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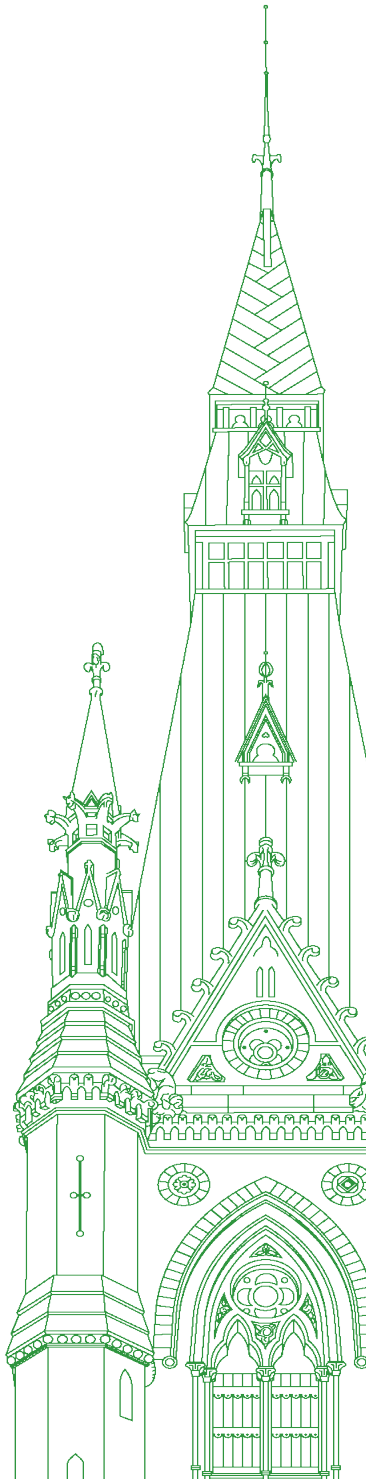
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Chair: Shannon Miedema

Standing Committee on Environment and Sustainable Development

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● (1545)

[*English*]

The Chair (Shannon Miedema (Halifax, Lib.)): Good afternoon, everybody. This is meeting 54 of the Standing Committee on Environment and Sustainable Development.

For those here in person, please follow the health and safety guidelines on the cards on the table to prevent any audio and feedback incidents. That's for our interpreters.

Today we're resuming our study on carbon capture, utilization and storage technologies, and we have witnesses lined up for both hours.

In person, we have Mathieu Bouchard, vice-president, public policy and regulatory affairs, from Deep Sky. Online, we have Amil Shapka, the co-founder of No CO2 Pipelines Alberta.

Welcome.

Branden Leslie (Portage—Lisgar, CPC): Madam Chair, can I get a point of clarification before we start the meeting?

I'm curious about whether the clerk has heard back from Dawn Farrell regarding her testimony last week. She stated that she was going to endeavour to send in information about MPO staff who are currently being paid by external private companies—about who those individuals are.

The Chair: There is nothing yet.

Branden Leslie: We haven't heard anything back from her endeavours. I find that fairly extraordinary.

I got a request from media this morning. They said they had a number for the private sector employees working at the MPO. I'm hearing this second-hand from media, but we had the head of the Major Projects Office sitting right there. I asked her a direct question. She later claimed in that same meeting that her office was transparent by showing up and doing committee appearances like the one she was doing, while simultaneously refusing to give us any information. I have to hear third-hand, from a journalist, what the number of employees is.

I don't think this is an oversight. This is a remarkable lack of respect for the committee and for Parliament itself. If the head of the MPO can answer a newspaper about how many employees working for them have been seconded from private sector enterprises, I think she has a responsibility to sit here and answer questions.

The Chair: Mr. Leslie, we can follow up with her and ask for a written submission, if that will suffice.

Branden Leslie: Thank you.

The Chair: Thank you.

To our witnesses, you have up to five minutes to give opening remarks. I have a little reminder for when you're at a minute. When your time is up, you don't have to stop immediately, but please try to wrap up. We'll also use this for the questions.

[*Translation*]

Mr. Bouchard, we will start with you. You have the floor for five minutes.

Mathieu Bouchard (Vice-President, Public Policy and Regulatory Affairs, Deep Sky): Thank you.

Good afternoon, Madam Chair and members of the committee. Thank you for the opportunity to appear before you today and to represent Deep Sky.

Deep Sky was founded in Montreal in 2023. We are a company that designs and operates carbon removal infrastructure through direct air capture and geological storage. We produce carbon removal credits sold in international voluntary markets to companies like Microsoft, RBC, TD Bank, Engie, Lufthansa and Salesforce. What sets us apart in this emerging sector is our multitechnology approach. We'll come back to that.

Deep Sky brings to the committee the perspective of a company that already builds and operates carbon removal infrastructure in Canada. Over the past 18 months, we have determined that direct air capture of CO2 works and that carbon can be stored in our geological formations.

Why, then, should we tackle the CO2 already in the air instead of focusing on reducing emissions? There are two main reasons.

On the one hand, many industrial processes, transportation modes and other technologies cannot be decarbonized in the short, medium or even long term. The only realistic solution for them, at least for now, is to remove the carbon they emit from the atmosphere.

On the other hand, and this is an even more significant reason, humanity has already emitted so much greenhouse gases that, even if we were to achieve net zero tomorrow morning, there would be enough carbon accumulated in the atmosphere to cause global warming that threatens our survival.

Therefore, we must both quickly reduce our current emissions and tackle the CO2 that has already been emitted. In other words, turn off the tap and empty the bathtub.

Deep Sky is not the only organization saying this. Indeed, the most recent report from the United Nations environment program, released a few weeks ago, recognizes that emissions reductions are no longer enough. We're going to exceed the 1.5°C mark. As a result, hundreds of billions of tonnes of CO2 will need to be removed from the atmosphere in order to restore temperatures to acceptable, safe levels.

[*English*]

Deep Sky is already fast at work. Our first facility, Alpha, is located in Innisfail, Alberta. Built in approximately 12 months, Alpha began operations in August 2025.

Five technologies have been deployed to date, with three more to come in the next few months. They include units designed by Canadian start-ups Skyrenu and CarbonCapture Inc., as well as by large OEMs Airbus and GE Vernova.

Thanks to Alpha, Deep Sky achieved North America's first permanent geological storage of CO2 capture directly from the atmosphere and issued the continent's first independently certified direct air capture carbon removal credits.

To be clear, direct air capture remains costly and energy-intensive. Evaluating equipment performance, energy consumption and operating costs in real-world conditions, in summer as in winter, allows Deep Sky to identify the improvements that drive greater efficiencies and reduce costs.

These improved units will eventually be deployed close to permanent storage sites that Deep Sky is developing in Alberta, Manitoba and Quebec, where we are also actively engaging with local first nations and communities to ensure their meaningful participation in our projects. Support for this work includes commitments from the federal government and the provincial governments of Quebec and Alberta and from Canadian public and private investors, such as Investissement Québec, BDC, OMERS, BMO and National Bank, as well as Breakthrough Energy Catalyst and Sumitomo Mitsui Banking Corporation.

Deep Sky Alpha was the first project to qualify for the 60% federal investment tax credit for direct air capture. That tax credit is one of the reasons that Canada is a leading destination for direct air capture infrastructure investments.

In addition to being fiscally attractive, Canada has significant advantages in this emerging field: abundant clean power, suitable geological formations for permanent carbon storage, and a skilled engineering workforce. We have decades of experience developing and regulating complex subsurface infrastructure, including underground gas storage. While permanent CO2 storage has its own technical requirements and risks, we can draw on established Canadian expertise in geology, well integrity, monitoring and environmental protection.

Canada has the expertise to lead and the evidence to move forward. We must now build on that foundation to make permanent carbon removal a meaningful part of our response to climate change while creating lasting economic value here at home.

● (1550)

Thank you. I look forward to your questions.

[*Translation*]

I would also be pleased to welcome you to visit one of our sites.

Thank you.

The Chair: Thank you, Mr. Bouchard.

[*English*]

We'll now turn to Mr. Shapka for five minutes.

Dr. Amil Shapka (Co-founder, No CO2 Pipelines Alberta): Good day. I would like to begin by thanking you for your time and consideration.

My name is Amil Shapka. I am co-founder of No CO2 Pipelines Alberta, a growing grassroots coalition of individuals and organizations opposed to the Pathways project.

Appearing before a parliamentary committee was never on my bucket list. My new neighbour is about to be a 30-inch-in-diameter, 2,000-psi CO2 pipeline, over which I have serious questions and concerns. I've talked to hundreds of people up and down the entire route, from Fort McMurray to Elk Point, and one thing is clear: When on-the-ground Albertans understand what Pathways is, they do not want it.

For starters, this is a CO2 pipeline, not an oil or gas pipeline. Being an asphyxiant and toxic, compressed liquid CO2 poses unique health and safety risks, not the least of which is an unpleasant death. In 2020, a similar pipeline ruptured near Satartia, Mississippi, sending 45 people to hospital. It's interesting to note that the Pathways document “Pipeline safety and emergency management planning” describes the event as a “pipeline leak”. The first responders who arrived to people frothing and lying in their vomit called it a “zombie apocalypse”.

Second, CCS is really toxic waste disposal. This is not the food-grade bubbly in your bubly. Regardless of the method used to collect and transport the CO2, it will contain harmful impurities. The state government of Queensland, Australia, banned CCUS permanently in 2024 over concerns about the potential negative impacts on groundwater. Is our water any less important?

Third, in April and May of this year, several earthquakes with magnitudes of up to 4.2 were experienced northeast of Edmonton and attributed to an adjacent facility using high-pressure CO2 injection. This should raise questions, if not red flags, about whether we should be advancing this project before knowing what the combined seismic impact of having as many as 19 injection wells would be.

Fourth, why are we pouring taxpayer dollars into a project that will at best reduce global emissions by a mere 0.02%? A former Suncor executive and architect of Pathways, Martha Hall Findlay, has publicly questioned spending billions on a project that generates no revenue, with no effect, and we agree.

Many of us who are about to live in its shadow see Pathways serving industry's interests, not ours or the public's. If this is a nation-building project, where's the shared prosperity? This will not create permanent jobs here that you can build lives or communities on. It's going to be another temporary camp, with an outside crew who will leave behind nothing but empty bottles and takeout pizza boxes. We locals assume all of the risk, inherit all of the problems and will receive little or no benefit.

That brings me to this: Who is going to be responsible and accountable for the cumulative impacts of these major projects? The Alberta Energy Regulator is failing everyday Albertans, who are already carrying a heavy economic and environmental burden from an industry that has gifted the next generation 170,000 orphan wells and the unholy mess that is the Fort McMurray tailings ponds, to say the least. These are the tip of an unprecedented disaster brewing in Alberta that no one is willing to take seriously. We have no reason to believe it won't be made even worse by this project and the oil and gas industry's expansions linked to it.

We do not share the government's urgency and feel that this project is being fast-tracked. With a storage hub footprint three times the size of P.E.I., Pathways would be the world's largest. It is unproven at scale and puts life, land, water and taxpayer dollars at risk for no meaningful benefits.

I think we all agree that something needs to be done, but is it this? Why would we do this? Given the Alberta government's opposition to the Impact Assessment Act, allowing Pathways to proceed without being carefully and properly assessed, including with a federal impact assessment, would be reckless, short-sighted and irresponsible.

Again, thank you for this opportunity. I would be happy to address any of your questions.

● (1555)

The Chair: Thank you very much for that, Mr. Shapka.

We'll now turn to questions from members.

We'll begin with the Conservative Party for six minutes with Mr. Ross.

Ellis Ross (Skeena—Bulkley Valley, CPC): Thank you, Madam Chair.

Thank you, witnesses, for your testimony.

