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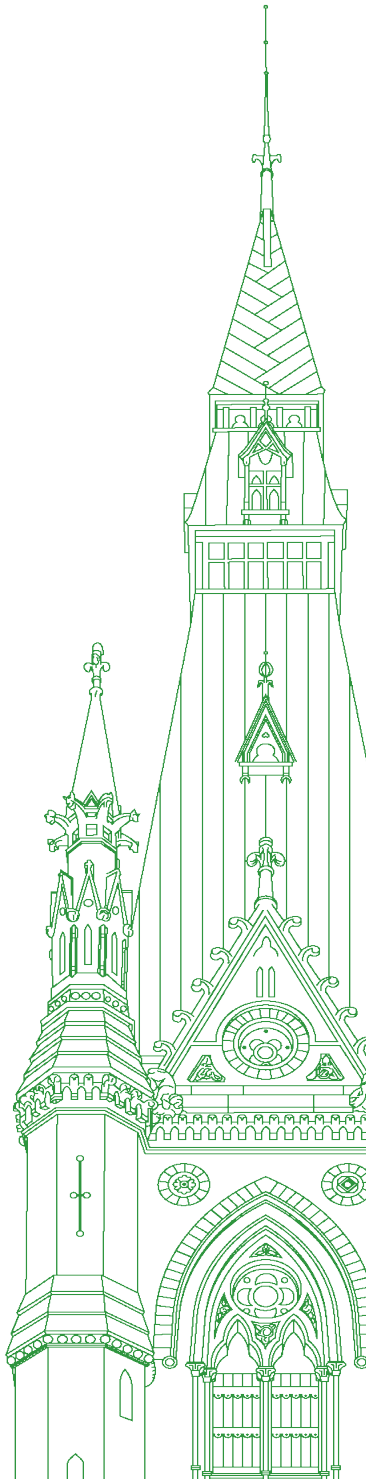

Chair: Ms. Valerie Bradford

Standing Committee on Science and Research

Thursday, May 9, 2024

● (1105)

[*English*]

The Chair (Ms. Valerie Bradford (Kitchener South—Hespeler, Lib.)): I call this meeting to order. Good morning, everyone.

I would like to welcome our guest members on this committee today. We have MP Boulerice for Mr. Cannings, and we have MP Shanahan and MP Arya. It's really nice to have you.

We appreciate Arielle's silent appearance today. I'm sorry you're not well.

Welcome back, Lloyd. We missed you at the last meeting.

Welcome to meeting number 86 of the House of Commons Standing Committee on Science and Research.

Before we begin, I would like to remind all members and other meeting participants in the room of the following important preventative measures.

To prevent disruptive and potentially harmful audio feedback incidents that can cause injuries, all in-person participants are reminded to keep their earpieces away from all microphones at all times. As indicated in the communiqué from the Speaker to all members on Monday, April 29, the following measures have been taken to help prevent audio feedback incidents.

All earpieces have been replaced by a model that greatly reduces the probability of audio feedback. The new earpieces are black in colour, whereas the former earpieces were grey. Please use only an approved black earpiece. By default, all unused earpieces will be unplugged at the start of a meeting.

When you are not using your earpiece, please place it face down in the middle of the sticker for this purpose, which you will find on the table, as indicated. Please consult the cards on the table for guidelines to prevent audio feedback incidents.

The room layout has been adjusted to increase the distance between microphones and reduce the chance of feedback from ambient earpieces. These measures are in place so that we can conduct our business without interruption and to protect the health and safety of all participants, including the interpreters.

Thank you for your co-operation.

Today's meeting is taking place in a hybrid format. For those participating virtually, I would like to outline a few rules to follow.

You may speak in the official language of your choice. Interpretation services are available for this meeting. You have the choice at the bottom of your screen of floor, English or French. If interpretation is lost, please inform me immediately, and we will ensure that interpretation is properly restored before resuming the proceedings.

Before speaking, please wait until I recognize you by name. If you are on the video conference, please click on the microphone icon to unmute yourself. When you are not speaking, your mic should be on mute.

As a reminder, all comments by members should be addressed through the chair. With regard to a speaking list, the clerk and I will do the best we can to maintain a consolidated order of speaking for all members, whether they are participating virtually or in person.

In accordance with the committee's routine motion concerning connection tests for witnesses, I'm informing the committee that Jackie Jacobson has not completed tests in advance of the meeting.

Pursuant to Standing Order 108(3)(i) and the motion adopted by the committee on Tuesday, January 31, 2023, the committee is commencing its study of science and research in Canada's Arctic in relation to climate change.

It's now my pleasure to welcome Michel Allard, professor emeritus, centre for northern studies, Université Laval.

From the Arctic Research Foundation, we have Tom Henheffer, by video conference.

Jackie Jacobson is a board member of the Arctic Research Foundation. He is on screen, but because of the headset situation, he will not be participating from an audio perspective.

Angus Cockney, a community engagement and northern specialist, is also with us from the Arctic Research Foundation.

We will begin with Michel Allard, for five minutes, with his opening statement.

[*Translation*]

Mr. Michel Allard (Professor Emeritus, Center for Northern Studies, Laval University, As an Individual): Good morning.

My name is Michel Allard. I work at Université Laval as a professor emeritus. You can tell by my hair colour. I'm a researcher at Université Laval's Centre for Northern Studies. I'm a member of the Canadian permafrost research community. For a number of years, I was a member of the ArcticNet research network.

My work covers a range of topics, such as the impact of permafrost thaw on natural environments, including the formation and transformation of lakes and waterways. It covers temperature changes and permafrost thaw caused by shrub growth and increased snow coverage, the process known as the greening of the Arctic. It also covers the geotechnical characterization of permafrost under transportation infrastructure, especially airports, and in the built environment of northern communities.

Using our acquired knowledge, we help design adaptation solutions in engineering and land-use planning for the people in charge. We also track or monitor permafrost temperatures in eastern Canada, from Nunavik to the High Arctic, using a network of thermal cables inserted into drilled holes. The network is operated by the Centre for Northern Studies. It's the largest university-based monitoring network in Canada.

Let me tell you about the impact of permafrost thaw.

Permafrost covers 40% to 50% of Canada. Its thickness ranges from a few metres deep at the southern margin to hundreds of metres deep in the High Arctic. The permafrost temperature varies across the area depending on the climate, as a direct result of air temperature. As the climate warms, the permafrost temperature rises. When the temperature reaches zero degrees, the permafrost thaws. The ice melts, which causes the ground to subside. This radically transforms ecosystems and damages infrastructure.

In natural environments, permafrost thaw disturbs the tundra and forests. This changes animal living environments and the nature and availability of traditional indigenous food resources. The disturbances, along with the formation of new lakes or the draining of other lakes, can also make it more difficult for locals to move around the area and access food resources. Some parts of northern Canada are also affected by many fairly extensive landslides.

In more sensitive areas, we also measure the carbon gains and losses—in the form of organic matter, carbon dioxide and methane—related to the permafrost thaw, in order to better measure the process known as permafrost carbon feedback.

● (1110)

In the built environment of first nations and Inuit communities, the instability of permafrost comes on top of a serious housing crisis. It's important to ensure that the current buildings and the many buildings scheduled for construction in the near future remain stable. Stability can be achieved by selecting suitable land, such as rock, or by building foundations adapted and designed to withstand the climate of the coming decades. A major research effort must be undertaken with the northern communities and territorial governments to identify soil characteristics, design the foundations of houses and buildings according to their dimensions and plan urban development. It's impossible to plan for the harnessing of water sources, the construction of distribution systems, the disposal of waste water and the disposal of waste without taking permafrost into account. Permafrost conditions are specific to each community, depending on geology and climate.

[*English*]

The Chair: I'm sorry, Mr. Allard. That's time. We're limited to five minutes for opening statements, but you'll have an opportunity to answer questions.

[*Translation*]

Mr. Michel Allard: Okay.

[*English*]

Thank you.

The Chair: We look forward to hearing your further testimony. Thank you so much.

We'll now turn to the Arctic Research Foundation.

Mr. Henheffer and Mr. Cockney, you have a total of five minutes between you, however you want to distribute that time.

Mr. Tom Henheffer (Chief Executive Officer, Arctic Research Foundation): Thank you. He and I spoke beforehand, so I'll start us off.

Madam Chair and honourable members of the committee, thank you for this opportunity to speak to you on the important issue of Arctic science and research in relation to climate change.

The Arctic Research Foundation is a non-profit charity that enables and catalyzes community-led science and infrastructure projects in the Arctic. We work with communities to build networks of NGOs, universities, researchers and governments to fund and deliver programming, while providing access to ships, green energy-powered mobile labs and other research infrastructure.

Many issues need addressing in regard to science and climate change in the Arctic, but there's a single common factor making it harder to address problems and capitalize on opportunities. Unlike other Arctic nations, Canada lacks a cohesive, cross-departmental and holistic national strategy for the Arctic.

Let me back up and discuss some of these issues. Shockingly, the Arctic Ocean may be ice-free in less than a decade. The region is warming at least four times faster than the rest of the world. Many northerners are living through devastation. Communities are losing up to 90% of their buildings to fire and flood, sometimes both in a single year, and are even collapsing into the very ground as permafrost erodes.

However, climate change is far from the only issue. China is increasing its holdings in the north, including purchasing a stake in a Northwest Territories rare earth minerals mine. They've added the Arctic to their belt and road initiative. They're creating a new form of capitalistic colonialism that's making rapid inroads into Canadian territory. At the same time, the United States denies Canada's claim to sovereignty over the Northwest Passage. Even amidst its war against Ukraine, Russian submarines are testing the boundaries of Canada's waters, and we have no idea what other countries may be up to under the surface.

I highlight issues related to sovereignty and security in addition to science because it cannot be overstated that these issues are deeply intertwined and must be addressed as such. Other nations see the value in tackling these problems together and are taking decisive action to address them. In 2022, the United States adopted the national strategy for the Arctic region. This strategy mandates that the entire government work cross-departmentally to address Arctic issues. No such strategy exists in Canada. Government departments are far too often working in isolated silos, leading to duplicated effort, wasted time and wasted taxpayer money.

Upon realizing the federal government's lack of a national vision for Canada's Arctic, ARF stepped into the policy world to develop a draft implementation plan for Canada's Arctic and northern policy framework in a document entitled “Arctic National Strategy”. We offer it up to parliamentarians as a foundation upon which to build this holistic strategy for the north. The strategy is built around four pillars: reconciliation and the co-production of knowledge; protecting the environment while understanding and adapting to climate change; capacity building and economic development; and Arctic data governance and management. It was written in collaboration with northern senators, leaders and communities, and is built out of high-impact recommendations, common-sense policy changes and shovel-ready projects that can have a meaningful impact on the biggest issues facing the Arctic. We'll be submitting this policy to the committee for your review.

