up, especially around coal-fired power production. Boundary Dam has been capturing for 12 years, and a lot of those lessons learned are going into Chinese developments today.

Branden Leslie: Out of curiosity, do they have a carbon market? Who is buying the Chinese-created credits out of utilizing and storing carbon there?

Breanne O'Reilly: There's no carbon market there right now. It is driven by the Chinese government in deciding what projects are going ahead. It would be nice if we could integrate stuff like that and just decide, “You're decarbonizing”, and go.

Branden Leslie: I wouldn't go down the path in which Chinese dictatorships are nice in terms of implementing....

Breanne O'Reilly: No.

An hon. member: Whoa.

Branden Leslie: That's what I say. Yes. Get in a different world, my man.

From your experience with carbon capture developers, how much of the difficulty in getting projects built—the final investment decision point—comes from delays in permitting approvals and uncertainty over the government programs that are meant to try to enable them?

Breanne O'Reilly: Very little comes from capital costs and that piece. The challenge comes with paying for the project over the operating lifespan.

As for Clean Prosperity's point, the economics around that carbon pricing and what the value is for reducing emissions are where projects struggle to reach a final investment decision.

● (1700)

Branden Leslie: I believe it was during your testimony that you talked about the $130 in 2040, but the challenge with the headline price in reality....

Say there are enough upfront supports, through tax credits or other mechanisms, to get it built. We have an agreement in the case with the MOU in which it's going to be rising steadily. How do we avoid interim periods in which we are achieving none of the stated objectives or we are not keeping up with the U.S.-based production credit?

Ultimately, taxpayers are going to be on the hook for unexpected amounts above and beyond the initial costs and that bridge in combination with the tax credit creation.

Breanne O'Reilly: It was actually Chloe's remarks that included the—

Branden Leslie: This is a question for both of you, then.

Breanne O'Reilly: Okay.

I don't know if you want to speak first on the carbon pricing.

Chloe McElhone: Sure. Thank you.

As I mentioned, capital support is important at the starting point to get projects off the ground, but these projects aren't looking at five, 10 or 15 years of operations. They're looking at 20 years minimum, and then there's ongoing monitoring and verification costs, even when carbon is no longer being captured.

The gap—or the opportunity, frankly—is in that ongoing support from industrial carbon markets. That's not money coming from the government directly. Rather, it's a government-created and -regulated market that is incentivizing industry to capture carbon and make those investments, providing them with an additional revenue stream by generating credits they can monetize and sell. It also helps reduce compliance costs for other industrials through purchasing credits created from carbon capture projects, when their own decarbonization opportunities may be limited or more costly.

Breanne O'Reilly: The only piece I would add is that there are mechanisms in place for ITC access so that you are promising to capture a certain quantity of CO2 over the duration of your project. If you are not meeting that obligation, you are required to pay some of that back.

Branden Leslie: I'll stick with you, Ms. O'Reilly, because I know you wrote this back in August.

You said some Canadian carbon projects are already economically viable. Can you give us some examples of those projects?

Breanne O'Reilly: Quest and North West Redwater, through the clean fuel regulations, are already producing revenues.

Branden Leslie: There's no ongoing government funding at any level for the two projects you've outlined.

Breanne O'Reilly: That's correct.

Branden Leslie: You've also written that capturing carbon from certain industrial processes can cost more than $100 or $200 per tonne. At what point does it become potentially so high on the operations of capture that government support really can't be justified?

Breanne O'Reilly: We've seen a few projects pause their progress because they don't feel the $140 per tonne is economical for them to move forward with. We've also seen projects, such as the Mercer pulp and paper plant in Alberta, look at refurbishment first, so that when they add capture, they can have carbon capture for the duration.

It completely depends on the facility and what they're trying to achieve.

The Chair: Thank you very much, Mr. Leslie.

We'll now turn to Mr. Grant for six minutes, please.

Wade Grant (Vancouver Quadra, Lib.): Thank you, Madam Chair.

Thank you to the witnesses for joining us.

Ms. McElhone, what does the available evidence tell us about the cost per tonne of greenhouse gas emissions avoided through CCUS, compared with other industrial decarbonization measures?