Mr. Shapka, I was very intrigued by all the articles I read regarding Pathways, a $16.5-billion project. I'm not sure Canadians understand the reality of what it actually means. We're talking about a pipeline. I think most Canadians thought it was just a simple process of sequestering carbon, capturing carbon and then somehow forcing it into the ground.

I agree with your comments on the lack of environmental assessment. I'd like to talk about safety and about some of the contents that will be going into the pipeline, but parallel to that, I've been reading the comments made by Chief Allan Adam of the Athabasca Chipewyan First Nation in his opposition to this. Granted, we all want an open and transparent process for an environmental assessment, but the Canadian government does owe a fiduciary duty to first nations, not only under section 35 of the Constitution and under the jurisprudence, but also under the Indian Act and the conditions of the numbered treaties.

I don't understand why the Canadian government is reluctant to do an environmental assessment when really the foundational information we talk about is already there in many examples around the world. That should be easy enough to submit into an environmental assessment process. Is there something else that I'm missing in this equation?

Dr. Amil Shapka: No. I agree with you completely. Chief Allan is an advocate. We have indigenous stakeholders, such as Keepers of the Water, that are doing great work for us. We don't understand this. We don't understand why there's such reluctance and resistance here.

You know, it's not red tape; it's an important thing, an environmental impact assessment. We're talking about a project that could potentially be sequestering and injecting carbon for decades and at volumes of an unprecedented scale. I agree with you.

Ellis Ross: I utilized the B.C. environmental assessment, which is provincial, and the federal environmental assessment to gain insight into the complexities of some of the projects that were facing us back in Kitamaat Village regarding forestry, mining and LNG. That's what an environmental assessment is supposed to represent on behalf of all Canadians.

You mentioned something about more going into this than just CO2. Did I hear you correctly? Is that the case? What is going into the pipeline, based on other examples around the world, other than CO2?

● (1600)

Dr. Amil Shapka: Well, in the one in Satartia, there was also H2S. My understanding is that residual hydrocarbons will be captured. It's not food-grade CO2. Then there are things that need to be added to the CO2 to allow it to flow through the pipeline.

It's not food-grade CO2. I'm a layperson. I'm not stupid, but there will be other harmful impurities accompanying that CO2 into the ground. I think that's a fair statement. If someone knows better than me, then I stand corrected.

Ellis Ross: I agree. I'm no expert myself. Trying to weave your way through all of this with the complexities is a tough job for anybody in any position, but I think there are some commonalities between all the people who want answers to this, non-first nations and first nations alike, especially on the groundwater and surface water, for that matter. Water is a big issue back in our area now in relation to AI and data centres.

In another example, you talked about a rupture in a pipeline and a substance getting out. Did that affect water in any form?

Dr. Amil Shapka: There are two things there. CO2 in water forms carbonic acid. As soon as you start mixing the two, you're going to change the quality of the water. My understanding is that the water becomes more acidic. Once injected into the ground, there's greater potential to leach out heavy metals like arsenic and other things that you don't want in your drinking water. Then there's the whole question of what method will be used to transport it and what will actually be included in there.

I was recently doing some research about the Alberta carbon trunk line, which is already happening here. I noticed in the regs that they were allowing up to 2% impurities. Again, I say that cautiously, because I'm not an expert in that stuff, but I'm quite confident in saying that stuff other than CO2 will be going into those pipelines and down into the ground.

Ellis Ross: I get the concern, but it seems like the only recourse for neighbouring communities is to rely on the court cases being proposed by Chief Allan Adam of the Athabasca, whether you do a judicial review or not. That's going to take years. In the meantime, I think that all the neighbouring communities and members—such as you, as well as first nations members—want is some facts.

Has there been any response from the federal government to say, “Yes, we will provide the facts” or “We will consider some type of environmental assessment to alleviate some of the concerns and be transparent and accountable”, for that matter? Has there been any indication of that?

Dr. Amil Shapka: No. We submitted a formal request for an environmental impact assessment way back in March, and we haven't received a response. Industry has been very slow. We're two and a half years into it, and we're just about to have town halls in the affected communities coming up this November.

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

Thank you, Mr. Ross.

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

Will Greaves (Victoria, Lib.): Thank you, Madam Chair.

Good afternoon, colleagues, and good afternoon to our witnesses.

My first question is for Monsieur Bouchard.

[*Translation*]

Mr. Bouchard, thank you for being here today.

[*English*]

I'd like to ask you to speak about carbon pricing. We know that carbon pricing is critical to the success of many of the government's emissions reduction priorities and to Canada meeting its targets. We know, despite some setbacks, that Canada has been a leader internationally on carbon pricing. My province of British Columbia, as you're well aware, was the first jurisdiction in North America to establish a broad-based carbon price, back in 2008. Those were the good old days, as we call them.

I'm wondering if you could elaborate, Monsieur Bouchard, on what the barriers or challenges are that you see to Canada's international participation in carbon markets, and what the federal government can do to increase the amount of capital coming in for Canadian firms trying to compete internationally.

Mathieu Bouchard: Right now, as I mentioned earlier, Deep Sky is focused on volunteer markets, because prices in the volunteer markets, which are public, for direct air capture credits are somewhere between $500 and $1,000 U.S. per tonne. There is a lot more room for us to sell those credits, given the current high cost of the technology.

We're working very fast. The learnings from Alpha and all the data that's being generated are allowing us to fast-track the improvements to the different direct air capture technologies to increase efficiencies and lower the cost of each tonne of carbon we're capturing. Eventually, the goal is to move into the volunteer markets.

Right now, about 35% of emissions across the world are covered by regulated markets. That's going to reach about 50% if current policies are implemented throughout the world. That's 50% by about 2030, which means there's going to be a huge market for CDR, or carbon removal, credits.

Minister Dabrusin announced in September that Canada was going to develop a framework under article 6 of the Paris Agreement. Article 6 of the Paris Agreement allows countries to exchange carbon removal credits, put simply, and would allow a Canadian company like Deep Sky to basically sell the credits being produced here in Canada on international regulated markets. Why is that interesting? That increases the demand for the credits we're producing here at home in Canada, and we're already seeing it from potential clients.

I mentioned that one of our clients is Lufthansa, the German airline. A few more airlines have signed contracts with us or are in the process of signing contracts. What they want is to use the credits they're purchasing from Deep Sky to meet their international obligations under CORSIA.

CORSIA is a system that's been put in place by the International Civil Aviation Organization, which is a United Nations organization based in Montreal. As of January 1, every airline in the world that flies international routes between 134 countries, including Canada, is going to have to meet certain emissions caps. One way of meeting those emissions caps is through the purchase of carbon removal credits.

Airlines, right now, are out in the market looking for these CDR credits, but they need the credits to be certified by the country where they're produced so there's no double counting. Going back to article 6 of the Paris Agreement, that allows countries to set up registries and make sure that any credit sold on the international market is not going to be doubly counted in the selling country's inventory and the buying country's inventory. That's a very important move. We're following this very closely, including with the industry across Canada, because we need to open up these international markets.

Europe is also coming up with its own program for the purchase of carbon removal credits. The European Union has announced that as of 2030, it will purchase 250 million euros' worth of carbon removal credits, and all of those, for now, are going to come from direct air capture, which is the technology that Deep Sky is developing. That means that if we can get a framework under article 6 and we can get an agreement with Europe going—that's something we're pushing, as well, and we had some good meetings last week in Montreal as part of the Canada-Europe summit—it opens up another huge market for Canadian carbon credits.

As I said, we have the geography, we have the technology and we have the clean power to make this happen and turn it into an export opportunity for us and for the country.

● (1605)

Will Greaves: Thank you for that response.

Switching gears quickly in the remaining minute or so that we have, I'd like to ask you what steps you think the federal government could take that would help connect the different regional sectors of strength within Canada related to carbon storage and carbon removal together. For instance, Deep Sky has projects on the Atlantic coast. There's a separate, or at least a distinct, I think, carbon removal and carbon storage sector out here on the west coast. What actions can Ottawa take to help link and strengthen those different regional industries in this space?

Mathieu Bouchard: The provinces and Ottawa need to work together on this. Environment Canada is currently drafting a protocol for the recognition of carbon removal credits from direct air capture. That work has been going on for two years, so we're hoping that we're going to see some results as quickly as possible. We need to move faster. We want to make this happen.

We have to have provinces working with Ottawa, not redoing the work that's been done by Ottawa, in adopting those same standards.

● (1610)

[*Translation*]

The Chair: Thank you, Mr. Bouchard.

Thank you, Mr. Greaves.

Mr. Bonin now has the floor for six minutes.

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

Mr. Shapka, I think you mentioned that Australia has banned carbon capture and storage because of water risks. Did I understand correctly?

Dr. Amil Shapka: I'm sorry, my French is not very good.

Patrick Bonin: Okay. You are supposed to have simultaneous interpretation.

[*English*]

The Chair: Mr. Shapka, if you go to “more” at the bottom of your screen, you should be able to select “interpretation”.

We'll restart.

[*Translation*]

Patrick Bonin: In addition to seeing if it works for Mr. Shapka, I would like to take this opportunity to remind you that the necessary checks should be done before the meeting starts to ensure that interpretation is available.

Mr. Shapka, I will try again. Can you hear me okay?

[*English*]

Dr. Amil Shapka: Yes. Thank you.

[*Translation*]

Patrick Bonin: That's wonderful.

I think you said that Australia has banned carbon capture and storage because of risks to water and water tables. Did I understand correctly? Can you tell us a bit more about that?

[*English*]

Dr. Amil Shapka: Yes. They banned it permanently because of concerns over their groundwater in the state of Queensland, Australia.

[*Translation*]

Patrick Bonin: Was it a process somewhat similar to what the Pathways project is proposing?

[*English*]

Dr. Amil Shapka: I had trouble finding the details. I know the water is the same. It's carbon capture and underground storage. I can't see the technology being any different, but water is water.

[*Translation*]

Patrick Bonin: You talked about risks to human health. I know the Pathways project has not been finalized, but approximately how far away from the pipeline could it endanger the public? Have you estimated the number of people who could be affected along the project's route?

[*English*]

Dr. Amil Shapka: We haven't calculated how many people are affected.

In the references, there is a Keepers of the Water document. In there, we constructed a map showing what we call the hazard zone up and down the 440-kilometre pipeline. The calculations for that were based on the Satartia, Mississippi, rupture or explosion.

Those things vary by region because of temperature, but the health risks could be as far as up to 10 kilometres on either side of the pipeline. The closer you are to the pipeline, the more severe the events are. You can have death. Further out, you get decreasing health effects, but they're up to 10 kilometres on either side.

I would hazard a guess that in Alberta, where it's -30°C in winter, CO2 gas would not move anywhere. I think the scenario would be even more severe, but I don't think that kind of modelling is available.

That is part of our concern in asking for an environmental impact assessment to define those kinds of risks so that those of us living near it know exactly what it means for us.

[*Translation*]

Patrick Bonin: I think you mentioned that you asked the Minister of the Environment, Climate Change and Nature for a federal impact study on the project last March. You still haven't got an answer, as I understand it. For the time being, the government is not answering you.

Is that the case? Can you explain that? How is it that the government is not answering your request?

[*English*]

Dr. Amil Shapka: I have no answer.

We submitted a formal request for an impact assessment to Minister Dabrusin and the IAAC on March 24, 2026. We also asked for feedback on what were then upcoming draft co-operation agreements. I asked for that to be sent to my personal email, because I didn't want it to end up on our No CO2 Pipelines website. To date, we have not received a formal response from the minister.

[*Translation*]

Patrick Bonin: Okay. We should check to see if the committee can follow up on that, to make sure you get an answer. That seems like a useful thing to know.

You mentioned meetings that could be described as public meetings. Who organizes these meetings? It's not government bodies, is it? Is it the companies? Who is holding these consultations, if we can call them consultations?