These recommendations range from piloting new ways to conduct fish stock assessments to changing federal funding structures to investing in green energy-powered containerized agriculture to help alleviate food shortages. Here's one example relevant to the committee's study from the strategy.

While research is now conducted with more community consultation and collaboration than in the past, federal grants are still administered through a system that is based on southern ways of thinking. They have enormous administrative burdens. Grants for Arctic research follow the same procurement rules as grants to study Lake Winnipeg or the forests of New Brunswick. This means that while communities may have more funding in theory, in practice it can be very difficult to actually get those funds out the door.

These grants also rarely carry additional funds to reflect the dramatically increased costs of operations, goods and transportation in the Arctic. Universities have experienced researchers, dedicated staff and departments with expertise in applying for government funds, as they should, but it is not fair to expect communities, many of which may only have a handful, if any, of full-time permanent administrative staff, to shoulder the same administrative burden.

The Canadian government needs to modify funding and grant application structures to be more equitable for northerners. You can see this in a number of different ways, wherein government structures are simply too rigid to work properly in the north. As a very good example of that, I understand the need for interpretation, but unfortunately, because Jackie is in the north and has been travelling, he was unable to procure a headset. As a result, he's unable to testify at this committee. I think that's a very poetic example of how these structures work.

My remarks have been submitted already. I'll cut this short so that I can give Angus a chance to speak.

● (1115)

The Chair: You have 30 seconds, Angus. Go ahead.

Mr. Angus Cockney (Community Engagement and Northern Specialist, Arctic Research Foundation): Thank you, Madam Chair and members.

Recently, Lori Idlout, the MP for Nunavut, shared our Arctic Research Foundation document, the “Arctic National Strategy”. Do you know what she called it? She called it impressive work. I don't think she's biased, coming from the north, but I think she sees what we're all talking about here with the troubling effects that are happening in the Arctic.

I want to take this down to a more personal level. Community members are worried and concerned with what's happening, especially with coastal erosion. A prominent political member of Tuk once said that they wanted to be buried in Tuk, but I'm not even sure of that now. That's how personal it's getting.

My cousin Noella Cockney is a retired RCMP officer. Her house's foundation was being pounded by waves last summer. You'd think she'd want to move south or to a safer place, but she said, "This is my homeland. I'm not moving."

I think we should all take heed of Lori Idlout's encouragement for all levels of government to use our Arctic Research Foundation document, the “Arctic National Strategy”.

Thanks.

● (1120)

The Chair: Thank you. I'm going to stop you there.

Maybe during the first question, you'll get a chance to expand on that. I know that you each wanted five minutes, but that would take away from our questions. We're really looking forward to hearing your testimony.

Now we will open the floor to questions, and we'll start with MP Tochor for six minutes.

Please indicate to whom your questions are directed.

Mr. Corey Tochor (Saskatoon—University, CPC): Thank you, Chair.

Mr. Henheffer, thank you for being online today and describing some of the differences in life.

I've been honoured to travel to all three territories on a couple of different occasions. It's very concerning to see the permafrost melting or warming and the impacts that has. It reconfirms our belief that the main environmental program of this government is the carbon tax, which we know doesn't lower emissions, based on the last nine years of measurements.

How this ties to the territories is that, like the carve-out in Atlantic Canada that was unfair for the rest of Canadians who were using home heating oil, there's a carve-out in the Arctic. I'd like to hear more about how the rebate works up there.

Mr. Tom Henheffer: The way that the government is legislating the carbon tax is outside of our mandate. We're an apolitical organization, but we encourage any action that can lower carbon in the future and in the present. There's been a lot of evidence that shows that carbon taxes do work.

I'm from the Atlantic provinces—I'm from New Brunswick—and I know that fuel costs there were making things difficult for people, but that's much more difficult in the north. There absolutely does need to be a carve-out in the Arctic for fuel. Almost every community in the north is reliant on diesel fuel to power their power plants. It's messy and it's inefficient, but it's the infrastructure that's there right now.

Life is already so expensive. You can pay $14 for a head of lettuce in some of these communities, if you can even get it. The cost of the carbon tax should not be passed on to people in the north, who are already experiencing the worst of climate change anyway.

In terms of the carbon tax as a whole, it's likely a positive initiative because work needs to be done to mitigate climate change, but yes, there absolutely needs to be a carve-out. Angus is from Tuktoyaktuk, so he can speak more to the realities on the ground there.

Mr. Corey Tochor: If you're concerned about lowering emissions, aren't you concerned that the carbon tax hasn't lowered emissions in Canada? In nine years, your permafrost is still, unfortunately, warmer and disappearing.

Mr. Tom Henheffer: It doesn't doesn't work like that. You don't pass legislation and the next day climate change is solved.

I'm not interested in getting into an argument about the federal government's policies and what they are. I think there is very strong evidence internationally that carbon taxes are generally an effective way to lower emissions.

Mr. Corey Tochor: Where would that [*Inaudible—Editor*]?

Mr. Tom Henheffer: There needs to be a price for carbon, plain and simple. It's not free. We release this into the atmosphere and it causes serious damage. There needs to be a cost associated with that, plain and simple.

I think your question is asked in somewhat bad faith, to be frank. As I said, I'm not interested in talking politics. I'm talking about what's happening in the north, what's happening in science, not what is going to influence the election in the next couple of years. That's not what this is about.

Thank you for your question, but frankly, I think it's not particularly relevant.

Mr. Corey Tochor: I think it is very relevant because politically speaking, the measures that this government has enacted on lowering emissions are ineffective. The proof is in our ranking around the world and in the fact that our emissions have gone up since they introduced the carbon tax. The only year that they went down was the year that we all were locked down and didn't move.

The concern on the political side of things is that the policies that impact the north are having a negative impact. You have shared comments about the cost of living crisis up there right now and how it makes things more expensive.

● (1125)

Mr. Tom Henheffer: Yes.

Mr. Corey Tochor: Meanwhile, the tax measure that is making everything more expensive is something you want excluded from your budget.

Mr. Tom Henheffer: It's not our budget. I'm saying that there needs to be a carve-out for people who live in the north, absolutely. The cost of living is high enough, and they are already living through the challenges that come with climate change, which are so much more severe there. Action needs to be taken.

Mr. Corey Tochor: Yes.

Mr. Tom Henheffer: As I said, I'm not an expert on the government's legislation for the carbon tax. We're doing primary research, but my understanding, as I think it's very well understood in the scientific community and among economists, is that globally carbon taxes have worked well.

I think we're wasting the committee's time getting into an argument about this. We're here to talk about science in the north, not government policy in regard to the carbon tax. I don't know what you're suggesting to do in place of it, but something needs to be done.

Mr. Corey Tochor: Absolutely.

I'd like to get your thoughts on SMRs, or microreactors, in the north so that we can replace the diesel that is transported up there—and you're right that it's a high-emitting source—and look towards other sources of energy, such as nuclear.

The Chair: You have 19 seconds.

Mr. Tom Henheffer: I think there's a lot of potential in small and medium-sized reactors. They are safe. They generate a lot of power. Obviously, they're expensive, but the key thing is going to be whether the communities want this. There's a lot of distrust of people selling goods and new technologies in the north that rightly needs to be overcome. There needs to be a lot of consultation and collaboration done with the communities to find out about that.

That's not a question that's best asked of me. It's a question that's best asked of Angus, Jackie and other people living in and from the north.

Mr. Corey Tochor: Thank you very much.

The Chair: That's your time. Thank you for your testimony.

Now we will turn to MP Longfield for six minutes.

Mr. Lloyd Longfield (Guelph, Lib.): Thank you, Chair, and thank you to the witnesses.

I'd like to get back to our study on research and the challenges we're facing. I'm really interested in the report that's been generated. I think it has base information that we need for this study, and the earlier we can get a hold of the report so we can go through it, the better.

My question, starting with Mr. Henheffer and then going over to Mr. Cockney, is about how research is different in the Arctic. With research in southern Canada, generally you have a university attached to a geographic area that applies for research funding and does research based on geography, with ties to other southern universities. In the Arctic, we don't have a university network, and often universities have to apply for NSERC funding and cobble together research grants to do Arctic research. I'm thinking of the PEARL research station up in Ellesmere Island in Eureka, where the University of Toronto has a main presence, but tries to cobble together enough research to study climate change and study permafrost with other universities around the world.

Could you talk about how we can provide a different way of networking research funds together that could either be led by a southern university or led by the people in the Arctic?

Mr. Tom Henheffer: The challenges of doing research in the Arctic are enormous. It's much more expensive. We run a fleet of nearshore research vessels, and the cost to run them in the north is huge. One of them, our vessel that gets the most work, is based out of Halifax and transits north every year, so we have 10 to 14 days' worth of cost just to get up there. We have other ships that are kept in the north, but for a ship that large, there isn't the infrastructure to do the maintenance that it needs, at least not in the geographical area where it normally works.

There are other challenges in addition to cost. Of course, these are settled land claims. This is the Inuit and northern indigenous peoples' backyards, so collaboration is key. We can't just start with the universities. We need to start with the communities. They need to have a say in where the funding goes. However, as I mentioned in my remarks, given the administrative burden that they have to go through, the way these funding structures are set up with universities just doesn't work for the north. It's based on a southern way of thinking, and that needs to change. There are a number of ways that it can be simplified, but those details are a bit too complex to go into today—

● (1130)

Mr. Lloyd Longfield: Can I interrupt? Those are very important details, and if they're not in the report, could you give us something in writing that suggests some alternate ways of going about this?

Mr. Tom Henheffer: Absolutely. They are in the report, so you'll see them in our strategy, but it's a lot to go into in a three-minute answer.

One key thing you mentioned that I really want to highlight is that, because we're a non-profit, we lose money every year in delivering our programming. We charge as little as we can, but that's still too expensive for most scientists. There simply aren't grants for ship time in the Arctic, or even for using our mobile labs in the Arctic for developing infrastructure. There are research grants and grants to pay universities to pay researchers, but rarely is there enough money for ship time, and it's based on southern costs, not northern costs.

What we do is stack programs. If they're operating in the same geographical area, we'll bring in the University of Manitoba and the University of Toronto, and we'll all work together. In that way it can be more affordable. Stacking programs is one important thing, but coordination and collaboration in general are key.

Mr. Lloyd Longfield: Thank you.

We have a couple of minutes left, Mr. Cockney, to fill in some of the....

