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• (1830)

[English]

The Chair (Hon. Kirsty Duncan (Etobicoke North, Lib.)): Colleagues, I call the meeting to order. Welcome to meeting 22 of the House of Commons Standing Committee on Science and Research.

Today's meeting is taking place in a hybrid format pursuant to the House order of June 23, 2022. Members are attending in person in the room and remotely by using the Zoom application.

Pursuant to Standing Order 108(3)(1) and the motion adopted by the committee on June 16, 2022, we are continuing the study of research and scientific publication in French.

[Translation]

I'd like to make a few comments for the benefit of the witnesses and members before we begin.

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

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

As a reminder, all comments by committee members and witnesses should be addressed through the chair.

[English]

For members in the room, if you wish to speak, please raise your hand. For members on Zoom, please use the "raise hand" function.

The clerk and I will manage the speaking order as best we can. We appreciate your patience and understanding.

In accordance with our routine motion, I am informing the committee that all witnesses have completed the required connection tests in advance of the meeting.

Tonight I am pleased to welcome to our committee, appearing as an individual, Nathalie Lewis, professor at the Université du Québec at Rimouski. From the University of Ottawa, we have Martine Lagacé, associate vice-president, research promotion and development.

Each of our witnesses will have five minutes. At four and a half minutes, I will hold up this yellow card. It lets you know you have 30 seconds.

Because we have interpretation, if notes were not submitted in advance, could you make sure to speak a little slower so that we have translation?

With that, we welcome you. Thank you for coming.

We will go to Professor Lewis for five minutes, please.

• (1835)

[Translation]

Mrs. Nathalie Lewis (Professor, Université du Québec à Rimouski, As an Individual): Good evening and thank you for your invitation.

I am going to get right to the point, since five minutes is short.

Canada is a country where French is one of the two national languages. As a francophone citizen, I could discuss that aspect, which is of primary importance for me. However, I am instead going to devote my speaking time to scientific publishing in French, another aspect that I also consider to be important.

Canada is a relatively neutral country within the Francophonie. I have just come back from Tunisia, where I attended a scientific event on the Francophonie. I have seen Canada's influence on other francophone countries, that is, the impact of Canada's French and positive image in relation to the Francophonie. Our country can play an important role in this regard...

[English]

The Chair: I'm sorry; I'll have to stop for a second. We're having trouble with the interpretation.

Can we try again?

Colleagues, we're going to suspend briefly to try to sort this out. While they try to work out the interpretation issues, perhaps if Vice-President Lagacé is willing, we could go to her while they try to work out the interpretation in the background.

Would you be willing?

• (1840)

[Translation]

Dr. Martine Lagacé (Associate Vice-President, Research Promotion and Development, University of Ottawa): Absolutely.

[English]

The Chair: Thank you so very much.

The floor is yours for five minutes, please.

[Translation]

Dr. Martine Lagacé: Thank you.

I would first like to thank the members of the committee for allowing me to speak this evening, both as associate vice-president of research promotion and development at the University of Ottawa and as an individual, as a francophone researcher who produces research documents in both official languages. I will perhaps explain a little later what I describe as slippage on the part of francophones, who sometimes have a tendency to switch from French to English in their research.

Why are science and scientific publication in French a major subject for the federal government?

As the 2021 Acfas report points out, research, and more comprehensively science in French, has a profound impact on the vitality of francophone Canadians and on their ability to flourish and their sense of linguistic well-being. Far from simply expanding the francophone Canadian pedagogical, academic and professional lexicon, it provides scientific expertise that is indispensable for creating training programs, for various policies, and for appropriate services for francophone minority communities.

By producing and disseminating solid pedagogical resources, research in French makes possible a continuum of high quality education, ensures succession in francophone communities, and promotes a Canadian francophone scientific culture whose influence extends beyond national borders.

Let us understand one another clearly. The question being raised this evening goes well beyond our francophone communities. It is also the future of Canada's scientific diplomacy, its ability to influence the destiny of a community of 300 million speakers, global citizens, on every continent. The future of research in French is therefore the future of Canada's scientific, industrial and humanitarian presence in the entire world.

As a G7 member country, Canada also plays a leading role and can therefore have an influence on many international issues, be they economic, environmental or other subjects. Our community's capacity to produce robust analyses and studies in French is therefore an addition to the sphere of influence that contributes so much to our country's reputation. Unfortunately, and you have certainly heard this, we are seeing a rapid erosion of Canada's scientific production in French.

The ongoing decline in grant applications written in French, the low success rate in funding competitions, particularly at the Canadian Institutes of Health Research, and consequently the chronic underfunding of research in French, point to the rapid disappearance of science in French and thus of Canada's scientific diplomacy.

Of course, the three granting councils have been aware of that decline for many years, and the few measures taken have unfortunately not had very significant effects.