● (1615)

[*English*]

Dr. Amil Shapka: We did that all by ourselves. We held open houses up and down the line, in every small town. We met with all the local municipal county and city councils. We have done probably 15 or 16 of them throughout the whole area that we think will be affected by this storage hub. Those were all initiated and done by volunteers. As I said, that's as grassroots as it gets.

[*Translation*]

Patrick Bonin: You say that when Albertans know more about the Pathways project, they don't want it. Is that based on what you see on the ground when you talk to people and explain the project to them, or is it based on surveys?

[*English*]

Dr. Amil Shapka: Absolutely. In fact, we've been quite surprised. We've gone into places like Cold Lake and Bonnyville, which have a heavy oil and gas industry. We expected to meet resistance and not be well received, but we had the reverse.

The guys in the coveralls and hard hats, who work in the industry, were quite shocked to hear about this proposal. They agreed with this. They thought it was crazy. At first, they didn't believe us, and then we said, “Well, figure it out yourself. We're just telling you what we know, which is publicly available.”

We have people on the ground working in the industry. Again, these are not expert opinions, but these guys have spent their whole life in oil and gas. They agreed with us wholeheartedly. They thought it was a very bad idea.

[*Translation*]

Patrick Bonin: The government said that its first so-called project of national interest would be the oil sands pipeline, which would transport one million barrels a day and would come with the Pathways project. We'll see if that happens.

Are you concerned to see that the government is giving itself the necessary powers to fast-track projects as it did through Bill C-5 and now wants to do through Bill C-39? Does that worry you in terms of the Pathways project?

[*English*]

The Chair: Give a short answer, please.

Dr. Amil Shapka: I am very concerned about that, especially the link between Pathways and Pacific link, because the two have nothing to do with each other.

The Chair: Thank you very much.

[*Translation*]

Thank you, Mr. Bonin.

[*English*]

We'll now turn to Mr. Bexte for five minutes.

David Bexte (Bow River, CPC): Thank you, Chair.

Welcome, witnesses. This is a very interesting and multi-faceted study. There are a lot of issues, and there are a lot of things we don't understand well. I hope you can share some clarity.

Mr. Bouchard, I wonder if you could supply some of that clarity.

Where does your system rank in terms of cost-efficiency? I don't need you to be too specific, but where does it rank in class in terms of dollars per tonne of CO2 removed?

Mathieu Bouchard: Right now, we're on the higher end. As I said, the voluntary market price is between $500 U.S. and $1,000 U.S. per tonne, but what you get in return is high integrity and guaranteed removals, because we can actually track—

David Bexte: Yes, every system has integrity and proof—"I guarantee."

Mathieu Bouchard: I know. I'm just telling you.

David Bexte: It makes me question things a bit. This feature is consistent among start-ups, irrespective of industry.

Where did the start-up funding come from for this? What was the structure that brought this into fruition?

Mathieu Bouchard: I listed our shareholders. We have both private and public ones. We have Investissement Québec, which is the investment arm of the Quebec government. We have BDC. We have OMERS. We have two banks, National Bank and BMO. We have the second-largest Japanese bank, the Sumitomo Mitsui Banking Corporation. That's—

David Bexte: What proportion of that was public funding?

Mathieu Bouchard: Well, the majority was private because we got $40 million from Breakthrough Energy Catalyst, which is a U.S. fund that—

David Bexte: Is it very small public funding?

Mathieu Bouchard: Overall, it was probably half and half. Then there's the investment tax credit that—

David Bexte: That's not start-up capital. That's revenue or ongoing operating—

Mathieu Bouchard: No, the investment tax credit is capex, so it's—

David Bexte: Okay, that's off capex.

When you're operating, then, how much money will come from the Treasury to buy credits? Is it nothing?

● (1620)

Mathieu Bouchard: No.

David Bexte: This is net zero to the government.

Mathieu Bouchard: The only public purchase of credit right now is from an RFP that's ongoing by the federal government to purchase credits to offset its own emissions. We're still waiting for the outcome of that process. It was in budget 2024, if I remember correctly.

David Bexte: In the interest of time, you said that it's a high-cost solution right now. How low is the theoretical limit that you can go to? I presume you have a projection.

Mathieu Bouchard: Yes. The goal is to get to below $200—

David Bexte: The goal is below $200 per tonne.

Mathieu Bouchard: —by somewhere in the early 2030s, at which point we get to regulate prices.

David Bexte: The market price today is what?

Mathieu Bouchard: As I said, it's between $500 U.S. and $1,000 U.S. per tonne.

David Bexte: That's the market price today.

Mathieu Bouchard: Yes. That's on private markets. There's no government money.

David Bexte: There's no government money. All right.

How important would a beneficial-use component be to the system—for example, if the CO2 was used for some other economic benefit that would make a more positive cash flow right away?

Mathieu Bouchard: It depends, because it really depends on the price. You can use the CO2 to make low-carbon concrete. The pricing there allows you to sell CDR credits at about the same price as we do.

David Bexte: Presumably, the purity is high enough to make food-grade CO2, and we could make Coca-Cola with it.

Mathieu Bouchard: Yes, but it's probably a very expensive way of producing food-grade CO2.

David Bexte: My point is that with no revenue model other than traded credits, there's no other beneficial economic use for the system, and the alternate beneficial use of CO2 would have a huge impact on project economics.

Mathieu Bouchard: If there were another use that could bring us some revenues, absolutely.

David Bexte: That means other carbon capture and carbon utilization systems that provide storage.

Mathieu Bouchard: Yes, absolutely. Right now, as I said, the price is better.

David Bexte: Thank you very much.

Mr. Shapka, I'm trying to get an idea of the scale of what you're talking about. With regard to the pipeline route that you imagine is going to happen, how many people are involved? How many people would be encompassed by the 10-kilometre or 20-kilometre corridor that you envision?

Dr. Amil Shapka: As a best guess, I would say maybe 10,000. If we use the 10-kilometre hazard zone, that thing is coming probably six kilometres east of a town called St. Paul, and then there are communities like Mallaig. I would say 10,000 people.

David Bexte: Do you think there are other potential economic use cases for CO2 that don't....

I apologize. I think we know I'm done.

Voices: Oh, oh!

An hon. member: You have to turn the timer off.

The Chair: That's quite the alarm, Mr. Bexte. It's musical.

David Bexte: Thank you very much.

The Chair: We'll go over to Mr. Watchorn.

[*Translation*]

You have the floor for five minutes.

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

Thank you to the witnesses for being here today. I'm going to start with Mr. Bouchard.

Mr. Bouchard, I'm an engineer, so I like anything technical. I would like you to explain a bit about how your direct air carbon capture technology works and how soil carbon injection technology works.

Mathieu Bouchard: Direct air capture, to boil it down to its simplest form, involves a large fan that pushes the ambient air onto a filter. There are different types of filters: liquid sorbents and solid sorbents. You won't be surprised to learn that liquid sorbents, given the Canadian climate, don't work as well in the winter. However, we are very capable of getting solid sorbents to work. One of the units we have even operated below -20°C all winter on the Deep Sky Alpha side. Therefore, it is possible.

Once it goes through the sorbent, there's a chemical reaction. Amines are typically being used right now. They capture CO2. Then you use heat to regenerate the sorbent and extract the CO2. The CO2 is purified. Then it will be injected into deep geological formations.

There are two types of methods currently used to store CO2. What we find more in western Canada and the Prairies is injection a few kilometres under the ground, so between two and five kilometres under the surface, in highly porous sedimentary layers where CO2 can be injected directly in a supercritical form. As long as there is bedrock over the top that covers everything and acts like a plug, it will keep the CO2 in that state for hundreds or thousands of years. In fact, we guarantee the irreversibility of the process for 1,000 years.

In Thetford Mines, Quebec, mineralization is being explored, which is a different method. CO2 is mixed with water. That creates a solution that is injected directly into the bedrock, between 800 and 1,000 metres below the surface. It's the same rock that contains asbestos and is very rich in magnesium. A natural reaction occurs, transforming the CO2. It reacts with magnesium to become magnesium carbonate, an extremely stable mineral that will remain inert. Through that process, it takes about 24 months for all the CO2 to be mineralized.

● (1625)

Tim Watchorn: Other witnesses here have talked about risks to drinking water. Do you think that in the future, there could potentially be a redilution or a chemical reaction with carbonic acid that would create a risk for the water table?

Mathieu Bouchard: Of course, we absolutely have to avoid the water tables. However, given the distances under the soil surface where we carry out the process, it is well below the water tables. In Thetford Mines, for example, the water table is, at most, 40 metres below the surface, whereas our process occurs 800 metres below the surface. However, we have to make sure that the wells are properly designed to prevent contamination where the wells go through the water tables.

That said, we do need to avoid the water tables. It's the same thing with sedimentation.

Tim Watchorn: Okay.

As for investment tax credits, what I understand is that, to get the 60% tax credit, you need an appropriate regulatory location. Today, that would be Alberta, British Columbia and Saskatchewan.

I also understand that Quebec has passed Bill 17, which allows for a pilot project in Quebec. That would be in Thetford Mines.

Could you claim the 60% federal tax credit under the bill or not?

Mathieu Bouchard: No, that won't be possible yet.

What the Income Tax Act requires is a comprehensive framework that has to be certified by Environment and Climate Change Canada. What Quebec authorized as of June for pilot projects is not enough for us to receive the tax credit.

We are starting to work with the new Quebec government to get it to put all this back on the table and move forward as quickly as possible to enable us to develop a project in Quebec.

Tim Watchorn: Okay.

Are there any barriers at the federal level to achieving all this, or is it just provincial for the time being?

Mathieu Bouchard: We are not federally regulated for carbon storage or capture.

Tim Watchorn: In Quebec, there is the cement plant in Port-Daniel—Gascons, which is one of the biggest carbon emitters in the province. Is your technology scalable to a cement stack or anything like that?

Mathieu Bouchard: No. In our case, the technologies are different. I know that you will be hearing from a representative of Svante Technologies later. That company has a technology for capturing carbon at the source, whereas our technologies are really for direct air capture of carbon.

However, we can co-locate storage, because it's the same molecule. We can certainly store industrial CO2.

Tim Watchorn: In terms of electricity, how many megawatts does your technology need to capture a tonne of CO2? Is it calculated in kilowatts?

Mathieu Bouchard: I'll do the math after, because it's hard to tell you off the top of my head.

For a 30,000-tonne project, like the one being considered for Thetford Mines, we need 15 megawatts of power.

We would have to do the math for energy consumption. You can do the math after that.

[*English*]

The Chair: You can submit it later, maybe.

[*Translation*]

Thank you.

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

Patrick Bonin: Thank you, Madam Chair.

Mr. Shapka, you mentioned water and health risks and issues related to earthquakes. In your view, are there any other significant risks that we should be aware of? Could you possibly send the committee a document explaining your concerns or documentation on those risks?

[*English*]

Amil Shapka: Yes, I'll gladly do that.

[*Translation*]

Patrick Bonin: Thank you.

You mentioned a request for an impact assessment that was made to the minister. Can you also submit the letter that has remained unanswered, as I understand it, since last March?

[*English*]

Dr. Amil Shapka: Yes, I'm happy to do that also.

[*Translation*]

Patrick Bonin: Okay, thank you.

Mr. Bouchard, thank you for being here.

One question remains. Do you think that we can continue to expand oil and gas production in the country and that, using your technology, we'll solve the problem by capturing CO2? Could it handle that expansion?

Mathieu Bouchard: I won't get into the political debate. As I said earlier, our position is that we need to turn off the tap and empty the bathtub. The faster we do the first one, the faster we'll meet climate objectives.

Patrick Bonin: When you talk about turning off the tap, what do you mean?

Mathieu Bouchard: I mean stopping emissions as quickly as possible.

Patrick Bonin: Thank you.

There are still financial issues. The government has only so much money. There's always a debate when it comes to determining how much to invest in developing carbon capture and storage technologies in order to perhaps lower costs, compared to the option of reducing emissions immediately, which also takes energy.