We just did a research study on indigenous traditional knowledge and the different approaches indigenous people use towards science. Going through indigenous communities could be a way for us to fund research in the Arctic. Could you speak to that and whether there's an opportunity there that we could explore in our report?

Mr. Angus Cockney: Speaking of opportunities, even the U.S. government has adopted a policy to integrate into every federal agency indigenous knowledge when it comes to science and research. For example, NASA has approached us, and me especially, to advise it on how to approach these communities in the north and engage them in science and research. Really, it's community-based, asking the people, “What are your priorities in research and science?”

It's going in the right direction. I hope researchers are going in the right direction in Canada too.

Mr. Lloyd Longfield: It's about replacing the word “university” with the word “community” so communities have access to research funds.

Mr. Angus Cockney: Yes. More and more, even for us with the Arctic Research Foundation, we go into a community and ask them, "What are your priorities?" We did a lot of work in Gjoa Haven, especially with the discovery of the ships, and that was by engaging the community first.

Mr. Lloyd Longfield: I know I'm close on time, so I'll just thank you for being here and contributing. I look forward to the written submissions.

The Chair: Thank you, MP Longfield. That was great.

Now we turn to MP Blanchette-Joncas for six minutes.

[*Translation*]

Mr. Maxime Blanchette-Joncas (Rimouski-Neigette—Témiscouata—Les Basques, BQ): Thank you, Madam Chair.

I would like to acknowledge the witnesses here today for the start of this vital study.

My first question is for Mr. Allard.

Mr. Allard, I would like to congratulate you on your career to date. You're a professor emeritus. It's an honour to welcome you here today. I had the privilege of visiting the Centre for Northern Studies, where you have been a member for many years. I gather that you were even a member as an undergraduate. Your work and commitment over the past few years are now being recognized.

I'll jump straight to the questions, which are vital today. You talked about melting permafrost and its impact. How can we prepare for and adapt to the permafrost situation? This affects other countries as well. Climate change transcends borders.

How can we work with our closest neighbours and allies, such as the United States and Greenland, to take more action in the face of melting permafrost?

Mr. Michel Allard: Research networks are working closely together, particularly Alaska and Canada. Moreover, we're starting to share work methods. For example, we're sharing permafrost mapping with the Inuit communities and on the communities' land, so that we can help them adapt.

In this committee, we're currently talking about setting up programs or making the best possible scientific programs inspired by the communities, in order to work with them. The people in the communities—we have an example next to me—are very familiar with their issues.

Many academics have already started doing this, for example in our network, at Université Laval, but also in ArcticNet. People from this network will be giving a presentation later. Relationships with Inuit and indigenous communities in northwestern Canada have been established. These relationships are very strong.

All Canadian researchers have a great deal of experience. However, we have funding issues. In addition, it's now time for the communities themselves to establish research needs and research partnerships.

I just want to mention briefly that a number of academics, particularly in our area, are more than willing to work together.

● (1135)

Mr. Maxime Blanchette-Joncas: Mr. Allard, I would like you to elaborate on this vital collaborative effort. This effort is needed in order to forge ties with people, particularly in indigenous communities. Each community takes a completely different approach. We understand and respect that. What are these differences?

Quebec has a certain approach for working with indigenous communities, particularly in Nunavik. However, this approach seems a bit different from the one used in the rest of Canada. Are you doing certain things?

The Centre for Northern Studies has over 60 years of expertise. You certainly have had experiences that we can draw on today to optimize our effectiveness.

Mr. Michel Allard: In my opinion, yes. I'm thinking specifically about permafrost mapping in communities and adaptation work on the ground.

In Nunavik, for example, the main concern of Inuit communities is access to resources for hunting and fishing. This access has become less and less safe as a result of climate change. There are also issues with the construction and foundations of houses and with runway maintenance.

Since Nunavik is part of Quebec, the Quebec government has funded many studies. When I work in Nunavik, 80% of my funding comes from Quebec and 20% comes from other sources, such as the federal government.

When I work in Nunavut, almost 100% of my funding comes from the federal government. A small portion comes from the Nunavut government. It's a bit more challenging because the funding is less consistent. Federal programs are intermittent.

Mr. Maxime Blanchette-Joncas: I understand that the proportion is around 80-20. However—

Mr. Michel Allard: When I work in Quebec, yes.

Mr. Maxime Blanchette-Joncas: —when taxes are paid, the proportion is 50-50—

Mr. Michel Allard: Ha! I know that your committee is made up of politicians.

Mr. Maxime Blanchette-Joncas: —thank you for confirming this.

Mr. Allard, I'll come back to the accessibility challenges.

You referred to the extensive landslides in certain areas. I would like some concrete examples. As we know, we can't get up north on a pedal boat. We need airplanes and runways.

I would like you to explain the challenges, costs and differences in design between gravel and paved runways in the Arctic. I know that the Boeing 737-200 is used. It's the only jet that can land on gravel runways. However, this jet is on the verge of extinction.

More traffic is called for. However, this also makes it more difficult for researchers to get on the ground.

Mr. Michel Allard: Just yesterday, we met with the president of Air Inuit. The gravel runway poses an issue that requires him to adapt his new Boeing. With the Quebec department of transportation, he's looking for ways to make the runways more solid. I think that they'll end up having to pave the runways.

When paving a runway on permafrost, the impact of the pavement on the temperature of the ground below must be taken into account. Maintenance must also be planned for any cracks. Defects that occur over time must be fixed. All the maintenance machinery, which is completely different, must be considered. It's another matter entirely.

The north has its own specific needs. Traffic is increasing. I imagine that, one day, in Canada, runways will need to be paved in Resolute Bay or other cities and towns to accommodate increased traffic, but likely also to support the country's strategic interests.

● (1140)

[*English*]

The Chair: I'm afraid that's our time for this question.

[*Translation*]

Mr. Michel Allard: So we need exercise.

[*English*]

The Chair: Thank you so much.

We will turn now to our guest, MP Boulerice, for six minutes.

[*Translation*]

Mr. Alexandre Boulerice (Rosemont—La Petite-Patrie, NDP): Thank you, Madam Chair.

I'll digress for a moment. In about 20 minutes, on Parliament Hill, people will be counter-protesting to stand up for women's rights, their reproductive rights and the fact that women can control their bodies and make their own choices. I support them wholeheartedly. I wish that I could be there. However, I'm also delighted to be taking part in this vital study. I just want to remind you that these rights are still being threatened. We're already seeing this in the United States right now.

That said, I would like to thank the witnesses for joining us today.

Mr. Allard, in your remarks, you referred to the “greening of the Arctic.” This phrase may sound beautiful, but in reality, it's quite frightening. For lay people from the south like me, a Montrealer, I would like you to explain what the greening of the Arctic really means.

Mr. Michel Allard: In short, global warming encourages plant growth. Shrubs are currently becoming more abundant, especially on the tundra. These shrubs include dwarf birch and willow. This can be seen in satellite images. This changes the ground's thermal regime. In particular, it increases snow accumulation on the ground and causes permafrost degradation.

This also has many implications for indigenous people. For example, in some parts of Nunavik, caribou used to be hunted. Now, moose are found in these parts. In other places, people cultivated the land so they could pick berries. They can't now, because the shrubs are taking up all the space and smothering the berries. This major change, related to climate change, has side effects.

Mr. Alexandre Boulerice: I gather that global warming is likely to melt or thaw permafrost, which contains carbon dioxide and methane captured over thousands of years. The release of methane will speed up global warming. It's a vicious cycle.

Mr. Michel Allard: Yes. That's the permafrost carbon feedback that I referred to earlier. Across Canada, we could work with some communities. We want the chance to work with them on this issue to make sure that everyone understands the state of the environment and also to study the actual carbon footprint. Personally, I think that this feedback is a bit overestimated. Honestly, I think that we scared people a bit.

That said, I think that this feedback should really be measured. In Nunavik, for example, we observed that permafrost degradation led to the accumulation of peat bogs, which are carbon sinks. We see this in other places as well. Studies in Alaska showed this effect. We still need to take stock of the situation. However, we can calm our collective fears a bit.

Mr. Alexandre Boulerice: Thank you for helping to allay my personal anxieties.

All these factors have a tangible impact on infrastructure, land subsidence and erosion. What research is needed to further protect infrastructure in northern communities?

Mr. Michel Allard: For a number of years, the federal government, through Transport Canada, had an excellent program called the northern transportation adaptation initiative.

People got together. They visited a number of northern communities. They worked on major projects, such as the Inuvik-Tuktoyaktuk Highway, the Dempster Highway, the Alaska Highway—with the Alaskans—and the Iqaluit airport. It was this type of work. It was a model.

In my remarks, my final recommendation was to recreate an organization of this nature. This would involve creating a community adaptation initiative program in the north so that communities and researchers could work together on adaptation research.

● (1145)

Mr. Alexandre Boulerice: I recently read that northern communities could use a thermosiphon, a tool to stabilize permafrost.

Can you tell us about it? Does it work? What exactly is this tool?

Mr. Michel Allard: This tool is highly technical and it works well.

These are systems of pipes that run beneath the foundations of buildings and that extract the heat that the building transfers to the ground. Thermosiphons contain carbon dioxide, which rises in the tubes on the side of the building. This works in winter. In winter, as the gas cools, it condenses—turning to liquid—and flows into the tube beneath the building. This keeps the ground frozen beneath the buildings to prevent subsidence caused by permafrost degradation. When buildings come into contact with the ground, their heat is transferred below. This technique is designed for large buildings such as garages, warehouses and facilities on concrete slabs.

For houses, it's too expensive and it isn't the best solution. In this case, piles are a better solution.

Mr. Alexandre Boulerice: Thank you.

[*English*]

The Chair: Thank you very much. That was great.

We'll now turn to our second round.

It will be MP Soroka for five minutes.

Mr. Gerald Soroka (Yellowhead, CPC): Thank you, Madam Chair, and welcome to the position.

I'll start off with Mr. Cockney. No one's been asking you questions.

In the past, Jackie Jacobson and I'm sure many others have talked about how resource rich and cash poor the north is. What federal policies do you believe are creating barriers that reduce resource development in the north, and what changes would you propose to better harness the economic potential of the north's natural resources?

Mr. Angus Cockney: As you know, in the western Arctic, they say the Inuvik-Tuktoyaktuk Highway is the road to resources. It's all market-driven. Back in the 1970s, when the first Trudeau was in office, he pumped a lot of money into companies to subsidize their exploration needs. The Inuvik-Tuktoyaktuk Highway has been a boon for tourism in Tuk. As for activity there, it's all market-driven for sure.