Chloe McElhone: Notably, there is per tonne avoided versus per tonne captured. How those economics are looked at per tonne avoided is going to be very dependent on which province the carbon capture project exists in. There is significant electricity associated with carbon capture equipment, so there's something that's deemed an energy penalty associated with that. That's going to be larger or smaller, depending on the emissions intensity of the electricity grid the carbon capture facility is located in.

The economics are going to be different when there's a higher cost per tonne avoided rather than per tonne captured. The reason we think a lot in terms of per tonne captured, however, is that it's often how offset credits and the credits you're generating from capturing that carbon are determined. There are small volumes that are held back in case of reversal, but generally, it's measured by per tonne captured and then stored.

That's how the terminology differs.

● (1705)

Wade Grant: What data should project proponents be required to disclose so that the government and the public can independently assess project costs, emissions reductions and reliance on public funding?

Chloe McElhone: I'm not as sufficiently expert as others here are about the investment tax credits and the requirements associated with them in order to get access to them.

In terms of the carbon credit generation and industrial carbon pricing, there are established and defined protocols that have very clear requirements and methodologies setting out how and when a carbon capture project can generate carbon credits and have an ongoing revenue stream from that source, and then there are also requirements that are very clearly laid out about the reporting around that, the ongoing verification of it and the monitoring as well, over the long term.

Wade Grant: Thank you.

Ms. O'Reilly, based on international experience—I think you talked about international experience earlier—what are the most significant technical, financial and regulatory barriers preventing CCUS projects from being deployed at commercial scale in Canada?

Breanne O'Reilly: They're policy stability and certainty, which came up in the previous set of witnesses' responses.

When there's uncertainty in whether there's going to be value for emissions reduction going forward, it makes it incredibly challenging to make the scale of investment that's needed for carbon capture to move forward.

Wade Grant: With respect to the tax credits I was talking about, Mr. Rainville, how effective are existing federal tax credits and other financial incentives at attracting private investment for CCUS, and what changes would improve their effectiveness?

Etienne Rainville: The number one complaint about the ITC regime generally has been the speed of access for a lot of proponents. There were a lot of delays, effectively, in terms of getting them off the ground, and that's what a lot of project proponents—for CCUS and others—were concerned about. Most of that has been remedied, and the ITCs are effectively in operation these days.

The big questions are the policy questions around whether the carbon pricing regime is going.... The benchmark, the backstop and all of these pieces are still to be settled in the next few months, and that's what a lot of projects are still waiting to hear about, frankly: what the carbon pricing regime coming out of the Alberta MOU is going to look like for the rest of the country.

Wade Grant: I'll go back to you, Ms. O'Reilly.

What lessons can Canada learn from large-scale carbon capture projects about construction costs, operating performance, capture rates and the reliability of projected emissions and reductions?

Breanne O'Reilly: Do you mean from international projects?

I will say Canada has the third most operating projects in the world. We find that a lot can be learned, internationally, from Canadian projects.

The other two countries that are operating at a higher rate than Canada are the U.S. and the U.K. The U.S.'s projects are primarily around ethanol production and going to enhanced oil recovery. Sure, we could improve our ethanol capture within Canada. We are now adding an enhanced oil recovery to the ITCs. That is a lesson that we've moved forward with already.

Public confidence and investor confidence in the emissions reductions over the long term are really what's preventing Canada from having a lot more projects moving forward now.

Wade Grant: I know I have more than four seconds, Madam Chair, but I'll cede the rest of my time.

The Chair: Thank you, Mr. Grant.

[*Translation*]

Mr. Bonin, you have the floor for six minutes.

Patrick Bonin: Madam Chair, I would be pleased to take my colleague's speaking time, if I may.

Ms. Levin, you talked about numbers. The Pathways project, which is meant to capture and sequester carbon, could potentially cost $30 billion. Obviously, half of it would be provided in the form of tax credits, so $15 billion would come from the federal government. Can you confirm that figure for us?

Also, I think you mentioned an additional $1 million per year for operating costs. Does this match the figures you have for the cost of the project?