What do you think is the balance that needs to be struck?

● (1630)

Mathieu Bouchard: There is indeed a trade-off. The technology is still being developed, so we don't need to put all the electricity into direct air capture of carbon at this time. In any case, we don't have the technology to deploy it at scale.

What we are seeing is a curve that will evolve gradually. For example, in Quebec's integrated energy resource management plan, the idea is to deploy between seven million and eight million in carbon capture and storage capacity by 2050. Obviously, it won't be done overnight; it has to be done gradually.

Patrick Bonin: When you talk about seven million to eight million, what exactly do you mean?

Mathieu Bouchard: It's between seven million and eight million tonnes a year. I'm sorry, I forgot to specify that it's tonnes.

We're talking about a capacity of seven million to eight million tonnes a year. It will be done gradually. I see it as a bit of an exponential curve: We're going to start slowly, we're going to learn to do it properly and safely and, gradually, we're going to deploy the capacity up until 2050.

Patrick Bonin: Thank you.

The Chair: Thank you.

[*English*]

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

Branden Leslie: Thank you, Madam Chair.

I'll start with Mr. Bouchard.

How has Deep Sky managed to be so successful with more or less only private investors when everybody else seems to be very reliant on federal or provincial money?

Mathieu Bouchard: We're basically de-risking the technology for investors. In most cases, companies will rely on their own single technology. If that technology doesn't work, investors are out of luck and the company is out of business.

As I said earlier, we have five technologies deployed right now in Alberta. We have three more coming. We have technologies from large companies and from start-ups, and we're iterating with our technology providers.

Branden Leslie: Your company aside, when we look at the whole of this industry, if it's too risky for private investors, why should taxpayers be the ones we continuously look to as the major funders of these projects?

Mathieu Bouchard: I can't speak for the rest of the industry. I think the industry has to assume part of the risk. That's the way we're doing it, and I think we can be a model for others so that it can be developed.

We're going to need some public money. I'm not going to pretend that's not the case. This is an emerging industry, and it's the same case for every emerging industry. We need some public capital to get it going, to de-risk some of the investments and then to scale it up and allow the private sector to fully fund it.

Branden Leslie: My understanding is that you've worked in government in the past. I'm curious. At the time that changes were made to the Impact Assessment Act, why were CCUS projects never automatically designated for an impact assessment review?

Mathieu Bouchard: I can't answer that. I don't know.

Branden Leslie: It just seems strange. I tried to look through the history to find out if it was part of the recent regulatory pullback of interprovincial and other elements from the review process, but it seems as though this was never included.

Mathieu Bouchard: That's my understanding, but I don't know why.

Branden Leslie: That's fair enough.

Should projects of at least a certain scale go under some sort of.... I understand the Alberta regulator said they don't, and it reserves the right to, in future, put forward a necessity for projects to go under review. I assume that's if you or others expand the scope of your projects.

When I look at Pathways, the scale of it is massive. Should a project of that scale go through a formal impact assessment, whether it is federal or at least provincial? I would suggest it should be federal.

Mathieu Bouchard: You have the agreements now between Ottawa and the provinces on project assessment. In Quebec—I'm more familiar with that situation—there are going to be thresholds, and it's going to be subject to a full impact assessment above a certain threshold. Alberta makes its own choices. I'm not as familiar with Alberta.

Branden Leslie: In the case of Quebec, do you know if they are basing it on a tonnage threshold? What is the threshold they're looking at?

Mathieu Bouchard: They haven't announced it yet. All they've told us, privately, is that they're going to put in place some form of threshold.

Branden Leslie: Okay.

You mentioned during your commentary the EU and the regulated market piece there. What in the existing Canada-EU free trade agreement is not included such that it would require us to have associate membership within the EU to have access to sell your direct air capture credits into the EU marketplace?

Mathieu Bouchard: We're not considered a good or a service in trade. We're outside of this, which is good. We're not subject to tariffs.

However, what we would like is the recognition of Canadian credits for the European Union ETS system, which is their trading system for carbon credits. Right now, they've announced they would be buying credits that are produced in the EU starting in 2030, and then they would open it up to international providers as of 2035. What we want is for Canada to be included as quickly as 2030, not to have to wait—basically get a head start. That's what we're looking for.

● (1635)

Branden Leslie: Is that the main emerging market? Is there a risk that you're going to have protectionism of these industries by the EU, by BRICS nations and by others? You mentioned trying to get in there as an early bird, so to speak. Is protectionism likely in this particular market?

Mathieu Bouchard: I hope not, because I think there's more to gain for both sides. There are many ways to generate CDR credits. There are cheaper ways, maybe, that can be developed in the EU that Canada can use, and vice versa. If you increase the size of the market, it will benefit both sides because we'll be able to maximize the value and lower the cost for Europeans and Canadians.

Branden Leslie: You mentioned entering the voluntary market. Can you quickly explain what that means versus regulated?

Mathieu Bouchard: Right now, companies like Microsoft have announced goals to reach. In the case of Microsoft, they are extremely aggressive goals, and they're using CDR credits so they don't have a regulated obligation to purchase the credits. They do it on their own. That's the difference.

Branden Leslie: Thanks.

The Chair: Thank you, Mr. Leslie.

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

Bruce Fanjoy (Carleton, Lib.): Thank you, Chair.

Thank you, witnesses.

Mr. Bouchard, you've talked about five existing technologies, with three more on the way. Are these variations of a core model applied in slightly different ways, or are these completely separate technologies?

Mathieu Bouchard: There are a lot of variations and differences between the different technologies. As I was explaining earlier, sorbents make a big difference. You have liquid sorbents and solid sorbents. Then there's the way the technologies are designed and the way the CO2 is extracted from those filters, from the sorbents. There are lots of variations, yes.

Bruce Fanjoy: What are the considerations that make one technology work better than another?

Mathieu Bouchard: The fundamental difference between solid and liquid sorbents is that liquid sorbents don't work in very low temperatures because they freeze. That's one issue for Canada. With the way the systems are designed, they can operate better in certain conditions. Some technologies will operate better in cold climates, and some in warmer climates. Humidity has a huge impact, and it has a huge impact on the chemical processes and on the moving parts. The more moving parts you have.... What we're seeing right now is that the fewer moving parts, the better. Let's put it that way.

Bruce Fanjoy: Is the technology more at the direct air capture level as opposed to the sequestering underground level, or does it work in both?

Mathieu Bouchard: There are two different ways of approaching sequestration and multiple ways for capture.

Bruce Fanjoy: Could you comment on three factors with respect to the technologies: how proven they are, how scalable they are and how economic they are?

Mathieu Bouchard: On the proven side, we've demonstrated over the last year that it can be done. We have technologies that have performed extremely well and up to the specs that were provided to us. That can work. Now we're working on improving them.

In terms of cost, energy consumption is still high. That's our highest operations cost, and we're working very actively to lower those costs. Now we have second generation units that are coming to the site over the next few months, among the ones that I described earlier, and it's going to be extremely interesting to see how they perform, because on paper at least and in the labs, they've performed much better than first generation technologies. It's like any technology. If you look at your cellphone from 1981, it's nothing like what we have right now.

Bruce Fanjoy: I didn't have a cellphone in 1981.

Are there any natural limits to scalability that you're finding?

Mathieu Bouchard: Some have chosen to run before they can walk. We've chosen to start very slowly. The capacity of Alpha is 3,000 tonnes per year. The next stage would be 30,000 tonnes per year, so 10 times more, and then we'd move to 150,000 tonnes. We're taking all of these learnings to deploy slowly but exponentially, eventually, at a larger scale.

Bruce Fanjoy: That leads to my next question. If we put something in the ground, it must displace something that's already there. What's being displaced in this case?

● (1640)

Mathieu Bouchard: In the case of sedimentary storage, these are porous rocks, so we're using the natural pore space within the rock to store the CO2. Eventually, any well has a set duration depending on how porous the rock is. It can last 20 years, 30 years or 40 years in certain cases, but at a certain time, you have to cap the well and keep it closed because you've filled all the space. When you're looking at mineralization, we're using natural crevices, the natural fault lines within the bedrock. It's the same thing. As the carbon mineralizes, eventually you'll fill all those cracks, and you'll have to move to another well.

Bruce Fanjoy: I'm not a scientist, but those cracks aren't empty. They would have air trapped in them.

Mathieu Bouchard: There's air, yes, exactly.

Bruce Fanjoy: Air would be vented in this scenario. Is that correct?

Mathieu Bouchard: Yes. It would be a slow process. In terms of mineralization, you wouldn't feel air coming out of the ground. It's the same thing for sedimentation. We're very deep underground, and we actually want to avoid any connection between the zone where we're injecting and the surface, because CO2 would also be coming out at that point.

Bruce Fanjoy: Okay. Thank you.

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

Thank you to our witnesses, Monsieur Bouchard and Mr. Shapka. We really appreciate your time this afternoon.

We'll suspend briefly to switch to our next set of witnesses. Thank you.

● (1640)

_____(Pause)_____

● (1645)

The Chair: We're going to get started on our second hour of witness testimony this afternoon on carbon capture, utilization and storage technologies. All three witnesses for this hour are online with us today.

I'll give a warm welcome to all of you. Thanks for being with us.

We have with us Anne-Céline Guyon, energy and climate analyst, Nature Québec; Erik Nickel, president and chief executive officer, Petroleum Technology Research Centre; and Claude Letourneau, president and chief executive officer, Svante Technologies.

You'll all get up to five minutes to provide some opening remarks. I have a little time card here for when you're approaching the end. Just wrap up when you see it. That's for the question period to follow also.

I will begin with Madame Guyon.

It's over to you for five minutes, please.

[*Translation*]

Anne-Céline Guyon (Analyst, Climate-Energy, Nature Québec): Good afternoon, Madam Chair and members of the committee.

First of all, I would like to thank you for inviting our organization to testify on a subject of great importance in the fight against climate change, namely carbon capture and storage technologies.

Allow me to introduce myself: I am Anne-Céline Guyon, climate and energy analyst for Nature Québec, which is a national nonprofit organization that has been working on the conservation of natural environments and the sustainable use of resources since 1981.

Right off the bat, we want to make it clear that Nature Québec is not opposed to carbon capture, utilization and storage, or CCUS, technologies. These technologies have a place in mitigating greenhouse gas emissions, but their success depends on a realistic understanding of the role they can play. We need to approach this issue rigorously and based on science, not on an incomplete vision of the climate crisis that undervalues the responsibility of fossil fuels and places all our hopes in unrealistic technosolutionism.

Our position is based on that of the Intergovernmental Panel on Climate Change, or IPCC. Yes, carbon capture and storage technologies have a role to play, but mainly to offset so-called residual emissions, which are those that are hard to mitigate. These technologies can therefore be useful in certain industrial sectors, such as steel or cement production, where decarbonization remains complex. In no way—we insist on this—can these technologies justify the status quo of Canadian fossil fuel production, let alone its expansion.

To understand why, the International Energy Agency's 2023 report “The Oil and Gas Industry in Net Zero Transitions” is particularly illuminating. According to the report, if oil and gas consumption continues as expected based on current policies, no less than 32 billion tonnes of carbon would have to be captured by 2050 to limit warming to 1.5°C. In addition, the necessary technologies would require 26,000 terawatt hours of electricity in 2050, which is more than the 2022 global demand—

● (1650)

The Chair: I'm sorry to interrupt you, but could you speak a little more slowly for the interpreters?

Thank you.

Anne-Céline Guyon: Okay.

In addition, it would require annual investments of $3.5 trillion.

This observation summarizes the three major issues in the development of CCUS technologies: their effectiveness, their energy consumption and the necessary investments.

First, let's talk about their effectiveness.

Globally, we emit about 40 billion tonnes of CO2 per year, while existing technologies enable us to capture about 45 million tonnes, barely 0.1%.