Mr. Gerald Soroka: In your view, do federal climate policies align with the economic realities and the environmental needs of northern communities? Could you propose alternative strategies that more effectively balance economic development with environmental protection in the Arctic?

Mr. Angus Cockney: I've seen action for sure. I know the government has climate adaptation programs that communities have accessed to try to mitigate what's happening, especially on the coastline.

How do we adapt? In Tuk, for sure they're in the mode of prevention. You see that with all the shoring up of the shoreline. It's not adaptation; it's prevention right now. How do we prevent that from further happening? I'm sure the project that's now occurring in Tuk won't be the last one.

Mr. Gerald Soroka: Given the severe housing shortages in northern communities, how do you assess the current government's efforts in addressing this issue? Do you believe that there is too much red tape involved in housing?

Mr. Angus Cockney: From a community level, I was in Tuk a couple of weeks ago, and certainly the housing issue is evident. It's a challenge getting supplies and so on up there. It's a matter of will, I guess, for the government to inject resources, financial resources especially. I know that the government back in the residential school days had the will to build infrastructure, so I'm hoping that kind of will returns to housing.

Mr. Gerald Soroka: On federal support for science and research in the north, do you believe that current efforts are sufficient? What changes would you recommend to ensure that northern scientific research is adequately funded and aligned with the region's unique needs?

Mr. Angus Cockney: As far as sufficiency goes, it's never enough. It will always be ongoing if climate change continues. Certainly, we see that it has accelerated in the last decade or so.

As far as sufficiency goes, it will never be enough.

● (1150)

Mr. Gerald Soroka: Mr. Henheffer, in your recent op-ed on the Canadian Arctic strategy, you pointed out concerns regarding foreign interests, particularly from China and Russia, in the Arctic. What specific threats do they pose to Canada's interests in the region, and do you believe that there are significant government failures when it comes to defence in the Arctic?

Mr. Tom Henheffer: I'm not an expert on defence, but in terms of the issue of monitoring, I think science and environmental monitoring need to be combined with security monitoring. There are massive swaths of the Arctic that aren't being monitored, and we're one of the only organizations with near-coastal ships that work in uncharted waters, which means that we don't know what's going on under them, with the exception of a few ships run by a private foundation, in addition to the government and local ships that are up there.

To go back to one of your earlier questions, one really key thing that I didn't get to in my opening statement is that, first off, there absolutely needs to be more funding for Arctic science. There's no question that it needs to increase. As Angus said, we'll never get to a point where everything is done, but what really needs to happen is funding to increase capacity in communities, especially around administration. Lots of these communities have maybe one or two administrative people, or none, and they're tasked with doing an enormous amount of work to get funding grants out the door, and that just isn't enough.

When the government announces $200 million or $250 million for big research projects for monitoring and running programming on lakes, as the Łutsel K'e do, who are in charge of a park in the east arm of Great Slave Lake, that money is allocated to science. There's very little allocated to training and capacity building within the communities. That needs to change. That needs to be included as well, because once that happens, you can grow the economy in these communities. You can get people having meaningful jobs and working towards building their own science initiatives.

The Chair: I'm sorry. That's our time, but thank you so much for those great questions and answers.

Now we will turn to MP Jaczek.

You will have the floor for five minutes.

Hon. Helena Jaczek (Markham—Stouffville, Lib.): Thank you, Chair, and thank you to our witnesses for their presentations and testimony so far.

[*Translation*]

My first question is for Professor Allard.

[*English*]

Professor, you heard from Mr. Henheffer from the Arctic Research Foundation about what they've been working on—in other words, a national Arctic strategy. As I looked at the material prepared for us by our wonderful analysts, I was very much struck by how many institutions, colleges, universities and not-for-profits are involved in Arctic research, I'm sure with the very best of intentions, because we are all aware of the tremendous impact that climate change is having on the Arctic. However, do you see a need for increased collaboration? What kind of experience have you had in avoiding the duplication of research and in ensuring that we get good science done and that this knowledge is disseminated among the various groups and used appropriately?

[*Translation*]

Mr. Michel Allard: There are certainly a number of institutions. I'm thinking, for example, of Nunavut Arctic College; the Nunavut Research Institute; the Aurora College Research Institute located in Inuvik; and Yukon University located in Whitehorse. These organizations are growing on an intellectual and scientific capacity level. It's vital to work with them from a logistics perspective—they're on the land—but also to access a whole host of communities. The organizations represent these communities and they train people from these communities. Their collaboration is key.

Each community must be included. I agree with the other witnesses. Each community must have the opportunity to hold a forum or a meeting to voice its concerns.

I worked in Kugluktuk, a community in the western Arctic, where the concerns revolved around access to the land, for access to a park. The Inuit had their own solution to prevent damage to the tundra by all-terrain vehicles, a mode of transportation that they adopted. We worked with them to ensure that their concept was technically sound. It was a great experience.

People from the Centre for Northern Studies work on Bylot Island, which is very close to Mittimatalik or Pond Inlet. They work closely with the communities, particularly on animal biology. Community members and regional organizations, such as the Qikiqtani Inuit Association, participate in the research.

Our greatest wish is to train people. That's what interests us. The level of education isn't very high. At this time, very few young indigenous people finish high school or college. It would be good to have institutions in the north to train young people and integrate them into research teams in order to further their training.

● (1155)

[*English*]

Hon. Helena Jaczek: Thank you very much. I think there are some concrete recommendations there.

Mr. Cockney, obviously you're part of the Arctic Research Foundation, which is clearly very interested in indigenous knowledge, observations and contributions to their research. What is your observation across the Arctic with all of these various institutions that currently exist? To what extent are they incorporating indigenous knowledge?

Mr. Angus Cockney: Thank you for that question.

As a side note, as far as building capacity goes, you'll have to talk hunters and trappers out of hunting and fishing to build capacity for sure.

Anyway, as to what I see across the Arctic, I think universities and researchers are really beginning to align themselves with community members. They're adopting the approach of asking, "What do you need? What are your priorities?" I know when we go into communities across the Arctic, we ask what they're interested in and how we can move forward with research and science in their area.

Hon. Helena Jaczek: That's encouraging.

The Chair: That's our time. Thank you very much.

We'll now turn to MP Blanchette-Joncas for two and a half minutes.

[*Translation*]

Mr. Maxime Blanchette-Joncas: I can take more time, Madam Chair. It would be my pleasure.

You know that I have questions. I'm ready.

Mr. Allard, I would like you to speak more about the value of scientific studies and research on melting permafrost. This is happening in the north. However, as you said, this leads to the release of greenhouse gases that will directly affect the climate. Permafrost blocks microbial activity and contains viruses. I would like you to elaborate on this.

This is happening in the north. However, the impact is felt all over the planet. We need these vital ecosystems.

Mr. Michel Allard: Yes, absolutely.

I want to come back to Mr. Boulerice's question earlier about permafrost carbon feedback. I believe that we need to measure that in Canada. Our knowledge of it comes from international literature, which is mostly based on mathematical models and remote sensing analysis across the Arctic, but there are very few studies on the ground to measure the gas emissions that naturally come from permafrost, first of all, and degraded permafrost. The accumulation of organic matter, plant growth, all of that changes the carbon footprint of northern Canada.

I would even posit the scientific hypothesis that we may have a very useful carbon sink in northern Canada that should be protected so that it can one day be counted in the country's carbon emissions.

Mr. Maxime Blanchette-Joncas: In concrete terms, what are your expectations in terms of the federal government accelerating and supporting scientific research in the north and in northern communities? What are the priorities?

Mr. Michel Allard: Build relationships and visiting these places. My colleagues, like Dr. Cockney, know what it's like to work with researchers. Many of them come through Tuktoyaktuk and are involved in coastal erosion studies. That includes a number of my colleagues. You know that travel and meetings are very expensive. The communities have very little scientific equipment on hand. People could also develop or use technologies that make it easier and easier to collect data, take photos, observe on the ground and exchange on the Internet with Inuit observers who are on site. As much as possible, we want young people to handle that and work in their communities.

● (1200)

Mr. Maxime Blanchette-Joncas: So it would be a good idea for our committee to visit—

[*English*]

The Chair: Thank you. I'm afraid that's our time. I'm sorry. It's the worst part of this job.

For the last two and a half minutes of this panel, we'll turn to MP Boulerice.

[*Translation*]

Mr. Alexandre Boulerice: Thank you very much, Madam Chair.

First of all, Dr. Cockney, thank you for your kind words about my colleague Lori Idlout. It's always good to hear such things.

In your opinion, what should the federal government's priorities be when it comes to research in the Arctic zone? What are your priorities?

[*English*]

Mr. Angus Cockney: As far as the priorities of the federal government in the Arctic go, I think it should pay more attention because of what's happening in the Arctic. It's well known that the effects are incredibly prominent in the Arctic.

As far as our identity goes, our land claim agreements ensure that we are to maintain our cultural identity. If we were to lose our land, we wouldn't have identity. The federal government needs to put more resources into the Arctic and have the will to be there.

[*Translation*]

Mr. Alexandre Boulerice: Thank you very much.

I don't have much time left, but I will go ahead and ask Mr. Henheffer a question.

Mr. Henheffer, you used a word earlier that's very loaded and quite strong. You talked about a new type of colonialism in the north coming from China.

In one minute, can you explain what you meant by that? I'm asking because it's quite concerning.

[*English*]

Mr. Tom Henheffer: It is quite concerning that they're using soft diplomacy to make large investments in resource companies in the north. It's a good, legal way for them to do that.

My understanding is they've also visited certain communities in the north and have generally been turned away. If they're coming in, giving many more resources and bringing in a lot more funding at a scale larger than what the Canadian government is doing, you have to ask yourself why the communities wouldn't take their money. Why wouldn't they sell to people who are offering more?

As we've seen, they've already purchased a huge stake in a major rare earth minerals mine in the Northwest Territories. The more that happens, the more jeopardy there is to our sovereignty, especially when you consider that this is Inuit and northern indigenous land. There are land claims that belong to these people and that they have sovereignty over. Canada needs to be a good partner there and invest in resources and infrastructure, because if we don't, other people are going to, and China is already showing that.

The Chair: Thank you very much.

Thank you, Michel Allard, Tom Henheffer and Angus Cockney, for your testimony. You've given us much food for thought. It was fascinating listening to your testimony. You may submit additional information through the clerk. Please see the clerk for any questions.

We'll suspend briefly to allow our witnesses to leave, and then we will resume with our second panel of witnesses. I will ask members attending via Zoom to please stay connected to this session.

● (1200)

_____(Pause)_____

● (1208)

The Chair: We're back. We're anxious to get started with our second round.