We are persuaded that in order to strengthen research in French and to support and disseminate publication in French, it will require closer collaboration among researchers, universities and the actors that fund research, particularly the federal granting bodies. In fact, in my view, "collaboration" is a key word this evening.

The University of Ottawa is privileged to be home to two cohabiting linguistic communities of researchers, francophone and anglophone, and to navigate between them. However, we are also observing a rapid decline in science in French at our university. We do our bit by supporting research and science in French at the University of Ottawa.

I am thinking, for example, of the University of Ottawa Press, the only bilingual press in North America, which publishes academic works in French and English. In 2019, the University of Ottawa created the Collège des Chaires de recherche sur le monde francophone, a truly dynamic entity devoted to supporting very high level research in French. The college brings together 10 holders of research chairs in French who are working on various subjects, such as cultural heritage, digital health or francophone immigration.

The University of Ottawa has also implemented a bilingual strategy for mobilizing knowledge, which supports our researchers in pursuing their work in their language, despite the pull that might be exerted by the decreasing number of publications in French.

• (1845)

I will conclude with a recommendation. The University of Ottawa would look very favourably on a Canada-wide federal strategy to support research and scientific publication in French that would recognize the importance assigned to research and the advancement of knowledge in French in Canada. Such a strategy would also enable the Canadian scientific community to play an even more noteworthy role not just in Canada, but also elsewhere in the world.

If time had permitted, we could have addressed the question of coordination among the actors.

Thank you.

[English]

The Chair: Madame Lagacé, I am sorry to interrupt. I apologize, and you've been so gracious in taking over. We thank you.

I'm just going to hear from our clerk. Thank you very much for your testimony. We're glad you're here.

We are going to now try to go to Professor Lewis again to see if this will work. We'll start at the beginning.

[Translation]

Mrs. Nathalie Lewis: Can you hear me better?

[English]

The Chair: We hear you better, yes. Could you start at the beginning?

[Translation]

Mrs. Nathalie Lewis: Thank you, Madam Chair.

I'm sorry about the problems with the sound.

Today, my remarks will focus on an aspect that I consider to be important for francophone scientific publishing.

I was talking about the privileged position Canada holds within the Francophonie and I think it is important to continue my remarks on that subject.

I believe that in the interests of the diversity of knowledge, science cannot deprive itself of French. Apart from being the tool of communication, however, it is how ideas are organized and structured that demands pluralism in languages and linguistic diversity.

In a world where current issues are crucial and complex, we cannot deprive ourselves of diversity. I am aware of this as an environmental sociologist. The organization of science demands that criticism and feedback be shared for all research and analyses at the international level. It is not a matter of publishing articles to pad a curriculum vitae or puff up a career—and we could come back to the upsurge in bibliometrics; rather, it is to circulate ideas and knowledge. This is central to the scientific method and it is what is important and dear to me as a scientist.

Today, we have to acknowledge the massive anglicization of science. One could hold forth at length about the causes, but that will not be the angle I take in my brief remarks. In fact, I want to stress the importance of the circulation of scientific ideas. Accordingly, as science is organized at the international level at present, that circulation takes place through scientific publishing, and that circulation must necessarily be international. Ideas have to mingle.

The work done in recent years around the language of science shows that English is the most used as the language of international scientific communication, and this reduces and impoverishes the essential scientific diversity I referred to earlier.

French, like others of what are called national languages, would be reduced to national dissemination. Here, I am not even referring to the dissemination of French in Canada. It poses a real scientific and epistemological problem in the connection between theory and practice. It deprives us, collectively, of what is cruelly missing for us to grasp today's complex issues: the mingling of multiple ideas across sectors and disciplines, and the essential, and today even vital, scientific imagination.

In Europe, it is interesting to look at what has been achieved by the cOAlition S and the leadership exercised by numerous researchers who have worked on the status of the language in science and publishing. On this point, Canada has a major responsibility to science and the Francophonie and to Canadians. It could occupy an enviable position in this regard.

Scientific publishing takes place in large part through scientific journals, that is, peer-reviewed journals, reviewed by other scientists who are experts in the same fields. We could come back to this aspect. Scientific publishing is the dominant tool or vehicle, which we will call it even if though is more complex, that allows scientific advances not only to be disseminated, but to be also circulated and debated and discussed. That publishing must reflect the importance of French in an equal position as a scientific language. That is no longer the case today, as we have briefly discussed.

The current model of scientific dissemination requires that researchers publish and be visible—which is coherent, so far—and, whether or not they join, promote certain scientific journals over others. I cannot unpack the fine points of the traps of bibliometrics in these remarks, but that aspect is quite important and well documented. This way of building reputations does not affect just francophone scientific publishing, obviously, but it nonetheless throws up more obstacles.

Apart from this rankings race engaged in by the journals, we come back to the initial idea: the importance of international dissemination and the diversity of that dissemination, the aim of which is to circulate ideas, discoveries and research.