Here in Canada, Deep Sky, whose representative we just heard from, says it aims to capture 30,000 tonnes a year. As for the Pathways project, it plans to reduce emissions from the oil sands sector by 16 million tonnes of CO2 per year starting in 2035. This represents only 7% of current oil sands emissions, which total 92 million tonnes. The province, as we know, also aims to double its production by 2035.

Simply put, you just have to do the math to see that these reductions won't be enough to offset such an expansion, especially since 80% of emissions come from combustion, not production. So this is more of a greenwashing exercise than a genuine decarbonization strategy.

Second, let's address the energy issue, for which two aspects must be considered: energy sources and energy consumption.

For these technologies to actually help reduce emissions rather than generate more, they must be powered by renewable energy sources. They must not, for example, be powered by natural gas.

That brings us to the second aspect: energy consumption. We know that these technologies are particularly energy-intensive.

So there is a trade-off here. We must ensure that new renewable electricity generation is used primarily to decarbonize Canada's various economic sectors rather than to attempt to green an industry that will never be clean. This new type of generation also costs more than before, and poor energy trade-offs could lead to higher electricity rates for Canadians, which would obviously exacerbate the cost of living crisis.

We therefore warn you that, if these realities are not taken into account, Canadians risk suffering a triple blow: the impacts of climate change, the costs of loss and damage and rate hikes resulting from poor choices in the allocation of energy resources.

Third and last, there is the issue of investment.

For Nature Québec, it is essential to distinguish between support for research and development, particularly in universities, and the granting of billions of dollars in tax credits to an industry that forecasts no less than $90 billion in profits in 2026—profits fuelled by the war in Iran.

The federal tax credit for CCUS technologies could cost Canadian taxpayers $15 billion by 2035. That's in addition to the approximately $30 billion for the Pathways project and the $43 billion for the Pacific Link pipeline project.

These are substantial sums that the government is preparing to spend on an industry that, despite having been aware of the harmful effects of its activities on the climate as early as the 1960s, has spent billions of dollars on disinformation campaigns.

We are raising a moral and ethical issue here. It's not just the carbon that will be captured; it's first and foremost our tax money. Yet it is not up to Canadians to pay for the decarbonization of the country's most polluting sector. The sector itself must take responsibility.

If we want oil and gas companies to invest on their own in reducing their emissions, the most effective way is well known. It involves implementing strong carbon pricing for the industry. Every tonne of greenhouse gases emitted must carry a cost high enough to directly incentivize companies to fund emissions reductions out of their own profits. Yet, once again, the federal government has weakened the system through its agreement with Alberta.

In conclusion, we urge the committee to exercise caution and ask that it evaluate the development of CCUS technologies based on their true role in mitigating greenhouse gas emissions—that is, reducing residual emissions that are difficult to eliminate—rather than justifying the expansion of the fossil fuel sector.

Finally, let's remember that nature also plays an essential role in carbon capture and storage, and at a lower cost, but we of course still need to protect natural environments, restore degraded ecosystems and improve certain practices in sectors such as agriculture and forestry.

Thank you.

● (1655)

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

[*English*]

We will now turn to Mr. Nickel for up to five minutes.

Erik Nickel (President and Chief Executive Officer, Petroleum Technology Research Centre): Thank you very much, Madam Chair.

My name is Erik Nickel. I'm the CEO of PTRC. We are a not-for-profit organization that has been around for 27 years with the express goal of understanding the subsurface as well as we can. My personal background is in subsurface sedimentary geology and the understanding of how fluids—oil and gas, CO2, hot water—flow in the ground under our feet.

Today, I want to talk about what we've learned from studying the S in CCUS—the storage part.

We've been studying CCUS for 25 years as an organization, as have I, having done a master's degree in CCUS in the early 2000s. We've been looking at this from the standpoint of enhanced oil recovery with CCUS and the standpoint of deep saline storage, as we heard about earlier in the day in testimony.

CO2-enhanced oil recovery has been going on since at least the 1970s in west Texas and places like that. When we were confronted with the opportunity to look at this as a CCUS project instead of just CO2 EOR, we took it, in the early 2000s. The study we did was on a field called Weyburn in southern Saskatchewan.

This begs the question: What is the difference between CO2 EOR and CCUS? Effectively, the difference is that the CO2 is studied and tracked with what we call the MMV—the measurement, monitoring and verification—of the CO2 in the subsurface such that we can ensure that it stays where we say it will stay, that there is the right volume down there and that we can verify that it's not going anywhere.

At this point, it's good to point out a technical point. When we inject these tonnes of CO2—you'll hear a lot about tonnes of CO2—we inject them in what's called a supercritical state, which is to say that they are compressed and heated to a state where the CO2, at one atmosphere, is the size of a house. One tonne of CO2 at a supercritical state is the size of one of the chairs you're sitting in. We're trying to find efficiencies in storage so that as much CO2 as possible can be stored underground.

The risks of underground storage are less from geology. We understand geology and the layers, especially in the western basin, where I am. The risk is more from abandoned wells, legacy wells and those sorts of things. A lot of risk analysis and work go on around those.

When we talk about CO2 EOR, a rule of thumb to remember is that one tonne of CO2 will garner about three extra barrels of oil. If you put a tonne of CO2 down there, three barrels of oil that you didn't have there before are going to be there. This is problematic if you look at it from that side of the equation. From the other side of the equation, you are starting with a barrel of oil that has one-third of a tonne less CO2 intensity when it's produced. Obviously, there are arguments for and against this, and I'm the geologist who is here to tell you how it works.

About half the CO2 remains entrained in the rock after you get oil out of a reservoir using CO2 EOR. However, the other half comes up in the oil. This CO2 is then recaptured from that oil and reinjected. Why? It's because an oil company has paid probably somewhere between $20 and $40 for that tonne of CO2 to net them the extra three barrels of oil. They don't want to lose any of that to the atmosphere, not to mention that it would not satisfy the conditions of MMV that we place upon them. It's in the company's best interest to recapture and reinject the CO2, run it through the reservoir again and get another three barrels of oil for that tonne of CO2.

The other part of storage is deep saline injection. In Saskatchewan and Alberta, this means a very deep formation called either the deadwood or the basal Cambrian sandstone, at depths of up to 3,000 metres. We do this as part of SaskPower's Boundary Dam CCUS project, where we do a lot of the same measurement, monitoring and verification to ensure that the CO2 is staying where it's supposed to go, that it's not leaking up the wells and that it's not leaking up to geological features in the subsurface.

● (1700)

We are now able to track and view a CO2 plume in the subsurface, using various technologies. We have sites in southern Saskatchewan that serve as field laboratories for the testing of these kinds of technologies.

Thank you very much.

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

[*Translation*]

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

Claude Letourneau (President and Chief Executive Officer, Svante Technologies): Good afternoon, Madam Chair and members of the committee. Thank you for the invitation.

[*English*]

I'm the CEO of a Vancouver-based company called Svante. We have the ambition to become the world's first fully integrated carbon management company. We manufacture the equipment. We supply the carbon capture technology and the infrastructure that pulls CO2 out of industrial exhaust or directly out of the atmosphere, and then we lock it away permanently underground.

This industry is called the carbon management industry, which is similar to the waste management industry. We collect, transport and store the physical molecule of CO2. We're building a carbon management system for the planet, offering an engineering solution, working in tandem with nature, and generating industrial carbon credits and carbon removal credits—referred to as CDR.

In the last 10 years, we have raised $800 million of private funding with less than 10% of taxpayer money, invested $200 million in a state-of-the-art manufacturing facility and created 300 highly skilled jobs in Vancouver. Our Redwood manufacturing facility is the world's first gigafactory to make a solid filter for CO2 capture for both point source and direct air capture. We are all in, and failure is not an option.

We cannot achieve this without the support of all levels of government to commercialize. We have two projects in the deal book of the Canada investment summit that took place in Toronto: the North Star BECCS project, which is with the MLTC first nation in Saskatchewan, and the Northern Spruce pulp and paper CCS project with Mercer in Alberta. Both projects are generating CDR credits, and they represent an investment opportunity of about $1 billion.

The challenge is CO2 monetization. Aside from the massive deployment needed of renewables and the electrification of our energy system, we need to pay attention to rewiring our industrial sector by reducing CO2 emissions, not by reducing our energy choices, to make products. I call this the “green industrial transition”. The impact of extreme weather conditions is now becoming a shocking reality to some of us, with the social cost to society reaching $200 to $300 per tonne of CO2.

CO2 monetization remains one of the key barriers to the rapid deployment of carbon management at scale. In other words, who pays for cleaning up the atmosphere or to avoid polluting it? Right now, it's primarily governments around the world paying the bills for extreme weather damages. Ultimately, it's all of us. There are damages to our property, and insurance, taxes and costs of products and services are going up.

Why would anyone pay anything for something they cannot smell, see or do anything with? That's the molecule of CO2. The debate we have as a society is on putting a price on carbon. I think we need to change the public narrative to address the fact that people are still concerned about the impact of extreme weather conditions on their lives. People understand the need, and they would rather support lowering the carbon intensity of the products and services we buy instead of putting a price on carbon.

The price on carbon should be embedded in products and services, like the cost of waste management for our rubbish. The same annual budget of $2,000 per year that we pay to our municipality for rubbish is equivalent to about $200 per tonne of CO2.

What we need are industrial policies. The clean fuel regulations, or the CFR, are an example. They are a national industrial policy designed to lower the carbon intensity of the fuel supply in Canada and are paid for by the Canadian fuel suppliers of gasoline and diesel. The CFR regulates the life-cycle carbon intensity in grams of CO2 per megajoule, well to wheels, with the goal being to lower it by about 15% by 2030. To achieve this, fuel suppliers are blending fuel at about 90 grams per megajoule with biofuel at 30 grams per megajoule. If we were to integrate CDR credits into the CFR market, it would deliver a net-negative tonne of biogenic CO2 that no fuel switch can provide.

● (1705)

Canada has all the resources required to be a global leader in durable CDR. Why is that not happening? The constraint is not technology. It's not resources. It's not capabilities. It's demand. It's the absence of long-term CDR offtake and the revenue certainty it provides. The endgame for the CDR is policy-driven demand—that is, government directly buying CDR or otherwise mandating other emitters to buy. The world will need gigatonnes of CDR, which represents $100 billion a year in spending.

I have two recommendations to make. The first recommendation is to integrate the CDR into the CFR, the clean fuel regulations. The second recommendation is to stop treating carbon as a liability. Start treating it as a sovereign asset class for international trade.

Thank you.

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

We will now turn to questions from members.

We'll begin with Mr. Bexte for six minutes, please.

David Bexte: Thank you, Madam Chair.

Welcome, witnesses. Thank you very much for your willingness to be here. We're learning a lot about the landscape of carbon capture, utilization and storage.

Mr. Nickel, I would like you to expand a bit on the Weyburn project, if that's all right. Can you describe the nature of the beneficial use? You already described three barrels of oil per tonne. How important is that to project economics related to carbon capture?

Erik Nickel: They're purchasing CO2 at a cost of probably about $20 to $40 a tonne, most of it coming, incidentally, from the United States, from a coal gasification plant in North Dakota. With the oil they're selling for $90 a tonne, this is working out quite well. It is a field that otherwise would have declined to almost zero production years ago.

What CO2 does is that it pulls more oil out of the rock. It doesn't push it like a bulldozer or something. It mixes with the oil, devisscosifies it and allows it to move out of the rock. For an expenditure of $40 a tonne, they get an extra three barrels of oil. Over the course of the life of that field, they've injected 44 million tonnes of CO2 and produced in the order of 120 million incremental barrels of oil.

David Bexte: Your background is geology. You have a great deal of experience and familiarity with the western Canadian sedimentary basin. I do as well. I grew up in western Canada, in Alberta, and worked in the oil and gas industry for a long time. I wonder if you could comment a bit about the scale of the CO2 enhanced oil recovery, or EOR, opportunity in western Canada.