I would like to make a few comments for the benefit of the new witnesses.

Please wait until I recognize you by name before speaking. For those participating by video conference, click on the microphone icon to activate your mic, and please mute yourself when you are not speaking.

For interpretation, for those on Zoom, you have the choice at the bottom of your screen of floor, English or French. For those in the room, you can use the earpiece and select the desired channel.

It's now my pleasure to welcome, from ArcticNet, Dr. Christine Barnard, executive director, by video conference. As an individual, we have Dr. Jackie Dawson, Canada research chair in human and policy dimensions of climate change at the University of Ottawa and scientific director of ArcticNet. Finally, from the centre for northern studies, we have Dr. Normand Voyer, professor.

You will each be given a maximum of five minutes for your remarks, after which we will proceed to rounds of questions. I will signal when you have one minute left.

We'll start with Dr. Barnard to deliver her remarks first.

Go ahead, Dr. Barnard.

● (1210)

Dr. Christine Barnard (Executive Director, ArcticNet): Thank you for the opportunity to speak as a witness.

As we are now seeing, climate change is happening in the north at unprecedented rates—more than two to three times faster than the rest of the world. The consequences are dramatically affecting northern communities and all of us in the south. Melting glaciers and rising oceans are affecting coastal communities, whose houses are under threat of falling into the sea. Safe access to hunting grounds is impeded due to unpredictable weather. Wildfires are devastating communities and ecosystems while acting as vectors for long-term transformation and accumulation of contaminants. These are just a few of the many dramatic impacts that demand investment in science to better understand and prepare for change and to monitor how systems are evolving and interacting, from sea ice to human health.

After a pandemic and at a time of intense geopolitical tension, we should keep in mind a few lessons.

Decisions must be based on evidence emanating from science and indigenous knowledge. Science can be humanity's exit strategy from a crisis, whether it's a pandemic or the cumulative effects of climate change.

Cross-cultural, national and international collaborations are key to developing and deploying solutions.

The need for science in understanding and mitigating the effects of climate change and biodiversity decline is the most pressing issue of our time, in my opinion. The need for indigenous knowledge is also critical in recognizing and respecting its importance in understanding the north and the globe in a more holistic way.

One of the most important lessons we have learned at ArcticNet is that research in the north is completely different from research in the south. It requires more time to build and nurture relationships, to co-develop projects and to exchange throughout a project's lifespan. It requires more travel and therefore more funds, as work in the north is tremendously expensive and can be dangerous, with people needing the right safety and cultural training to ethically work with communities.

Northern indigenous people currently have access to several funding pots, but they do not necessarily have the capacity yet, nor the pool of researchers, to apply and fulfill these mandates. The partnerships with academic institutions remain critical for upholding our commitments to achieving knowledge advancement in the north. There are certainly not enough funds for researchers in post-secondary institutions, given the realities mentioned earlier of conducting northern research and the required engagement and relationship building.

Inadequate research infrastructure is hindering the progress of Arctic research. A few great research centres are operational within the vast territory of the north, such as the Nunavut Research Centre, the Nunavut Research Institute and Aurora College, but out of 60-plus research stations, only one, operated by Polar Knowledge Canada, receives adequate funding. The 60-plus stations, which are distributed across all northern geographic regions and ecosystems, are in dire need of operations and maintenance funds. This is urgent, to ensure that safe and well-equipped stations are accessible to locals and researchers.

ArcticNet, the polar continental shelf program, the centre for northern studies, Amundsen Science and many others offer logistical support to access remote stations, vessels and sites, but again, funding does not meet the demand. Investing in northern-led and indigenous-led research has become the mantra of the north, yet we must recognize that this will take time and considerable investments. Funds must be invested in training and capacity building in the north, but this should not be to the detriment of academic research in partnership with communities. That's to ensure we are exploring emerging issues and that there are no gaps in long-term monitoring initiatives.

It should be noted that capacity and readiness are not homogeneous across northern communities, as some are extremely effective at conducting research while others are not there yet. Each nation and territory has its distinct issues and aspirations, and decisions must be made according to local, regional and cultural distinctions.

Conducting research in the north is far from perfect, but giant strides have been taken to engage more meaningfully with indigenous partners and to support reconciliation through self-determined research. How we do research in the north is just as important as what research we do. One approach that ArcticNet has seen as effective is applying the principles of the national Inuit strategy on research in our projects. ArcticNet has also created the world's first Inuit-led research program, and there are opportunities to build on this.

Investment in northern research contributes to sovereignty and national security and increases resilience to climate change and reconciliation, while upholding Canada as a leader in Arctic research and indigenous partnerships.

Thank you.

● (1215)

The Chair: Thank you very much, Dr. Barnard. You had a few seconds left, so that's terrific.

We'll now turn to our second witness.

Dr. Dawson, you have five minutes to give us a statement.

Dr. Jackie Dawson (Canada Research Chair in Human and Policy Dimensions of Climate Change, University of Ottawa, and Scientific Director, ArcticNet, As an Individual): Thank you very much.

I want to begin by expressing extreme gratitude to all of you for taking on this really important topic. It's my absolute pleasure to be here today as a full professor and Canada research chair in human and policy dimensions of environmental change, as a lead author of the most recent Intergovernmental Panel on Climate Change report and as the current scientific director of ArcticNet.

Your committee's study is particularly important right now because Russia's invasion of Ukraine has meant that large portions of the global Arctic is now off-line for research activities. As a result, many European researchers are moving their research programs to the Canadian Arctic. Not only does this situation put pressure on Canada to ensure that we have proper measures in place to support this shift, but it also means that we have lost a substantial amount of data from the Russian Arctic region, thus decreasing our ability to accurately model climate futures and changing Arctic ecosystems.

Climate change in Canada's Arctic has and will continue to have significant consequences across local, regional, national and global scales. It is not an exaggeration to say that these changes have the potential to completely reshape and change the world as we know it. This is not just due to melting ice caps and glaciers and sea ice change, for example. It's also because of the cascading effects that these biophysical changes will have on society. For example, altered freshwater fluxes in the Arctic Ocean from melting ice will lead to variations in the Gulf Stream, which we expect will then lead to changes in the climate, not only locally but all the way to the mid-latitudes.

Conversely, the drought conditions that are being experienced near the Panama Canal and the horrific ship attacks that are occurring near the Suez Canal, combined with the reductions in sea ice that are occurring right now in the Canadian Arctic, mean that we are likely to see a coming shift in global maritime trade activity to newly opened Arctic sea routes, including, potentially, our Northwest Passage. Shipping is a trillion-dollar industry that supports 90% of everything moved globally, and a shift of this nature, although potentially economically fruitful in some regard, will also create a cascading set of risks related to geopolitics, the environment and indigenous culture.

These are just a few examples of the cascading effects of climate change. Of course, the question is, what do we do about it?

Over the past five years, Canada's status as a leader in Arctic science has grown internationally, especially with respect to indigenous peoples. Countries around the world, Arctic and non-Arctic alike, regularly look to Canada for guidance on not just what science is urgently needed, but also how science should be done. As a nation, we have made important improvements in this area through, for example, the Arctic's north2north program and the National Research Council's challenge programs and others, but there is a lot more to do.

At present, there are several competitive funding programs available to support indigenous engagement and leadership in science, but there remains a lack of training and capacity for local communities to meaningfully engage in these projects. It is important to point out that Canada is the only nation without an Arctic science strategy and that many non-Arctic nations, such as Italy, India, France and China, have Arctic science strategies. Although discussions are beginning about potentially establishing an Arctic science strategy, which is different from an Arctic strategy, we need this sooner rather than later. The lack of leadership in this space has already caused geopolitical and diplomatic challenges over this past year alone, and this is likely to continue.

One way that Canada is beginning to assert some leadership in this space is through the emerging Arctic pulse initiative, which is a Canadian-led international science mission that is planned between 2024 and 2030, with a major field season to occur in 2027. The initiative will link together existing projects and seeks to leverage additional resources to ensure that Canada can play a leading role in this space.

In conclusion, supporting a coordinated and connected Arctic science ecosystem in Canada that is underpinned by strong government supports, including a national Arctic science strategy that leads us, sets priorities and connects various institutions together, will be fundamentally important as we move forward. It will help us ensure globally relevant discoveries, economically vital innovations, self-determined approaches to sustainable development, strong international relationships among like-minded nations, indigenous reconciliation and urgent solutions for climate change mitigation and adaptation in Canada and around the world.

● (1220)

The Chair: You're right on the button. Thank you.

Now we will have an opening statement from our third witness, Dr. Voyer.

[*Translation*]

Dr. Normand Voyer (Professor, Center for Northern Studies): Good afternoon, Madam Chair and members of the committee. Thank you for giving me a few minutes to talk to you about the challenges facing the people of Canada's north in terms of science and research.

My name is Normand Voyer. I'm a chemist and a full professor at Université Laval. My specialty is the chemistry of natural products in Canada's far north. Today I represent the Centre for Northern Studies, or CNS, which was founded in 1961. Based at Université Laval, the CNS is part of a strategic research network together with other Quebec universities.

The Centre for Northern Studies is an interdisciplinary group of 61 research teams. It has more than 500 researchers. We have a network of seven research stations in Nunavik, in addition to two other research stations in Nunavut. We operate a network of unique environmental measurement stations from James Bay to Ellesmere Island.

We and members of northern communities are therefore privileged witnesses to the significant impacts of climate change. As has been said a number of times, the far north is the fastest-warming and most warming place on the planet. This is due to a phenomenon called Arctic amplification. I won't go through the effects of climate change, but for a comprehensive view of climate change in the Arctic, I recommend that you read the excellent review paper by my colleague, Professor Warwick Vincent, which I have submitted to the committee.

Do the people of the Arctic and the north have the research infrastructure, tools and funding to participate in the research? The short answer is no. Our work and our interactions clearly show that the communities themselves are seriously lacking financial and human resources and instruments. As a result, they are unable to conceive and carry out research projects that immediately address their concerns and allow them to train their future generations to actively participate in research.

For example, they have no laboratories equipped with the necessary instruments to validate water safety and the safety of medicinal plants. The same is true for labs and instruments to measure emerging pollutants, such as per- and polyfluoroalkyl substances, or PFAS, and microplastics in the Arctic.

Moreover, many projects of interest to the communities require very fine environmental data at the local level. This strategic data is vital for monitoring environmental change and making decisions. This data exists virtually everywhere, but one of the issues is that research stations and environmental measures are aging and require major investments to maintain and bring them up to standard. Unfortunately, no programs in Canada are specifically tailored to meet this type of need.