● (1710)

[*English*]

Julia Levin: There have been different estimates for the cost of Pathways. Originally, the companies said it was around $16.5 billion, but in testimonies and submissions to the House of Commons in recent years, they've said it's up to $30 billion. That is just the capital cost. These companies have never provided a breakdown, either publicly or in terms of their negotiations with the government, on what's actually included. There's the pipeline, which is an incredibly expensive part of it, but there are also several carbon capture facilities. It's an incredibly complicated project.

On the operating costs, which previous governments had refused to cover, it depends on the cost of the clean fuel credits. At current costs, that would be $500 million a year in operating costs. That's every year for 20 or 30 years. It'll likely be closer to $1 billion because of where those credits will be in a decade. One billion dollars each year plus the $30 billion equals around $60 billion for this project if it operates for 30 years.

[*Translation*]

Patrick Bonin: Would you be able to provide us, perhaps in writing, with the calculations you just did? We would appreciate it.

[*English*]

Julia Levin: Yes.

[*Translation*]

Patrick Bonin: Regarding this money, it is also important to keep in mind that there is a $43-billion pipeline that will be paid for using public funds.

In your opinion, would this carbon capture project be sufficient to eliminate the additional emissions from the new Pacific Link pipeline, if it is implemented?

[*English*]

Julia Levin: Absolutely not. The increased production that would be needed to fill a brand new, one-million-barrel pipeline is equivalent to 30 million tonnes per year. This project's best case—the companies' best case—is six million tonnes by 2035. None of these projects has ever hit its target rate.

That's to compensate now for increased production. When this project was initially brought forward by these companies five years ago to avoid regulations such as the emissions cap, it was to counter existing emissions, not future expanded emissions. This project is trying to clean the ocean with a thimble when it comes to the sector's emissions.

[*Translation*]

Patrick Bonin: I think the IPCC compared ways to reduce emissions and combat climate change in terms of their cost and effectiveness.

How do these carbon capture and sequestration projects compare with other solutions for reducing greenhouse gases?

[*English*]

Julia Levin: The IPCC has been quite clear—and I can send this over to the committee afterwards—that CCS is the least effective and most expensive mitigation option.

When we talk about CCS in oil and gas, which is mostly how we talk about CCS, these projects are stranded assets. This is an industry that we need to be moving away from. Equipping them with technology for 30 years is not a decarbonization decision.

In steel and cement—in which we don't see any CCS projects to date, despite decades of efforts—CCS would be a much more expensive mitigation option than, for example, using green hydrogen and electric arc furnaces in steel.

[*Translation*]

Patrick Bonin: I want to come back to these infamous high costs.

Why are oil and gas companies not paying? Why is the government paying? Why is public funding needed to carry out these projects? Why are we going to give oil and gas companies billions of dollars yet again?

[*English*]

Julia Levin: Oil and gas companies have been doing CCS for decades as an oil production strategy to get more out of their existing reservoirs. In the last 10 years, they've realized that they can position it as a climate strategy in order to get government money. That's what's happening now. These companies are well equipped to cover these costs themselves. If we had regulations that forced them to be responsible for their own pollution levels, they'd have to put their own money into this project. They don't actually want this project to happen. They're just using it as cover to avoid regulations and to greenwash more production. This year, in just one quarter, the profits of four of the five companies were $13.5 billion. They don't need Canadian handouts.

● (1715)

[*Translation*]

Patrick Bonin: Do you think it's possible that, at the beginning of pipeline construction, the companies say they're going to implement carbon capture and sequestration, so they invest in it a little, but that, ultimately, once the pipeline is built, they completely drop the project's so-called green rationale and they do not implement carbon capture and sequestration?

[*English*]

The Chair: Please give a brief answer, Ms. Levin, as we're out of time.

Julia Levin: We've already seen that delinking happening with the timelines. The pipeline is on a much quicker timeline than the CCS project. We've also seen in the MOU the shrinking of the emissions reductions promised through this project. Certainly, that is why I continue to say that this is a greenwashing project.

The Chair: Thank you very much.

[*Translation*]

Thank you, Mr. Bonin.