● (1710)

Erik Nickel: There is quite a lot of opportunity. This works well at the Weyburn field. It is quite a large field. It has approximately 1,000 or so wells. This also works in the field right next to it, the Midale field, which is about half the size. There are now a couple of fields under CO2 flood in Alberta as well.

In that region, especially in southeast Saskatchewan, with fields that have proven viable for CO2 EOR, there would be more opportunities for it. The limiting factor is always the availability of CO2. From a technical standpoint, many fields and companies would be lining up to buy CO2 if it were made available.

David Bexte: By how many factors or orders of magnitude could the EOR industry comfortably increase in western Canada?

Erik Nickel: You'd have to do a field-by-field study—

David Bexte: You're an expert. Just estimate it.

Erik Nickel: It would probably be at least an order of magnitude more oil and gas production.

David Bexte: The point I'm trying to get at here is that there is a very clear beneficial use case for CO2. Society could gain quite a bit of economic benefit without the need for a direct government subsidy and still have the impact of capturing a great deal of CO2 in the subterranean formation. Is that a reasonable premise?

Erik Nickel: It is, provided the cost of CO2 remains at $20 to $40. However, what we're finding is that in the United States, for storage they get a tax credit of up to $80 a tonne, I believe. It makes more sense for them to store it there than it does to sell it to Weyburn, for example. That contract may be ending soon as a result of that.

David Bexte: Are you saying that the government's actions in this way are interfering with how private industry could store CO2 without any government subsidy at all?

Erik Nickel: When it comes to the comparison between the United States and Canada, yes, I am. Right now, Canada does have the ITC applicable at 50% towards the production of oil. However, in terms of the economics of setting this up, it's not that they can put a $30 tonne of CO2 out and get three barrels. There's a lot of capital expenditure, obviously, in the capture part and the preparation of the wells for all of this. The ITC definitely helps sway the economics in favour of CO2 EOR.

David Bexte: If you have any reports, could you table a listing of the opportunities in western Canada and the total potential of them and submit it to the committee as soon as possible?

Erik Nickel: Yes.

David Bexte: I want to make sure we get right down into the weeds on what the real benefits are of CO2 EOR compared to virtual benefits that have no immediate direct economic benefit.

With the scale of CO2 capture possible in western Canada, whether it's point source or direct air capture, can you apply that filter? How much potential is there in the western Canadian sedimentary basin, not just in the Williston basin?

Erik Nickel: I believe there are up to 40 million tonnes a year of capture available. When you do the rough calculation, that's another 120 million barrels of oil a day, approximately. What Weyburn has done in 25 years, we could do in a year with efficient scale-up.

David Bexte: This could contribute directly to Canada becoming an energy superpower.

Erik Nickel: Absolutely.

The Chair: Your time is up. Thank you, Mr. Bexte.

[*Translation*]

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

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

Thank you for being here, Ms. Guyon. I've noted your opposition to CCUS technologies for fossil fuel production.

However, do you think there's a role for CCUS technologies in the cement sector? I think I heard you mention that briefly. I'm thinking specifically of McInnis Cement in Quebec. I'm curious to hear your opinion on that.

Anne-Céline Guyon: As I said in my remarks, we do believe that CCUS technologies have a role to play in sectors where they will be needed. We won't stop building houses by 2100—we agree on that—or infrastructure like bridges. Cement and steel will be needed. So, in this case, the development of CCUS technologies is indeed of interest.

● (1715)

Eric St-Pierre: Perfect, thank you.

[*English*]

Mr. Letourneau, thank you for being here.

As we know, Canada has been a clean-tech leader, with some amazing clean-tech companies. We often have close to a dozen in the top 100 globally. We have Svante, and we just had Deep Sky with us in the last hour.

Congratulations on earning the Canadian clean-tech award for venture of the year earlier this year.

My question for you is, why are carbon removal companies such as yours—Svante—crucial for Canada as it transitions towards a cleaner economy?

[*Translation*]

Claude Letourneau: I'll speak to you in French. You are a francophone, and so am I. I'm a Quebecker living in Vancouver.

Managing our carbon emissions is essential. Our company was named after the scientist Svante Arrhenius, who, 135 years ago, established the correlation between CO2 emitted by humans through industrial activities and the rise in earth's temperature. We're exactly where he predicted we would be 135 years ago. We've been talking about managing CO2 for 135 years. It's time to take action.

Right now, however, the focus is on technology development. We have spent $800 million to industrialize the technology, both for air capture and industrial point-source capture. Now we need to take action and deploy the technology on a large scale. We are a world leader in CO2 capture. It's important for Canada to be able to, on the one hand, reduce its own emissions and, on the other hand, generate carbon dioxide removal credits.

We have a biogenic industry. The pulp and paper and forestry sectors need additional revenue and need to further reduce their carbon footprint. That's made possible by capturing the CO2 that is emitted from the smokestacks of paper mills and sawmills that generate electricity from forest residues.

These carbon dioxide removal credits can then be sold to other companies around the world. If carbon dioxide removal is included in the clean fuel regulations program, companies such as Suncor and Cenovus, which are all partners in the Pathways project, will buy carbon dioxide removal credits at a much lower cost than what it would cost to produce them from the CO2 in products like those from Pathways.

Biogenic CO2 has a dual effect: Not only is less CO2 released into the atmosphere, but it also helps reduce the CO2 already in the atmosphere.

The Canadian government could also play a major role by trading these carbon dioxide removal credits with other countries that want to reduce their carbon footprint.

Eric St-Pierre: Thank you.

I note that Svante was at the Canadian Investment Summit in Toronto in mid-September. You may have been there yourself.

Can you talk about the importance of patient capital investment—for example, from Canadian pension funds or other pension funds—in truly supporting your sector or helping to shape it?

Claude Letourneau: In the $800 million in funding that we've raised, there are no Canadian pension funds. There are sovereign funds from Singapore, among others, as well as strategic funds.

In commercialization, we're now talking about raising funds to execute projects, not for technology development or industrialization. That requires another type of investor: an infrastructure investor. These pension funds could indeed play a role, but they are extremely cautious when it comes to investing in commercial-scale first-commercialization projects.

Today, we find ourselves in a sort of gap between the venture capital investors who have supported us so far and the infrastructure investors. By their very nature, pension funds face a higher risk when it comes to first-of-their-kind projects. So that's the gap we currently find ourselves in.

We are lucky to have an organization, PSP Investments, that manages government money through the Canada growth fund. These people have been extremely important to us and have provided us with some funding to carry out projects before the final investment decision. In other words, this is risk capital used to develop a project. A project itself can cost up to $25 million before we know whether or not we'll invest in it. The Canada growth fund helped us in this way with one particular project. Without them, we would not have been able to advance the project to the final investment decision. We hope to make the final investment decision on this project in Saskatchewan by the middle of next year.

● (1720)

Eric St-Pierre: Perfect.

Thank you very much for your time.

The Chair: Thank you, Mr. St-Pierre.

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

Patrick Bonin: Thank you, Madam Chair.

Ms. Guyon, the Carney government has proposed an oil sands pipeline that would allow for an additional one million barrels a day of production and would cost, at the very least, $43 billion. It would essentially be paid for with public funds. Oil from the oil sands is one of the most polluting, if not the most polluting, to produce in the world.

Now, they're saying they'll implement a carbon sequestration and capture project called Pathways, which will capture some greenhouse gas emissions and cost from $20 billion to $30 billion. The project may even qualify for a 50% federal tax credit because, according to the government, it will make it possible to have clean, decarbonized, green oil.

What do you think of this government initiative?

Anne-Céline Guyon: I think it's greenwashing, plain and simple.

The Pathways project, I repeat, would account for only a tiny fraction of the annual emissions reduction across the entire oil sands sector. Moreover, the province wants to double its production, so we're very far from the goal. On the contrary, greenhouse gas emissions will grow exponentially in the coming years if this goes ahead. In fact, you heard from Ms. Farrell at a meeting of this committee last week, and she told you exactly the same thing: The Pathways project alone wouldn't be enough to get the job done.

So, to me, this is nonsense. Above all, it makes no sense to invest public money in this. At the beginning of his term, Mr. Carney said that putting public money into a pipeline project and the Pathways project was out of the question. He said that, if the industry wanted to move forward, he would agree to put the necessary regulations in place, but the industry would have to figure it out on its own. Over time, however, we've ended up footing the bill. We find ourselves in a situation where, at the end of the day, Canadian society will bear all the risks, while the profits will be privatized.

Patrick Bonin: If there were no public funds for the Pathways project and the oil companies were paying for their project, would that bother you less?

Anne-Céline Guyon: That would bother me less, yes. But that doesn't change the fact that, once again, science tells us we need to stop consuming fossil fuels. Yet what we want in Canada, on the contrary, is to accelerate their production, or even double it. We're moving in the opposite direction of what science tells us: We must reduce our greenhouse gas emissions. Right now, we're on track to increase them exponentially, which makes no sense at all.

We can certainly try to implement a project that will capture a few million tonnes of greenhouse gases a year, but the math is simple. We can see that these projects aren't enough to offset projected emissions.

Patrick Bonin: Do you have any information on the global carbon capture capacity? Is it unlimited or limited? Do we have any idea?

Anne-Céline Guyon: There was a study published in Nature last year, if I'm not mistaken, which stated that, when it comes to carbon storage in the soil, the reservoir potential is much smaller than originally thought, if we take into account a whole host of factors, including potential seismic zones and groundwater tables. In short, when you layer all these factors on top of one another, you realize that this geological potential is much smaller than previously thought. So, we do need to also take that into account when assessing our options.

I'd say that we should start by conducting a study in Canada to determine exactly what that geological potential is for storing carbon in the soil.

Patrick Bonin: With that figure being unavailable, can you provide us with the study from Nature that talks about global capacity?

Anne-Céline Guyon: Yes.

Patrick Bonin: Thank you.

In your opinion, does the current price of carbon in Canada provide sufficient incentive for oil and gas companies to undertake carbon capture projects or reduce their emissions?

Anne-Céline Guyon: The facts prove otherwise. Apparently, if the government doesn't invest public funds in a project such as Pathways, the industry is unwilling to move forward on its own. This clearly demonstrates that the current price per tonne of carbon isn't high enough to incentivize oil and gas companies to make their own investments.

● (1725)

Patrick Bonin: The government has just designated the one-million-barrel-per-day oil sands pipeline project as a project of national interest, to say the least. It wants to build the pipeline within a year and says that it will implement a carbon capture and sequestration project by 2035.

Are you concerned that construction of the pipeline might begin, that the pipeline might even be put into service and that this carbon capture and sequestration project might ultimately be abandoned, leaving us with a pipeline without sequestration?

Anne-Céline Guyon: Indeed, nothing currently seems to be making the implementation of the project mandatory. So, yes, this is a concern.

Patrick Bonin: In your remarks, you spoke about solutions found in nature. Could you tell us a bit more about the potential of these solutions for capturing and sequestering carbon?

Anne-Céline Guyon: Capturing carbon from the atmosphere is, of course, one of nature's key functions. The issue lies in the fact that, in order to continue serving as a carbon sink, nature also requires protection. As we know, for a variety of reasons, nature is currently more prone to destruction, particularly given the worsening effects of climate change. These effects lead to periods of drought and then to forest fires that release carbon into the atmosphere.

Above all, nature has a role to play in mitigation and storage. However, this remains contingent on protecting and restoring nature and better managing certain activities, such as agriculture and forestry, so that nature can play its full role as a carbon sink.

The Chair: Thank you, Ms. Guyon and Mr. Bonin.

[*English*]

We'll turn to Mr. Rowe for five minutes, please.

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

My first question is for Mr. Nickel.

Mr. Nickel, I come from Newfoundland and Labrador. We have a lot of offshore opportunities in oil and gas. One of the technologies there that's very promising is the carbon capture and enhanced recovery in the offshore.