In addition, because funding sources are very limited, they do not allow indigenous and non-indigenous researchers to work closely together to analyze and put the data into perspective.

There isn't enough cooperation with local and indigenous communities on Arctic science and research.

There are some great examples, such as the Kangiqsualujjuaq Inuit Imalirijit project in Nunavik, carried out in conjunction with scientists who came to communities to study pollution in the George River, which is essential to traditional activities. We also have a joint initiative with the Cree and Inuit communities of Whapmagoustui-Kuujjuarapik to characterize the natural substances in Labrador tea, a widely used medicinal plant in those northern communities.

However, there are very few examples because joint projects with northerners come with enormous challenges due to distance, transportation costs, limited access to the Internet, as well as a lack of human resources and spaces to build collaborative partnerships. We scientists lack the resources to build partnerships on the ground with the communities because northern logistical initiatives like the polar continental shelf program are underfunded, and the Natural Sciences and Engineering Research Council of Canada, or NSERC, also provides limited funding.

Building collaborative research partnerships with the communities is the only way to develop significant projects that truly meet their needs. They must be given the means to do so. We must give ourselves the means to do so.

Thank you.

● (1225)

[*English*]

The Chair: You were under your time. We're doing great with the timing. Thank you so much.

Now we will open the floor to questions, and we will kick that off with MP Michelle Rempel Garner for six minutes.

Hon. Michelle Rempel Garner (Calgary Nose Hill, CPC): Thank you, Chair.

There's so much to touch on. Where to begin?

I'll start with you, Dr. Dawson. You made a really important point about the lack of an Arctic research strategy. I've looked through the recently released defence strategy, which says it's going to advance the goals of the Arctic and northern policy framework. When I look at those two documents and the whole concept of data and data analysis, research and research presence and what Dr. Barnard said about the maintenance of research facilities and their presence, there's no harmonization of that whatsoever.

Would you recommend that the defence strategy and Canada's northern policy framework be linked together with a formal research strategy?

Dr. Jackie Dawson: Those documents should be harmonized, period, and yes, I strongly feel we need a clear and formal research strategy that comes from the federal government and directs the science community and sets priorities. Most other nations have this. It helps you decide what to do and helps you work together as a global community.

There are many research stations and many researchers, and we're all doing priority-setting exercises. At ArcticNet, we would love some guidance on that through a strategy.

Hon. Michelle Rempel Garner: I knew of ArcticNet even prior to politics, when I was in academic research admin. Were you consulted by the federal government either on the defence strategy or—

Dr. Jackie Dawson: No.

Hon. Michelle Rempel Garner: Do you think there's an opportunity, as we are getting more pressure as a country from NATO allies to increase our NATO spending, to target some of that work or those expenditures on research and research presence in Canada's Arctic?

Dr. Jackie Dawson: Absolutely, and that's a very strategic way to go because we are required to do that. We absolutely need to do that, and we need to be thinking strategically about all our research. All research should be multi-purpose. That doesn't mean I don't believe in pure, fundamental scientific research. However, in the Arctic, what we need is applied science that is multi-purpose for infrastructure development, defence needs, etc.

Hon. Michelle Rempel Garner: Can you expound on the reasons why? My assumption would be that the reason for that type of research is it's multi-faceted. It's not only to understand the ecosystem and impacts of x, y and z, but also to inform public policy, particularly on defence.

Dr. Jackie Dawson: Absolutely, yes.

Hon. Michelle Rempel Garner: To me, it seems impossible that Canada can make strategic decisions on defence strategy in the Arctic without understanding, for lack of a better term, how it works. Would that be a good reason why Canada needs an Arctic research strategy that's tied into its defence strategy?

Dr. Jackie Dawson: Yes, that is one very important reason. I can't remember the percentage of the Arctic charted to modern standards, but it's very limited. We have a lot more traffic, and we need to understand these things. We need better satellite infrastructure too.

Hon. Michelle Rempel Garner: Okay. That's a whole other hour of questions, but yes.

Dr. Jackie Dawson: Yes.

Hon. Michelle Rempel Garner: If you would like to put on the record that part of our research strategy is sovereign satellite infrastructure, let's—

Dr. Jackie Dawson: I'd like to put that on the record.

Hon. Michelle Rempel Garner: Great. We need another two hours here.

If we are going to proceed with reconciliation as a principle of any sort of Arctic strategy, how can we proceed with reconciliation if we don't have a research strategy that includes indigenous traditional knowledge? I guess what I'm trying to say is, to me, it seems very short-sighted that we now have a defence strategy and northern strategy that don't bridge those things with indigenous traditional knowledge.

● (1230)

Dr. Jackie Dawson: Indigenous traditional knowledge and the inclusion of people in the north—especially the Inuit, because of the population and settled land-claim areas—are essential.

I forget what I was going to say.

Hon. Michelle Rempel Garner: We're trying to lead you down the garden path with this. If we are going to recommend to the government that they have an Arctic research strategy that bridges the defence strategy and the northern strategy, does indigenous traditional knowledge need to be part of that?

Dr. Jackie Dawson: It absolutely does, one hundred per cent. They need to be leaders in it as well. There needs to be leadership from Inuit in that space.

Hon. Michelle Rempel Garner: I have one last minute.

You talked about this now becoming a diplomatic issue. Could you give the committee a concrete recommendation that would address those concerns?

Dr. Jackie Dawson: Again, we'd need two hours, but I can give you one concrete example as a recommendation.

Canada needs to lead in this space, period. The Arctic is our front yard. We are an Arctic nation. I would argue that we are not currently seen as leaders in this space. We are leaders in how we engage and how we engage with reconciliation, but we are not leaders in science.

Hon. Michelle Rempel Garner: Why do you think that is? Why do you think we're not seeing that? I'm short on time, but I think that's important.

Dr. Jackie Dawson: We're not coordinated; we're disjointed. We don't have priority-setting exercises. We're not organized. We haven't focused on the Arctic, and we absolutely need to. Non-Arctic nations are taking the leadership space, and that is causing diplomatic challenges.

Hon. Michelle Rempel Garner: Thank you.

The Chair: Thank you so much to both of you. That was very interesting.

Now we will turn to MP Arya for six minutes.

Mr. Chandra Arya (Nepean, Lib.): Thank you, Madam Chair.

Thank you, Ms. Dawson.

The Arctic is not totally new to me. About 12 years back when I was in the private sector, I formed a consortium of DRDC, the Royal Military College and companies like Raytheon and General Dynamics. There were about 10 or 12 different small-scale industries, with the Royal Military College involved, to form a centre of excellence to focus on integrating the technologies that are being used in the north.

There was a whole patchwork—I think there still is—of technologies being used. I thought we could integrate the technologies so that the monitoring and surveillance of the Arctic could be done in a better way. Anyway, it was not approved by the government. I don't know what is happening on that front.

Ms. Dawson, you and another witness both mentioned that commercial shipping is going ahead. Please be assured it will take another 25 to 30 years for that to happen. It is going to happen, but it will take 25 to 30 years.

Coincidentally, last week, I met the Singapore ambassador to Canada, who is also Singapore's ambassador to Arctic issues. I was quite surprised. The first thing that flashed into my mind was that Singapore is a big shipping point. He was talking about commercialization, but he agreed that it takes 25 to 30 years. He emphasized that they're looking at the Arctic from a climate change point of view.

Obviously, we all are aware of the problems created by climate change in the Arctic and elsewhere. The problems and impacts are emphasized again and again. I am not very sure that we'll be able to keep global warming within the accepted limits when North America still has coal-fired power plants, including in four provinces in our own country. We see another rich, developed country, Germany, restarting many of their coal power plants. When we, as rich, developed countries, are taking measures to continue and restart coal power plants, I don't know how we can influence or encourage the global south to do their part to fight climate change. We could go on and on about this.

My question is for ArcticNet. You mentioned how wide your collaboration is with so many different universities, agencies and countries. Are we spreading our resources too thin? Are too many players involved in various aspects of research? Are they duplicating the same things? What are your views on that?

● (1235)

Dr. Jackie Dawson: My view on that question is no. It's actually in some ways a small community. I know Michel Allard quite well. We know each other. We create review systems. There are the occasional duplications, but we are so far from understanding the region that that is not the risk. The risk is that we don't work together to understand these large-scale systems.

You mentioned the Singapore ambassador to the Arctic. We do not have an ambassador to the Arctic. The U.S. has an ambassador to the Arctic.

Mr. Chandra Arya: We're all ambassadors of the Arctic.

Dr. Jackie Dawson: That's right; we're all ambassadors to the Arctic. I would argue that we need one. You mentioned Germany. Germany is the leading Arctic science nation in the world, not us.

Mr. Chandra Arya: Still, Germany is the country that restarted its coal-fired plants when the first pain hit them. You can imagine how economically backward the global south is when they still have yet to see the basics of life that we take for granted. How do we ask them to tighten their belts? That's another thing.

You mentioned ArcticNet. I was looking at their website, and they collaboratively work with international research teams from Denmark, Finland and Spain. There's no mention of Russia or China. Maybe it's a new thing that they have taken them out. You also mentioned the loss of data. That is very important.

In the Cold War, I think there was some sort of collaboration among the scientists and researchers from the U.S.S.R. and the western bloc. Do you think there's any possibility of something like that happening? I ask because the Arctic is too important.

Dr. Jackie Dawson: You are absolutely right. As a scientist wearing my science hat, we are hopeful that there is going to be room for that, but considering the atrocities that are going on right now, it's a difficult step to take. We also endanger Russian scientists, our colleagues and friends, when we ask them to engage. It's a very complicated, sensitive subject—I'm sure you can understand that—and we're looking to the Arctic Council and our government for guidance on that.

Mr. Chandra Arya: Obviously funding is a thing. Every single witness coming to any committee in Parliament will say, “We need more funds.”

Dr. Jackie Dawson: Yes, always.

Mr. Chandra Arya: Obviously, there are always limited resources available.

Dr. Jackie Dawson: [*Inaudible—Editor*] is to leverage and connect, and that's what we need to do.

Mr. Chandra Arya: Exactly. I understand. That is where we need a formal strategy so the available resources can be channelled to important areas. That can stop the duplication of work so that it can all be done.

In addition to the strategy, is there any—

The Chair: Thank you. That's our time, sorry. I know we could all go on and on with this study.

Now we have MP Blanchette-Joncas for six minutes.

[*Translation*]

Mr. Maxime Blanchette-Joncas: Thank you very much, Madam Chair.

I find it interesting that we're talking about coal-fired plants in Germany. What about a certain pipeline named Trans Mountain, which will make it possible to take 890,000 barrels of oil a day from the oil sands. That will certainly affect the permafrost too. The government should take a good look at how clean its hands are before comparing Canada to other countries that don't always have the best climate change record.