[*English*]

We'll now go to Mr. McLean for five minutes, please.

Greg McLean: Thank you.

I'm going to stick with Ms. Levin.

It's very interesting testimony. Thank you.

Ms. Levin, on November 4, 2025, the government introduced a budget in the House of Commons indicating that there would be no tax credits for enhanced oil recovery. Then, 23 days later, it signed a memorandum of understanding with the Government of Alberta—Alberta is where I live—saying that they were going to have a tax credit for enhanced oil recovery. In less than 23 days, and less than 10 days after passing that budget, the Government of Canada—the Prime Minister—completely reneged on that promise. Tell me how you feel about that as far as trust in government goes.

Julia Levin: The reversal was of a long-standing approach to the CCUS ITC: that it would not be used for enhanced oil recovery. That was the promise made when this tax credit was first made. The reversal was also a violation of the government's existing policies. I think Canadians have a right to feel betrayed because this government is now subsidizing increased oil production.

Greg McLean: Thank you.

As for the other green expenditures that the government's committed to, both in that budget and in the spring economic update, do you see it speaking out of two sides of its mouth in moving forward with oil and gas exploration, and making it more expensive at the same time, while it continues to fund green organizations around the world?

Julia Levin: Generally, a coherent investment strategy when it comes to the energy transition is not to have one foot on the accelerator and one foot on the brake. It is great to see some investments in clean energy, but those can't be accompanied by massive subsidies for fossil fuels. That's what we're seeing this government do.

Greg McLean: Okay. You're saying what I would agree with: that the government is spending Canadian taxpayers' money in two directions at once. Can you confirm that?

Julia Levin: Yes.

Greg McLean: Ms. McElhone, I want to talk about carbon contracts for difference.

The thing about carbon contracts for difference is that there's already an industrial carbon price, which is a government intervention mechanism. When you put a carbon contract for difference in there, you effectively say that the taxpayers will subsidize it on top of the industrial carbon price—which may or may not be feasible in any market at any one point in time.

Can you tell us, as far as transparency goes, how that's beneficial to taxpayers, who need to see what the total cost—we can call it "subsidization" or "amelioration"—is of the carbon emissions we must address in society?

Chloe McElhone: Thank you for the question.

The industrial carbon pricing strategy is reset nationally with the upcoming reset and review of the federal benchmark. We also saw these changes come out in the Alberta memorandum of understanding and implementation agreement.

How carbon contracts for difference can work is by sending out a signal on a portion of emissions. I believe it was scoped at about 75 megatonnes over the project life in the implementation agreement. That's to send the signal to other industries and regulated facilities that there is continuation of the policy and the framework that uphold that carbon price.

● (1720)

Greg McLean: I'm sorry. I have limited time.

The question I asked was regarding transparency for taxpayers in terms of what the industrial carbon tax is costing them, as far as their energy goes, along with the behind-the-scenes carbon contracts for difference—which is another government subsidization, at the end of the day, because they're on the hook.

How do you feel about making sure that value is completely transparent so people can see it as part of their energy cost?

Chloe McElhone: There should be transparency on that. We've done some initial modelling around that topic—the pass-through cost to consumers. When you look at it on an individual project basis or in energy bills, it's a more marginal cost. It's a little more manageable when it's cut down to the consumer level, on an individual basis. However, the price also needs to be large enough to create a real price signal and incentive for industrials.

Both things need to be met, and transparency needs to be given on that.

Greg McLean: Thank you.

The Chair: Thank you very much.

[*Translation*]

Mr. Watchorn, you have the floor for five minutes.

Tim Watchorn (Les Pays-d'en-Haut, Lib.): Thank you, Madam Chair.

[*English*]

I want to get into the nitty-gritty of carbon capture because, when I was a kid, I liked taking stuff apart and putting it back together. That's probably why I became an engineer.

Ms. O'Reilly, the SaskPower Boundary Dam 3 project.... You talked about a mean scrubbing. Can you explain how that works?

Breanne O'Reilly: I'm not from SaskPower, so I can't answer to their specifics.