If there were no government regulations that forced companies to do this and no carbon capture incentives, would it still be worthwhile for offshore oil and gas and western oil and gas to use carbon capture and enhanced recovery economically?

Erik Nickel: It very much depends on where the CO2 is coming from and who is paying for the capture. The storage and usage in the subsurface are a very small percentage in comparison with the cost of capture—the cost of building the capture plants and the cost of operating the capture plants. That's where the devil is in the details.

It would depend on where the CO2 is coming from. If it's from a relatively easy source.... Some of the easier sources are from things like digesters for ethanol plants, which already spew out fairly pure CO2. If it's from power plants and natural gas power plants, it's a much more expensive process, in the billions of dollars just to get going on it.

Jonathan Rowe: You led into my next question. We spend a lot of energy trying to take carbon out of the air. Do you think it would be wise for us, as we build more refineries in the future, to build refineries above or in proximity to locations where we can store all the greenhouse gases that come into the refinery in underground chambers?

Erik Nickel: Ultimately, speaking to what one of the previous witnesses said, not all of the storage places are proving to be good—that is, the theoretical capacity for these hundreds of billions of tonnes of storage.

What you want to get down to is a much smaller number where you have matched capacity and where you have a proven area that would be good for storage right next to a place that is emitting a lot of CO2. There's some planning that would be involved in that.

Jonathan Rowe: That's perfect. Thank you.

I have a few questions for Madame Guyon. I have them phrased in a way that they can be very short. I have a really good question at the end, if your answers are short enough for the first few to get to the juicy one.

Are you and your organization against all pipelines in Canada and North America—maybe yes or no?

[*Translation*]

Anne-Céline Guyon: Yes. We're completely opposed to fossil fuel pipelines. Once again, science is telling us that we need to stop consuming and producing fossil fuels. We follow the science.

[*English*]

Jonathan Rowe: Do you guys focus on removing the current pipelines in Quebec just as much as you do on building new pipelines, or is the emphasis mostly on preventing new pipelines from going through Quebec?

● (1730)

[*Translation*]

Anne-Céline Guyon: I would say that we do both.

Regarding the current pipelines, we must above all try to focus on Quebec's real energy transition so that we can stop consuming fossil fuels. Remember that oil and gas still account for about 50% of Quebec's energy mix. We're working hard to promote the fossil fuel phase-out. We're doing this by wanting to develop public transit, decarbonizing buildings and proposing an industrial policy that incorporates decarbonization, for example.

[*English*]

Jonathan Rowe: Thank you. I have a really good question at the end.

I'm just curious. I believe that you were involved in preventing the east coast energy pipeline. If that pipeline had gone ahead to New Brunswick, do you think it would have lowered Canada's carbon emissions because we wouldn't have had to ship in oil and gas from other parts of the world, from the United States or the Middle East?

Do you think we would have been able to reduce the amount of coal burned in Nova Scotia? Do you think we would have been able to have maybe not a perfect tomorrow, but a better tomorrow, if that pipeline had gone through and had reduced dependency on the United States and other nations?

[*Translation*]

Anne-Céline Guyon: Absolutely not.

I think that the best way to reduce our dependence on oil—and I'm talking here about oil in general, not just foreign oil, but Canadian oil as well—is simply to focus on the energy transition. This means developing renewable energy. We also need to address our energy consumption. I'm talking here about energy sobriety and efficiency. In addition, all these energy sobriety and efficiency initiatives—as I call them—lead to money being spent in the provinces and creating jobs in the Maritimes and Quebec alike. Money invested in Hydro-Québec stays in Quebec, whereas money invested in oil and gas currently flows to the United States or Alberta.

[*English*]

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

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

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

My question is for Mr. Letourneau with Svante Technologies, please.

Mr. Letourneau, Svante is developing innovative carbon capture technology—

The Chair: It's just a little noisy. Let's quiet down for the witnesses, please. Thank you.

Chris Malette: Yes, I agree. I could hear quite a bit of chatter. Thank you, Madam Chair.

I'll start from the top.

Svante is developing innovative carbon capture technology, as we understand it. What makes your approach different from conventional carbon capture methods and what advantages could it offer to other Canadian industries?

Claude Letourneau: Our technology is using a solid sorbent as opposed to a liquid amine system. The Nobel Prize in chemistry last year was awarded to three scientists who invented a new class of nanomaterial called MOF—metal-organic framework—and we're the first practitioner of using MOF material for CO2 nitrogen separation, which is what you're trying to do when you're trying to remove CO2 from an exhaust post-combustion.

The particular MOF material that was designed was done at the University of Calgary by Professor Shimizu. We're basically taking up a solid sorbent, and the unique aspect is that we're also putting it on a sheet of paper and stacking it to make a filter. We can regenerate these filters every 60 seconds for the next three to five years before we have to replace them.

The benefit is that we have a process intensification, a much smaller vacuum cleaner, if you wish, for exhaust gas or direct air capture, and we can regenerate this with less energy than you would need if you used a liquid amine system, because you have to boil off the water that comes with the solution of amine. In our case, it's a physisorption system.

Chris Malette: That sounds a little technical for me.

What are the biggest challenges in bringing that type of carbon capture technology, which is probably proprietary to your group, from development stage to widespread commercial adoption?

Claude Letourneau: As I mentioned in my testimony, the biggest barrier today is to monetize CO2. You have a capital investment on one side, and you have the revenue stream that you need to generate. It's a waste material. There are not a lot of uses for CO2. In order to have a revenue stream, you need somebody who wants to pay for it.

As to the typical cost of a capture system, in the project we're working on, which is high-concentration CO2, at about 14%, versus direct air capture, which is 0.04%, it's like mining an ore at high concentration versus an ore at low concentration. Obviously, it would cost you more at low concentration. In our case, we need $200 per tonne to get a project that gives you a return on investment.

It's a funny concept. Investors are putting in money, and they want their capital back with a return on investment. Therefore, $200 per tonne is typically one-third for the operating costs, one-third for the capital recovery and one-third for the return on investment. Unless you have a revenue stream of $200 per tonne, no project will be built. Nobody is doing it for the pleasure of decarbonizing the industry. They're doing it for a return on investment.

● (1735)

Chris Malette: Mr. Letourneau, how do we see what opportunities there may be for deploying this sort of technology with such industries as cement, steel and oil and gas, which are other hard-to-abate sectors?

Claude Letourneau: We're doing it across the world for hard-to-abate sectors, but in the case of cement, first of all, you need to have storage capacity right next to the cement plant. Most of them are not located near storage capacity.

There is also the cost of carbon capture. If you translate this thing into dollar per tonne of cement produced, it's like doubling the price of cement to put in a carbon capture plant. The size is about the same as a cement factory. Unless you buy green cement, which in the end, when you put it into infrastructure, represents only 1% or 2% of a bridge, it will be very difficult to decarbonize or find a way to monetize the cement factory.

What we're focusing on today is biogenic CO2. Nature acts as a biomass filter to collect the CO2. There's an industry called the pulp and paper industry that extracts the fibre and burns the residue to make electricity. When you burn the residue, you emit CO2 back into the atmosphere. It is called biogenic CO2. If we can capture the CO2 as we do and store it, we generate a CDR credit, a carbon dioxide removal credit. Right now, it's only in the voluntary market. Microsoft buys the CDR credit.

We need to move to a compliance market. Therefore, I would like Suncor to buy CDR credits, not only to do Pathways, but also to help the industry next door do it.

Chris Malette: Thank you, Mr. Letourneau.

The Chair: Thank you, Mr. Malette.

We will now turn to Monsieur Bonin for two and a half minutes.

[*Translation*]

Patrick Bonin: Thank you, Madam Chair.

Ms. Guyon, thank you for your remarks and for your work. I know that you have been heavily involved in the efforts in Quebec to influence, for example, the Quebec government. That government has made sensible decisions in response to the climate crisis.

I could understand why your hair might stand on end when you hear my Conservative colleagues acting as if the climate crisis doesn't exist and saying that we need to ramp up oil and gas production, and when you see the government acting like a Conservative government. It's actually doing worse than what Stephen Harper did. I applaud you for your patience. I'm starting to lose mine a bit, as you can see.

This government has done something new. In its latest budget, the government said that it wouldn't fund enhanced oil recovery. It ultimately changed its mind and decided to provide a subsidy, a 50% tax credit, for enhanced oil recovery, in order to help the poor little oil companies making billions of dollars in profits.

What are your thoughts on this?

Anne-Céline Guyon: Can we take two minutes to consider the absurdity of this situation? The government will introduce tax credits to help oil companies—which, I repeat, are making billions of dollars because of the war in Iran—extract even more oil. However, the goal isn't to extract even more oil just to let it sit idly in barrels. It's produced for consumption, which means that it's burned. This means that it pollutes. More oil means more consumption, so more pollution, plain and simple.

Patrick Bonin: Come on, Ms. Guyon, there isn't any climate crisis. My colleagues next door said so.

Let's get back to something positive, such as the solutions found in nature. You spoke about carbon sequestration and capture. I know that a number of groups are working on this.

Could you provide a brief summary of these solutions?

● (1740)

Anne-Céline Guyon: Yes.

Patrick Bonin: Thank you.

You raised an interesting point regarding the need to use energy, such as electricity, in the right place in order to reduce consumption. Could you elaborate on this idea a bit?

For example, we met with a representative from Deep Sky. This company is proposing technology that, in some ways, consumes a great deal of energy.

What's your opinion on prioritizing the decarbonization of the current activities resulting from industries, buildings or transportation, rather than investing energy in other potentially more expensive technologies? Do you have a position on this?

Anne-Céline Guyon: Yes, and that's good timing. I'm quite familiar with Deep Sky. I've spoken with people from that company a number of times. I've asked them how many megawatts their projects would require, particularly in Quebec. It depends, because they have multiple projects. However, generally speaking, I gather that they would require roughly between 20 and 35 megawatts, depending on the projects and the time frame in question.

In Quebec and throughout Canada, the current focus is on producing more renewable electricity. The federal government has even implemented a strategy to that end. However, this energy also carries a cost. Not only does it cost money, it also affects the land. It comes with its own environmental challenges. Moreover, this is also a proposal from the IPCC—

The Chair: Sorry, Ms. Guyon, but your time is up.

Thank you.

[*English*]

We'll now turn to Mr. Leslie for five minutes, please.

Branden Leslie: Thank you, Madam Chair.

I'm going to dedicate my time to moving a motion that I put on notice last week, recognizing that we are at the end of the meeting. I wanted to make sure our witnesses had the opportunity to get in a very fulsome suite of remarks.

With that, I would like to move that motion. Rather than reading it in full, I'll remind everybody that it is related to the private sector employees who are working inside the Major Projects Office while being paid, at least in part, by their sponsoring private company.

The gist of the motion is that it asks for “a complete breakdown of MPO staffing since its establishment, which private companies and other organizations have supplied employees, how many people each has provided...and how much of their compensation is paid by their original employers versus the federal government”.

It's seeking to find the “conflict-of-interest assessments, internal ethics approvals and safeguards relating to these arrangements”, and asks for “a written explanation of who conducted and approved the internal ethics reviews, what criteria were used to identify potential conflicts of interest, what safeguards were put in place, and how the MPO ensures those safeguards are actually followed”.

We were all here for the testimony of Dawn Farrell. When I asked a question regarding private sector employees working inside the Major Projects Office but still being paid, she acknowledged that was true, but she lacked any clarity on information regarding it. We don't know who they are, we don't know what companies are paying them and we don't know how many there are. This arrangement, in my mind, should set off alarm bells for anybody around this committee.

Bruce Fanjoy: I have a point of order.

What does this have to do with ENVI? This is a human resources question. It could be the ethics committee and could be any other committee. I fail to see what it has to do with ENVI.