Dr. Voyer, you mentioned in your opening remarks that the Arctic is the fastest warming region on the planet. In your opinion, how could increased funding for research in the Arctic improve our capacity to fight global warming?

Dr. Normand Voyer: That's a great question. It could take two hours to answer it, but I'll try to do it quickly.

We've already talked a lot about coordination and funding, among other things. What we need but don't have in Canada is a clear long-term strategy. The key word is “continuity”. Money is often invested in one-off activities. For example, the Canada Foundation for Innovation holds a competition. That's not a good way to do research in the Arctic. It's not good for Canada and its Arctic strategy.

The Arctic is changing, and the only way to understand and adapt to those changes is to have precise environmental data on the ground. That requires a network of research stations, environmental stations, researchers who will work together over a long period. At the moment, the problem is that we have ad-hoc initiatives that play out over a fairly short period of time. We're always changing, adapting and redoing everything.

We need a long-term strategy. The Europeans have 15-year framework programs, for example. That would be much better adapted and would allow for research continuity. We can't conduct research on climate change and its impact in Canada's far north if we establish a three-year program and then replace it with another program so we have to change everything and submit applications over again. Therefore, we need continuity in research.

Of course, we need more money, because it's extremely important for Canada and because it's extremely important for the communities. We haven't talked a lot about the impact of climate change on communities. When you go up north, you see it every day. Changes in the greening of the north are affecting food, food security and lifestyles, including the migration patterns of animals that are traditionally food sources, and also medicinal plants.

So what's it going to take? We need a long-term strategy founded on cooperation and coordination. It must include an Arctic research strategy that will provide the main guidelines for ArcticNet, as well as all the organizations and research groups that work on northern research, including traditional knowledge, obviously.

● (1240)

Mr. Maxime Blanchette-Joncas: Thank you, Dr. Voyer.

If I understand correctly, to summarize what you said, science and research are all about the data. Right now, no database has been set up where you can share your data and your research, regardless of where it's done in Canada, like the research you do in the northern regions or in the Arctic.

So that's the priority.

Dr. Normand Voyer: Absolutely. There are tons of data; it's sent out everywhere.

The primary goal should be to work together. Financial support should make it possible to put all the data together, digest it and make it available to the communities, but also work with them to show them our results and explain that they too can play a role in finding solutions. They could incorporate traditional knowledge, the changes that elders and knowledge keepers are experiencing in the communities.

Mr. Maxime Blanchette-Joncas: Thank you, Dr. Voyer.

I'd also like to underscore what you and a number of witnesses have already said, namely the problems identified by Arctic researchers and the disastrous consequences they're going to have on our future.

Dr. Normand Voyer: It would take me two hours again to answer you.

We're very familiar with climate change.

If you read Warwick Vincent's review, you will understand that these changes are not just happening in the Arctic. The current changes happening there are having an impact in the south, much more than people think. Last summer there was a lot of talk about the massive wildfires, and the smoke from them that ended up in New York. That gave us good international press.

The consequences will continue to escalate as the Arctic changes very rapidly. They say that it's warming two to three times faster than the rest of the world, and that has consequences here. Every action has a reaction. Sea levels will rise, and we'll have more coastal erosion. It's not just in the north; it's going to be around the globe.

You know, it's a very small world.

Mr. Maxime Blanchette-Joncas: Yes, Dr. Voyer, thank you for saying that.

I think it's important that we wake up in some cases and realize how significant these changes are. When it's not happening in our own backyard, it can seem, I wouldn't say unreal, but sometimes like a lower priority, maybe.

Dr. Normand Voyer: What we don't have and need most is stable funding.

We're having trouble maintaining and upgrading our stations, and sharing our data. A trip to the north to co-build can cost $15,000 to $30,000. The organizations' current research grants are not adapted to that.

Mr. Maxime Blanchette-Joncas: Thank you very much.

[*English*]

The Chair: Thank you very much for that.

Now we will turn to MP Boulerice for six minutes.

[*Translation*]

Mr. Alexandre Boulerice: Thank you very much, Madam Chair.

I want to thank our experts for joining us today.

Professor Dawson, I'd like to start with you.

You talked about newly opened sea routes in the Arctic, the melting ice caps and climate change, but also the geopolitical consequences. Let's put a name to it, Russia, which planted its flag on the ocean floor at the North Pole in 2007.

How do you perceive what Vladimir Putin's regime did, unilaterally claiming some sort of sovereignty over an entire zone of our planet that's quite huge?

● (1245)

[*English*]

Dr. Jackie Dawson: That was one of many gestures—the most overt, absolutely.

I'm a climate change expert with interests in geopolitics because these things are intertwined. I'm not a security or political scientist, but I think it's quite clear that there are interests in the Arctic.

There are resources in the Arctic that we don't even know exist yet. We've been looking for uranium, diamonds, oil and gas, historically. With the movement toward EVs and other things, we're going to be looking for nickel, cobalt and others, and we haven't even.... We probably know some of it.

It doesn't surprise me at all that this is happening, and I anticipate it will continue to happen. The subsurface is what concerns me the most. We have satellites. We have some ability to understand and monitor the top, but as for what's going on underneath, I'm not sure.

[*Translation*]

Mr. Alexandre Boulerice: That could unfortunately lead to conflicts in the future.

You put a lot of emphasis on the increase in vessel traffic and the shipping lanes that will open up. It could be a good thing, but it could also be problematic or dangerous.

Do you think the federal government is prepared for this significant increase in shipping through these newly opened lanes?

[*English*]

Dr. Jackie Dawson: No, I don't.

[*Translation*]

Mr. Alexandre Boulerice: You quite simply don't think so. Thank you.

What, then, should the federal government be doing to prepare for this?

[*English*]

Dr. Jackie Dawson: Well, first of all, it's taken us 18 years to build a new icebreaker. I think we have six icebreakers—five, really—but they're all at end-of-life. We are building offshore patrol vessels. They aren't necessarily going to be useful in the high seas. They're definitely useful in the nearshore, which they're designed for. I think we're extremely slow to be building ships.

One thing that's extremely positive, though, is Davie shipbuilding now owns a shipyard in Finland, which I think will help us get around some of the challenges we've had in building ships. We can't build ships in China, which can build them cheaper and faster. I understand why we don't do that. Now I'm hoping we can speed this process up, but we are not ready right now.

[*Translation*]

Mr. Alexandre Boulerice: Needs haven't been addressed in the past 15 years when it comes to shipping. I've been here for 13 years, and this keeps coming up.

Professor Voyer, you talked about the impact the melting ice caps will have on rising sea levels. This phenomenon is going to affect everyone because the oceans flow around the planet, which is very small, as you said. It could be an issue for Holland or Bangladesh, but a lot of the world's cities were built right next to the oceans. That means it could become a bit of a problem for New York, London and many places around the world.

I want to refer back to the beginning of your presentation. As you said, you're a chemist and you specialize in natural products in the north. Climate change is having an impact on flora and fauna. Natural products have to come from somewhere. Are some natural products in the north at risk? What changes in the vegetation are having an impact that you're seeing?

Dr. Normand Voyer: That's a great question.

Shoreline erosion is also impacting towns as small as Tuktoyaktuk. It's critical for the people who live there.

When we talk about climate change, we often talk about warming, but also about losing biodiversity. However, every time we lose biodiversity, we lose chemodiversity. Plants contain natural substances that have extraordinary properties.

Forty per cent of the drugs in our medicine cabinets come from plants. With global warming, plants are adapting their metabolism. Some will go extinct. For example, we may lose the first medication developed to treat Alzheimer's disease.

We've shown in our research that a small microscopic fungus in Iqaluit Bay or Frobisher Bay, if you will, has the ability to neutralize malaria in the south.

We were especially interested in the Whapmagoostui and Kuujjuarapik communities, which use a plant called Labrador tea for their traditional medical needs. This plant is abundantly used. The problem is, in the past few years, members of these communities have noted that this traditional herbal tea has side effects. So they asked us if we could help them understand that. With warming, the plant has a summer cycle in its metabolism that produces different substances at different times. One of those substances is toxic. So the goal is to determine the best time to harvest the plant so that the therapeutic effects are at their peak and the side effects are minimized. This is an extremely meaningful factor caused by global warming that is being forgotten.

When we talk about biodiversity—

● (1250)

[*English*]

The Chair: Thank you so much, Dr. Voyer. That was a little over our time. It was very interesting.

Now we will start our second round of questioning with MP Lobb.

Mr. Ben Lobb (Huron—Bruce, CPC): Thank you, Madam Chair.

The topic of this study, as you folks well know since you got the invitation, is science and research in Canada's Arctic in relation to climate change. Probably a good place to start is to ask what happened hundreds of thousands of years ago and try to educate ourselves on what happened back when the ice shelf was lost.

Jackie Dawson, for the benefit of us all, can you tell us what happened, the best guess, that many years ago?

Dr. Jackie Dawson: I'm not a paleoclimatologist, so I look more into the future than the past, but certainly all of us understand the ice age and the changing conditions we've seen. We had ice times and non-ice times—we all know that. The difference now is how rapidly it's happening, not that it's happening.

It doesn't surprise any of us scientists that we are seeing a warming period. We've seen cooling periods, but the timeline that it's happening in is way faster than we've ever seen before. There are certain periods.... The last ice area has been here for over two million years, and we expect that to be gone within the next 20 or so.

I'm not sure that I answered your question, but I'm not a paleoclimatologist either.

Mr. Ben Lobb: From your experience up there, people were studying this years ago and will do so all the way through to continue to learn what's going on.

Dr. Jackie Dawson: Yes, absolutely. People take ice cores, for example, and the ice cores help us to understand. Konrad Gajewski and Dorthe Dahl-Jensen are two people who would have a very good understanding of this.

Mr. Ben Lobb: I think all Canadians feel it's their responsibility to do their best and to be mindful of what they're doing and their contributions, be they personal, commercial or industrial. However, if we're taking an honest look at the Arctic region and some of the Russian businesses, they're emitting almost all of the emissions up there. We can do our part, yes, but if Russia is contributing almost all of the emissions, what do we do? Really, is our job just to study the continued impacts of Russian pollution and its impacts on the Canadian side of the Arctic? Is that really what our role is going to be?

Dr. Jackie Dawson: No, and I think you're right in the sense that the pollution coming from the Arctic is coming from Russia. That's really reflective of the fact that something like 72% of the circumpolar GDP comes from Russia. Our contribution to circumpolar Arctic GDP is about 2.8% or 3%.