The way the plant operates is that there's initial flue gas coming off the coal-fired power plant. That flue gas is pre-treated before it goes into the CO2 capture process. The CO2 is then captured through an amine. That amine gets recycled and reused.

Part of that recycling and reusing is additional scrubbing to take out anything that made it through the pre-treatment and into that process so that they're able to regenerate the most amines they can and reuse them.

Tim Watchorn: What exactly is an amine?

Breanne O'Reilly: An amine is a solvent that bonds to the CO2 molecules.

Tim Watchorn: If I understand it right, Boundary Dam was the first full-chain capture facility in a coal plant. There's a second one at Shand. Apparently, the second-generation one is better. According to the numbers I saw, the second-generation plant could capture from 90% to 97% of the CO2 at double the scale, with 67% lower capital costs and 73% lower operating costs.

What was the change between the first-generation plant and the second-generation plant?

Breanne O'Reilly: The facility at Shand was a study. It's not an actual plant. I wasn't involved in that, so I can't speak to the specifics of the study.

The most recent SaskPower numbers say that Boundary Dam is capturing 90% of its CO2. They have taken information from additional studies they've done over their 12 years of operation and improved that capture efficiency over time.

Tim Watchorn: They've made it more efficient.

Breanne O'Reilly: Yes.

Tim Watchorn: I'll take an example in Quebec. One of our worst industrial emitters in Quebec is the Port-Daniel cement factory. The majority of our electrical grid is clean energy power. How could we take the Port-Daniel cement plant and use carbon capture to make it a better system?

Breanne O'Reilly: If you look at the Brevik facility in Germany, you will see that they are capturing 50% of their CO2 from the cement facility and producing low-carbon cement. Often, for cement capture, you need to add in heat, which is how an additional energy requirement comes in.

Brevik chose to operationalize its facility based on what its waste heat already was, so it's capturing only 50%. It's optimizing for what's there. Often in Canada we try to build to the nth degree of wanting to capture all the emissions, and it might be more efficient to look at what's reasonable for the facility.

The other piece with cement is that there needs to be a buyer for low-carbon cement.

Tim Watchorn: There should be more and more, we're hoping. Isn't that right?

Breanne O'Reilly: Yes, for sure.

Tim Watchorn: The first witnesses talked about a project—or a potential project—in Quebec at Thetford Mines. I'd like to know exactly how that works. I was speaking to one of the witnesses earlier. They take the tailings. What do they do to capture the carbon?

Breanne O'Reilly: That's surface mineralization. It works very similarly to direct air capture. Direct air capture uses limestone to capture the CO2. They can create a reaction at the surface level or in situ. At Thetford Mines, they're also drilling and testing underground and creating that chemical reaction in which the CO2 immediately mineralizes with the rock.

● (1725)

Tim Watchorn: You get a big pile of rock that you had before and make it into a better big pile of rock. Is that it?

Breanne O'Reilly: Yes, you make it into a white pile of rock; that shows that the CO2 has mineralized in it.

Tim Watchorn: Are there any uses for that rock afterwards? Is there something we could do with that?

Breanne O'Reilly: I haven't seen much in terms of CO2 use. There is a lot of testing being done in both British Columbia and Quebec on the methodology and verification of the CO2. Our first step is probably making sure that the CO2 is actually captured—to speak to the earlier questions on transparency.

Tim Watchorn: How do you monitor that the CO2 is being captured? How does that work?

Breanne O'Reilly: They can test the rock samples.

Tim Watchorn: They just—

Breanne O'Reilly: It's the same way as we've shown the CO2 increase over time. Through geological testing methods, they can show how much CO2 has actually been captured.

Tim Watchorn: That's very interesting.

Thank you very much.

Breanne O'Reilly: No problem.

Tim Watchorn: Thank you, Madam Chair.

The Chair: Thank you, Mr. Watchorn.

[*Translation*]

Mr. Bonin, you have the floor for five minutes.

Patrick Bonin: Thank you, Madam Chair.

Ms. Levin, do you think that a carbon capture and sequestration project like the Pathways project could actually delay the deployment of, for example, renewable energy or other solutions?

[*English*]

Julia Levin: There are a few ways.