The Chair: Thank you, Mr. Fanjoy.

Mr. Leslie, you can continue.

Branden Leslie: As I was saying, this arrangement should set off alarm bells. Private sector employees are sitting inside the government helping move multi-billion-dollar projects forward while still being paid by the very companies that have sponsored them to be there. We don't know who they are. We don't know who is paying them. We don't know what files they're touching or how the government is policing any potential conflicts.

You can look up ordinary employees on GEDS, or GCdirectory, yet people who are working inside this office and advancing multi-billion-dollar projects remain hidden from public sight. This is not about private sector expertise being in government. That is not a bad thing. The issue is private companies continuing to pay people who are now sitting inside government and helping move these major projects forward.

The conflict risk is much bigger than whether—

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

Chris Malette: What is the scope? This is out of scope for what we're discussing here.

We have witnesses sitting here listening to a soliloquy on employees of certain agencies. You only have to look at their faces to see that they're thinking, “Why am I here?” This is completely out of scope.

The Chair: Thank you, Mr. Malette.

Mr. Leslie, let's get to the finish.

Branden Leslie: Thank you.

As I was saying, the conflict risk, perceived or not, is much bigger than whether somebody is actually making money from a decision made by this organization. Their employer could benefit. A competitor could be affected negatively or positively. They could gain access to commercially sensitive information or an insider's understanding of how government decisions are made. Even if they never touch their own company's file, that kind of access can be enormously valuable—

● (1745)

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

Tim Watchorn: I'll make the same point of order that Mr. Malette did. This is out of scope. It should be dealt with at the ethics committee, not at the environment committee.

Branden Leslie: I didn't know this was an ethics decision.

Tim Watchorn: Well, you're the ones talking about ethics. I don't know. I think the point is that it's too long for clips. Just get it over with and let's move on and get the witnesses back.

The Chair: Can we wrap it up, Mr. Leslie?

Branden Leslie: I appreciate your following of process. This is in fact my time, and out-of-order points of order are not going to dissuade me from trying to highlight the reason that I'm moving this motion, because I think it is important for all of the perceived and real potential conflicts of interest.

If everything is properly managed at the MPO, prove it. Tell us who these people are. Tell us what companies—not the industries they might be from—are paying for them to be there, what they're working on, how their conflict of interest screens were handled, and whether or not they're updated.

I have a suite of questions that I decided to write up. Could somebody seconded from company A gain access to commercially sensitive information about company B while working inside the MPO?

The Chair: I'm sorry, Mr. Leslie, but we have another point of order, from Mr. St-Pierre.

Eric St-Pierre: I'm sorry to break your clip, Mr. Leslie.

Branden Leslie: No, that's fine. Don't worry.

Eric St-Pierre: These are often clips.

It seems like at every single ENVI meeting, there's a motion by the Conservatives. I just want to note that for the record. The minute we have a motion, you guys are up in arms.

The Chair: Speak through the chair, please.

Eric St-Pierre: Yes, Madam Chair.

They're up in arms over a motion. My colleague from Carleton presented a motion, and there was an hour of hurling and screaming, and it seems it's every single meeting.

We have amazing witnesses here today, and once again we have another motion. We'll probably have one on Thursday. We'll probably have one when we come back.

Branden Leslie: We won't have one on Thursday; I promise.

Eric St-Pierre: We don't have a meeting, exactly, but we probably will. You'll probably still try to present one.

I just want to put it on the record that there's an abuse of motions here. It's over the top.

I appreciate you, and sorry for cutting your clip.

The Chair: Thank you, Mr. St-Pierre.

Mr. Leslie.

Branden Leslie: Speaking of abuse of power, that's exactly what this motion is meant to resolve. The MPO has a clear set of employees who are potentially in a conflict of interest, and this committee seems unwilling to hear out this very reasonable motion.

I won't go through all the questions, just because of the time, but the questions should be asked.

Some hon. members: Oh, oh!

The Chair: Order, please.

Mr. Leslie, in fairness, you're not reading the motion. You're arguing the motion, and you know there are witnesses here. We could release them, or we could try to conclude their testimony.

Branden Leslie: I will wrap up very quickly, Madam Chair. I do appreciate your following of the process.

My point is that we had the CEO of the Major Projects Office sit here. I asked her if her organization is considered transparent in her own mind, and she said yes, because of appearances at committees like this. This was after I asked her for a list of all the names and companies that the people seconded to that office work for, and she said that she'd endeavour to get back to us. She has refused to do so, yet I got a call from a journalist this morning saying they know the number. I bet nobody else around this table knows the number. I know only because a journalist told me the number.

This is a breach of our parliamentary privilege. She has an obligation to report to this committee. This is an absurd overreach by her office. We have no idea. We have very reasonable questions.

We've put forward a very reasonable motion asking for very specific information. I don't think there should be any reason not to discuss it at today's meeting. I know the Liberals are going to want to adjourn debate on it or just outright vote it down. I think that's shameful. Transparency is the best disinfectant. Let's find—

The Chair: I'm sorry, but we have a point of order from Mr. Ehsassi.

Branden Leslie: Let's find out what these people are doing, how much they're getting paid and who's paying them.

The Chair: Go ahead, sir.

Hon. Ali Ehsassi (Willowdale, Lib.): Madam Chair, you were very clear in your instructions. You did instruct him to read his motion.

[*Translation*]

Patrick Bonin: Madam Chair, there isn't any interpretation.

You need to turn on your microphone, my dear.

[*English*]

Hon. Ali Ehsassi: The member is really making a mockery out of the process. Your instructions were very clear, that he speak to the motion and that he read the motion, yet not only is the member making a mockery of all these witnesses and all members of this committee, but he is in fact saying that he doesn't care about the instructions you have provided. I would ask that you rein the member in.

Thank you.

The Chair: Mr. Leslie.

Branden Leslie: If I were you, Madam Chair, I would follow the rules of this place. I have the floor to move this motion and to explain why I am moving it. I verbally tabled it last week. I followed the rules. I put it on notice, and now I have moved it. I have the authority to speak to why exactly I am moving it. The chair has no jurisdiction to tell me that I must only read the motion.

I am outlining very reasonable points. Canadians want us to ask questions about the number of employees, how much they are getting paid, what companies they come from and what the ethics screen is. Why these are difficult questions for a government agency to answer is simply beyond me.

Are none of you frustrated that she sat here and said that she couldn't tell us a number, but then told a journalist days later, who had to inform us? This is an abuse of the process.

I will not belabour this any longer, Madam Chair. I understand I have struck a real nerve on the Liberal side. They are clearly covering up on behalf of the MPO. We could have a debate on this right now and pass the motion so we can get transparency for Canadians.

Thank you, Madam Chair.

● (1750)

The Chair: Thank you, Mr. Leslie.

Mr. Grant.

Wade Grant (Vancouver Quadra, Lib.): At the beginning of this meeting, I believe the chair, with the clerk, talked about getting a response from the MPO with respect to employees.

I agree with my colleagues here about the scope and whether or not this belongs in this meeting. I really want to ask my questions. I still have some time, so I will move to adjourn debate on this motion.

[*Translation*]

Patrick Bonin: I have a point of order, Madam Chair.

As soon as my colleague started speaking about the motion, I raised my hand. On a few previous occasions, I've raised my hand and you didn't seem to notice me. Once again—

The Chair: You actually raised your hand after Mr. Grant did.

Patrick Bonin: Madam Chair, it's always the same. You always take your colleagues' side.

The Chair: Mr. Grant was first.

So, let's continue.

Patrick Bonin: I'll ask for the clerk's opinion. Every time a motion is introduced, I raise my hand. My turn comes after the turn of a member from the governing party, who wraps up the debate before we have a chance to speak about the motion. Today's motion is entirely reasonable, aside from its length.

The Chair: Mr. Bonin, you raised your hand one minute after Mr. Grant did today.

Patrick Bonin: Can we have the clerk's opinion on this matter?

As soon as my colleague began introducing his motion—

The Chair: We can talk with the clerk afterwards.

Patrick Bonin: I would like to hear it right away. Once again, this is an important motion—

The Chair: No, we're finished.

[*English*]

We're moving on.

All those in favour of adjourning debate, raise your hand, please.

(Motion agreed to)

The Chair: We will move on to our remaining questions. We have one more set of questions with Mr. Grant for five minutes.

Thank you, witnesses, for your patience. We'll continue.

Wade Grant: Thank you very much, Madam Chair.

Thank you to the witnesses.

Thank you, Mr. Letourneau. I got to visit Svante twice this past summer. It's not too far away from my home. It's a beautiful facility. I think it's worthwhile for some of my colleagues, if they're ever in the Vancouver area, to tour that place as well and enjoy the very informative short film. I really enjoyed it.

Svante is developing carbon technology with applications across industrial sectors. What opportunities does Canada have to become a global manufacturer and innovation hub for carbon capture technologies?

Claude Letourneau: We have a unique opportunity to be a world leader in the deployment of carbon capture technology and in selling product around the world. Also, the CDR credit could be generated in Canada and exported around the world.

I'm an old monkey. I've done a lot of rodeos. In the 1980s, I built a magnesium smelter out of asbestos mine residue in Thetford Mines. We were, at the time, the largest magnesium producer. I saw that industry move to China. We don't make any magnesium in Canada anymore, specifically in Quebec. I saw the same thing when developing the first lithium polymer battery in the 1990s. We were the first one to equip GM, Ford and Chrysler with lithium polymer batteries. Today, it's all dominated by the Chinese market. I sure hope carbon management will not have the same fate.

Wade Grant: To follow up, how important are federal investment incentives and government support in helping Canadian companies move from research and development to commercial scale manufacturing and deployment?

Claude Letourneau: We are very good at supporting a company in the start-up mode, and very good at doing the first pilot plant. We're not very good at supporting a company's first-of-a-kind facilities at a commercial scale.

Wade Grant: How do you think we can improve in that way?

Claude Letourneau: We need to act in setting up industrial policies that will basically trigger the market. The recommendation that I made to include the CDR credit, the carbon dioxide removal credit, as part of the CFR is one example.

I was part of the CAFE regulation in 1975. The CAFE regulation is the clean fuel regulation where passenger car producers had to reduce their CO2 emissions for passenger cars at 400 grams per kilometre in 1975. We're now down to 137 grams per kilometre. That's a 65% reduction in CO2 emissions from passenger cars being produced to date worldwide. That's an industrial policy that gave nascence to hybrid vehicles, electric vehicles, fuel cells and stop-and-start systems. Many technologies were created based on an industrial policy of product-based carbon intensity.

I plead with this committee to focus on regulations like this and not try to micromanage this industry. There are a lot of experts who know what to do—industrial policies on carbon intensity.

● (1755)

Wade Grant: How can federal procurement policies, in partnership with Canadian industry, help accelerate the adoption of domestically developed carbon capture technologies?

Claude Letourneau: That will be very critical for industries like cement. As I just described, a cement producer would have to double the size of his factory to put in a carbon capture plant and double the price of his cement if he wants to amortize the costs on it. However, as an infrastructure owner, the government can buy green cement. By buying green cement that's been decarbonized with carbon capture, the impact on infrastructure would be less than 1% of the infrastructure.

Wade Grant: What opportunities exist to develop Canadian supply chains for carbon capture equipment, materials and related technologies rather than relying on foreign supplies?

Claude Letourneau: We built a $200-million factory here in Vancouver to be the largest CO2 filter manufacturer. I have the capacity to do 10 plants at a million tonnes. I can do Pathways in six months, but it's going to take 30 years to build.

We have the capacity to build the industry. It's just a small step.

Wade Grant: Once again, I'll suggest that if anybody is in my neighbourhood, we should take a look.

Thank you very much, Mr. Letourneau.

The Chair: That concludes our session for this afternoon.

Thank you very much to our witnesses today. We really appreciate your time and expertise.

We'll adjourn until Tuesday.

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