We're completely underdeveloped and they're pushing development. From my perspective, it's actually not the Arctic that's the problem. It's other places around the world where we have to focus on mitigation efforts. Even Russia is emitting limited greenhouse gases per population compared to other countries.

I hope we can make some strides at the UNFCCC, the United Nations Framework Convention on Climate Change. We all have to come together. Also, I think we need to make money on an energy transition. That's how we have to get people to buy in.

● (1255)

Mr. Ben Lobb: Maybe I should know this, but approximately how many Canadians are currently doing research in the Arctic and contributing to that research? Is it hundreds? Is it—

[*Translation*]

Mr. Maxime Blanchette-Joncas: I have a point of order, Madam Chair.

[*English*]

The Chair: MP Blanchette-Joncas has a point of order.

[*Translation*]

Mr. Maxime Blanchette-Joncas: I've been told that the interpretation services are no longer working for people remotely.

[*English*]

The Chair: Okay. We need to add a little more time and go back a bit.

How long were you missing interpretation?

[*Translation*]

Mr. Maxime Blanchette-Joncas: It's not for me, Madam Chair, but for the people who are listening to us remotely. They need interpretation services in both official languages.

Can we do a test? It seems to have come back.

[*English*]

The Chair: Do you have interpretation now? Is it working? Can everyone hear in both languages?

[*Translation*]

Mr. Maxime Blanchette-Joncas: Yes.

[*English*]

The Chair: Okay, good.

MP Lobb, do you want to ask that last question again? I'll give you a bit more time so the interpreters can get it.

Mr. Ben Lobb: This was my question. How many Canadians are working directly or indirectly on Arctic research currently?

Dr. Jackie Dawson: The answer is that I just don't know. It's a problem, actually, that we don't know. We need to know. We don't have an inventory of the projects and programs. We can put that together, but it hasn't been done yet.

Mr. Ben Lobb: I appreciate that answer, because we're talking about an Arctic research science strategy. That's great.

Like Mr. Arya, at almost every meeting I've been at since I've been on this committee, somebody has said, “Give me some more money.” In this case, if you had a strategy, you would be able to pool it all together and say, “This is waste, this is good, this is duplication and this is triplication” and do it. That should be a highlight in the report, I would think.

Dr. Jackie Dawson: Absolutely.

Mr. Ben Lobb: How's my time doing, Madam Chair? Do I have five minutes left?

Voices: Oh, oh!

The Chair: No. Actually, you're down to a matter of seconds.

Mr. Ben Lobb: Okay, I'll cede my time.

The Chair: Thank you, Mr. Lobb.

That takes us over to MP Longfield for five minutes.

Mr. Lloyd Longfield: Thank you, Chair, and thank you to the witnesses for your testimony.

I want to go to Dr. Barnard. We've had people mention ArcticNet, but we haven't heard from you directly at this meeting. I really appreciate you taking the time to be with us.

When I look at how Canada participates in Arctic research with other groups in the world, when collaboration is happening, it seems like there is a gap that ArcticNet is helping to bridge. Could you talk to us about how ArcticNet is working to try to bridge science research in Canada and, through your working groups, how you're contributing to some of the research outside of Canada?

Dr. Christine Barnard: Thank you.

ArcticNet is one of the primary convenors of Arctic research across Canada, and I would even say across the world, because we can bring multidisciplinary researchers together through working groups, committees and science meetings. One of the core criteria funded through ArcticNet is having teams composed of researchers from different institutions to train HQP—highly qualified personnel—from different institutions. That automatically brings people together from different disciplines and institutions, thereby increasing the aspects of collaboration and contribution.

With our working groups and committees, we make sure to bring people from all northern regions and our research management committees to make sure there is an information exchange from the different regions that are brought to these committees. I think it is absolutely critical that we recognize the heterogeneity of our northern landscapes and peoples and we hear their voices on our committees and working groups.

We have this power of convening because we're not stuck in a federal department or agency or in the private sector. When we were building our application for the strategic science fund, we wanted to hear from everyone about what the science priorities were in Canada and internationally. We brought together over 300 people to discuss priorities in Arctic science. People from government sectors were telling us that it was the first time they were actually working with other public servants on this issue. They're Arctic researchers, but they don't have a place to come together.

I think ArcticNet really has a convening power, if you will, to bring people together across sectors, because we fund researchers from universities, indigenous organizations, Inuit organizations and the private sector. I think that's a big strength of ArcticNet.

● (1300)

Mr. Lloyd Longfield: Can you provide us with the most recent output that could help our committee's study on Arctic research? Then we could also appreciate the critical role that ArcticNet is playing in these discussions. I'm thinking of the Arctic Council, which was mentioned earlier. What's the interface between ArcticNet and the Arctic Council?

Dr. Christine Barnard: The leadership—Jackie Dawson, me and Philippe—sit on various working groups of the Arctic Council. We're also looking to fund Canadian Arctic experts to sit on these working groups to contribute to assessments that touch on various themes, such as biodiversity, contaminants and fresh water across the north.

ArcticNet brings experts to the table and sits on these working groups to make sure the information trickles down to the research community. I think one of the biggest problems, perhaps, in Canada is that when we have some agencies sitting at these tables, there isn't a trickling down of information to the research community.

Mr. Lloyd Longfield: There is a gap—

Dr. Christine Barnard: There is a gap.

Mr. Lloyd Longfield: —and Canada, being one of the eight founding members of the Arctic Council, has always been respected. However, if there's a gap, we need to identify that in our study.

Dr. Christine Barnard: Yes, we do, absolutely. I'd be happy to share our science priorities report with you.

Mr. Lloyd Longfield: That's terrific.

I only have 30 seconds left. I'm thinking of budget 2024, with $46.9 million over five years going through Natural Resources Canada to the polar continental shelf program. How does that interface...?

Dr. Christine Barnard: That's extremely important. It's providing researchers and northerners access to remote sites to conduct research. One of my points specifically addressed that we don't have the funds to meet the demand to access these remote sites.

Mr. Lloyd Longfield: This funding includes travel, and it includes expenses for people to get to those expensive-to-reach places.

Dr. Christine Barnard: Yes, it's logistical support, whether it be for fixed aircraft, airplanes or whatever else you need to access those remote sites. It's also for the possibility of staying in Resolute Bay before you're brought to other remote sites.

Mr. Lloyd Longfield: We just have to pass our budget.

Voices: Oh, oh!

Mr. Lloyd Longfield: Thank you.

The Chair: Thank you very much, Dr. Barnard.

We will now have MP Blanchette-Joncas for two and a half minutes.

[*Translation*]

Mr. Maxime Blanchette-Joncas: Thank you, Madam Chair.

My next question is for Dr. Voyer.

Dr. Voyer, I want to come back to what you said a little earlier about the importance of co-construction of scientific research projects with indigenous communities.

The committee's last study was on the concentration of research funding. Some universities share the vast majority of the funding. To be more specific, 15 universities receive 80% of research funding across Canada.

Do you think it would be beneficial for everyone if more money went to universities, or study or teaching centres that do scientific research and are close to those scientific research activities? For example, I'm thinking of Yukon University and Aurora College, which are directly on site.

Currently, the distribution of funding means that they aren't necessarily able to carry out scientific research on issues that closely affect their territory.

Dr. Normand Voyer: That's a great question. It takes a long time to build up a research tradition. Training doesn't happen overnight. A great deal of effort has been invested in the creation of the Nunavik Research Centre and other centres such as the Aurora Research Institute and the Yukon Research Centre. It's going to take time. However, these university training centres are already engaged in research activities and already receive funding.

I'm not in a position to answer the question about whether they receive enough to meet all their needs. Is it normal for 85% of research funding to be concentrated in 15 institutions? If we did an audit, we would probably find that the same is true in the United States and in the other G7 countries. However, research funding must be allocated to co-construction projects that will directly affect the communities.

I'm talking about carrying out projects that are relevant for Inuit, for northern communities, which would require specific programs. We're currently trying to export existing programs from the Natural Sciences and Engineering Research Council of Canada, or NSERC, the Canadian Institutes of Health Research, or CIHR, the Social Sciences and Humanities Research Council, or SSHRC, and the Canada Foundation for Innovation. We are trying to tie these programs to the reality of northern communities, which is completely inappropriate. There is a need to review the way funding is done—

● (1305)

[*English*]

The Chair: I'm sorry. I'm afraid that's a bit over, and we're getting close to the end of the meeting. Thank you.

For our final round of questions, we'll go to MP Boulerice for two and a half minutes.

[*Translation*]

Mr. Alexandre Boulerice: Thank you very much, Madam Chair.

Dr. Voyer, it was fascinating to hear your explanation of this small plant that is used to make tea but that could have side effects as a result of climate change. You made a very precise point about a real situation.

You also said that, in the north, there are no laboratories that analyze water safety. Is that correct?

Dr. Normand Voyer: In fact, there are labs, but they are underfunded, and their facilities are insufficient. In addition, the staff who use them aren"t properly trained. This is particularly true in Nunavik. I don't really know what the situation is in Nunavut, but the fact remains that drinking water is a major problem for northern communities. The instrument is absolutely necessary for the communities to be able to do certain checks. Now there are emerging pollutants. It's no longer just a matter of checking for coliforms or for safe water.

Mr. Alexandre Boulerice: There are perfluorinated compounds, PFAS.

Dr. Normand Voyer: There are indeed PFAS. There are now rare earth mines and nickel mines, which can release radioactive elements. So we need labs that are much better equipped and staff who are better trained to analyze water.

Mr. Alexandre Boulerice: You said that investments were needed, if only to maintain capabilities.

Dr. Normand Voyer: Absolutely.

Mr. Alexandre Boulerice: We're not even talking about development yet.

Dr. Normand Voyer: Right. Having instruments is one thing, but using them properly and optimally is another.

Mr. Alexandre Boulerice: It has to be done with well-trained people.

Dr. Normand Voyer: Yes.

Mr. Alexandre Boulerice: Okay.

Thank you very much, Madam Chair. That's all for me.

[*English*]

The Chair: Thank you very much. I really appreciate that.

Thank you so much, Dr. Barnard, Dr. Jackie Dawson and Dr. Normand Voyer, for your testimony and participation in our study on science and research in Canada's Arctic in relation to climate change. It was a most fascinating session. You may submit additional information through the clerk, and please see the clerk for any questions.

Given that we ran a bit over time, for the things I was going to discuss briefly, we will send out an email. That's just to give you a heads-up for things that the committee needs to think of going forward.

Is the committee in agreement to adjourn our meeting?

Some hon. members: Agreed.

The Chair: Thank you very much.