Governments have finite resources. If we choose to spend tens of billions of dollars on this one project, that is, of course, tens of billions of dollars that we do not have for the kinds of clean energy investments that would actually leave Canadians better off. Generally, one of the things we've seen happen with carbon capture over the last 30 years is that it's used as kind of an escape hatch delay tactic that slows down actual emissions reductions with the promise of capture one day.

[*Translation*]

Patrick Bonin: Do you know of any carbon capture projects on the same scale as Pathways that have been deployed and that are working? If so, how effective are they?

[*English*]

Julia Levin: Pathways says that it would be the largest project in the world. It's a constellation of projects.

No, there are no projects that hit its target rates. If, in one quarter, Boundary Dam has hit the rate, for 12 years it hasn't. This is what we see happening. Around the world, we see carbon capture being used to justify new fossil fuel production, but then the promised reductions are never delivered.

[*Translation*]

Patrick Bonin: Could you talk a bit about the prospective risks to people and the environment if a CO2 pipeline ruptures?

[*English*]

Julia Levin: I would really encourage the committee to talk to No CO2 Pipelines Alberta. These are people on the ground who will be impacted by this project, and they have been studying the local impacts.

Carbon capture infrastructure doesn't have the scale of fossil fuel infrastructure, so there are fewer examples to pull from, but we know that when carbon pipelines rupture, it can be incredibly dangerous.

We saw that happen in Mississippi in 2020, when a small community had to be evacuated because of a rupture. The first aid responders had no idea what was happening. They had to evacuate 300 people, and 46 people were hospitalized. They are still dealing with the health impacts today. Those firefighters are warning, around the country, about the dangers of these projects.

There are risks to groundwater, and this is why it's banned in the municipality—

The Chair: Thank you, Ms. Levin. I'm sorry; we are out of time.

We'll now go to Mr. Leslie for five minutes.

Branden Leslie: Thank you, Madam Chair.

Continuing on with you, Ms. Levin, the Prime Minister has repeatedly said that Canada will have decarbonized oil. What do you think of this new type of oil?

Julia Levin: Decarbonized oil is an oxymoron. You cannot take the carbon out of a hydrocarbon.

Branden Leslie: CCUS is explicitly part of the federal government's 2030 emissions reduction plan. When that was first designed, do you recall if CCUS enhanced oil recovery was part of that plan?

Julia Levin: There was never a lot of transparency about the meagre role that CCS was going to play. In terms of the ITC, which was the government's main tool to support CCS development, EOR was strictly made not eligible for the ITC, so I assume the government was hoping that most CCS was going to be used to permanently store carbon and not use it for their oil production.

● (1730)

Branden Leslie: Ms. Levin, are you aware that the Net-Zero Emissions Accountability Act has now reached its five-year anniversary and that section 27.1 of the law explicitly requires Parliament to undertake a comprehensive review of the legislation?

Julia Levin: Yes, I am aware of that.

Branden Leslie: Is there merit in this committee's doing such a study?

Julia Levin: Well, for disclosure, currently we have a legal challenge. We're challenging the government. We're in the courts because the emissions reduction plan that the climate accountability legislation requires has never been amended.

I would say, first, let's ensure that we have our day in court for them to defend against that legal challenge before we change the legislation.

Branden Leslie: I'm not suggesting that we change the legislation.

I'm not sure if you were watching on Tuesday at this committee when I moved a motion that was almost immediately shut down by the Liberals regarding that. The solution to your court case is, if we were to update our plan, your court case would, in fact, become essentially null and void.

Julia Levin: Yes.

Branden Leslie: Madam Chair, I would like to move the motion that I put on notice on Tuesday. I move:

> That, pursuant to section 27.1 of the Canadian Net-Zero Emissions Accountability Act, the committee undertake a comprehensive review of the Act and its effectiveness; that the study consist of four meetings, including one hour with the Minister of the Environment, Climate Change and Nature; and that the committee report its findings and recommendations to the House.

Madam Chair, Parliament put a five-year review into the Net-Zero Emissions Accountability Act for a reason, I would like to think, and five years have passed since that law came into force. It's time that, as an environment committee, we get to work. We have five years of plans, reports, audits and results sitting in front of us.

In my view, our job as a committee is fairly simple. Let's look at what worked, what did not, what Canadians have paid for and whether this law is doing what Parliament said it would do.

The Chair: Thank you, Mr. Leslie.

You're debating the motion that you're putting on the floor at this point.

I'm going to suspend—

Branden Leslie: That's not how this works, Madam Chair.

The Chair: —so that we can release the witnesses.

Branden Leslie: On a point of order, it's my floor. You don't get a chance to cut me off as I present the motion that I just moved.

I have—

The Chair: I also understand that you can't debate the motion that you are putting on the floor.

Branden Leslie: I'm not debating it; I'm explaining why I'm moving it.

The Chair: My interpretation is that you're debating it, so could you please conclude?

Branden Leslie: I will happily get back to my conclusion.

Wow, the chair is getting in on the mix. I've moved this twice, a variation of this, and we've had Liberals shut it down both times, saying, “We are going to adjourn debate.” I think the third time's the charm. I wasn't expecting it to come through the chair.

On Tuesday, I will say, the parliamentary secretary, whom I also have much respect for, highlighted, in response to the court case Ms. Levin talked about, that it could not be discussed because the government had responded to an earlier report this committee had done regarding an emissions reduction study.

I went and took a look at the government's response to that. In fact, I would say that, in this response, there is a good enough reason for this committee to at least debate this motion right now and, more importantly, pass it, because it is our job.

In its response to this committee's report, the government lumped in a whole bunch of recommendations—recommendations one, three, six, eight, 14 and 29. I'll quote it: “The Government of Canada remains committed to the Paris Agreement and achieving net-zero emissions by 2050. This commitment is supported by the Canadian Net-Zero Emissions Accountability Act (the Act), which provides a transparent and accountable framework for setting”—

Chris Malette: I have a point of order.

The Chair: I'm sorry, Mr. Leslie; we have a point of order.

Thank you.

Go ahead, Mr. Malette.

Chris Malette: Madam Chair, can we dismiss the witnesses, please, and perhaps go in camera?

The Chair: Yes, we are going to suspend momentarily so that the witnesses can be relieved, and then we will continue.

Mr. Leslie, you will have the floor when we resume. I was simply trying to relieve the witnesses and not shut down debate.

Thank you very much.

● (1730)

_____(Pause)_____

● (1735)

The Chair: We'll get started again, as it is 5:39. I know people have places to go.

Mr. Leslie, the floor is yours.

Branden Leslie: Thank you, Madam Chair.

I'll restart. It's a very short quote. This is from the response from the government to our environment committee's report on the emissions reduction plan:

> The Government of Canada remains committed to the Paris Agreement and achieving net-zero emissions by 2050. This commitment is supported by the Canadian Net-Zero Emissions Accountability Act (the Act), which provides a transparent and accountable framework for setting of science-informed emissions reductions targets, developing the plans to achieve them, and reporting on progress.

Thank you for directing me back to the government's own response on this. It highlights exactly why the motion I'm moving today is so vital. It is the third time I have tried it. It is legally in the so-called accountability act that the Liberal government put in place just over five years ago. I encourage anyone on the Liberal side to explain to me why we should not today decide we are going to begin this study at the earliest available opportunity—or shut down debate on it for a third time and show that the accountability act is toothless and that it was always meant to be that way.

● (1740)

The Chair: Thank you, Mr. Leslie.

Mr. Grant, go ahead.

Wade Grant: Thank you, Mr. Leslie.

As we stated on Tuesday, and as you referenced, a court case is ongoing. This matter is before the courts, as was stated by Ms. Levin, whom we just had here. A parliamentary standing committee shouldn't intervene or comment; it would be inappropriate.

This committee's very first study in this Parliament was the ERP study that the Conservatives were pressing for. A government response was requested and was tabled the first day this House returned. Interested members are invited to review the response. Therefore, I move to adjourn debate on this.

The Chair: All those in favour to adjourn debate, please raise your hands.

Some hon. members: Agreed.

The Chair: It is 5:41, so we will adjourn for today.

Thank you very much.

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