Let us come back to the preponderant position and the domination by journals most often associated with Anglo-Saxon commercial publishers. Today, we are witnessing a push toward uniformity in ways of thinking, and it is that phenomenon that it is important to revisit. We have to diversify our ways of thinking, writing and discussing.

• (1850)

And so a new approach, an exceptional redressing, special assistance to francophone publishing, which is regressing, must be given serious thought. This kind of differentiated assistance might seem unfair to some, because it is not egalitarian, but I will quote what has been said by sociologist François Dubé...

[English]

The Chair: Professor Lewis, I'm sorry to interrupt. The time is up, but you have an interested committee and they will ask you questions. Thank you both for being here.

We're going to go to our first round of questions. These are for six minutes, and tonight we begin with Mr. Tochor.

Mr. Corey Tochor (Saskatoon—University, CPC): Thank you, Madam Chair, and thank you to our witnesses here tonight.

I'm going to start with Martine from the University of Ottawa and the chairs you talked about. I believe you said there were specifically 10 French chairs.

Dr. Martine Lagacé: This is correct, yes.

Mr. Corey Tochor: On the website, I believe that I read somewhere that there are 94 in total. Is that a current number of how many chairs there are available at the University of Ottawa?

Dr. Martine Lagacé: Are you talking about internal or external chairs?

Mr. Corey Tochor: I would say internal chairs. What are the French ones? Are they referred to as internal or external?

Dr. Martine Lagacé: I think there must be close to about more than 70 internal chairs, yes.

Mr. Corey Tochor: There are 70 internal chairs.

You identified those 10, but what would be the breakdown of all the chairs, then? Is it just 10 of whatever that number is, or are there other ones that would work and publish in French but don't fall within those 10?

Dr. Martine Lagacé: Individual professors can decide to publish their work in either French or English, but aside from those 10, no, there are no other chairs, if I'm understanding your question correctly.

Mr. Corey Tochor: I'm just trying to understand. What you have control over is whom you assign those chair positions to. You assign 10 of I believe 94 just for French-only speaking and publishing professors, if that's correct.

Dr. Martine Lagacé: It is correct. These chairs were created to support publishing in French, which we tend to see moving backwards right now at the University of Ottawa. Many, many, many francophone professors tend to make the decision that if you publish in English, your impact factor will increase substantially. It will change your reputation internationally, because everyone knows in the world of research that if you publish, for example, in the *Journal of Applied Gerontology*, which is an American journal, your reputation as a researcher will increase incrementally.

If I decide to publish in a francophone journal, of course my reputation, my influence as a researcher, will be obviously reduced.

That's a fact, *per se*; hence the importance of creating support for francophone researchers with a translation service, for example, that could help them translate their publications from French to English and as such increase their influence and reputation worldwide.

• (1855)

[*Translation*]

Personally, as a researcher, I have often decided to switch from French to English in my scientific production, although I am a francophile. I can see quite clearly that when I publish in English, I have an impact that is not at all comparable to what I can have when I publish in French, since there is a bigger pool of readers. That is unfortunate and it prompts many francophone researchers to give up and decide to publish in English only.

[*English*]

Mr. Corey Tochor: Not to criticize, but if the problem is, to your point, that there are so many more people who would read English over French, it doesn't matter how many dollars we potentially could invest in trying to get more publications if the eyeballs are still going to be the same ratio. Is it actually going to accomplish what some believe needs fixing?

Dr. Martine Lagacé: It's also a matter of diversity of knowledge.

French will never disappear.

[*Translation*]

There is a big community of francophone researchers in the world. We could publish knowledge in English only, but we would be depriving ourselves of a diversity of ideas and knowledge. Of course, the readership is larger for scientific journals in English, but francophones still also have a duty to publish and disseminate research in French in various fields and to make sure that the reader has access to that knowledge also.

So I come back to one of our recommendations, which is to support francophone researchers so they continue to create knowledge

in French. That calls for a translation service to help them disseminate their scientific production in English in a bigger pool. It would then circulate in both languages.

[*English*]

Actually, coming from a university where bilingualism is one of our core values, I would say that to be able to publish in both languages is extremely important for the creation and circulation of knowledge.

[*Translation*]

Francophones are therefore less privileged in this regard.

[*English*]

Mr. Corey Tochor: I'm going to run out of time here shortly, and I want to ask another question.

Dr. Martine Lagacé: Yes.

Mr. Corey Tochor: I'm with you on some of your arguments, but let's go back to these 10 chairs, because it shows a little bit of the institute's direction. How many of those 10 are working on humanities or social sciences versus STEM or natural sciences?

Dr. Martine Lagacé: Most of the chairs in francophone research are in social sciences and humanities—which says a lot, by the way. It says a lot. It means that traditional, pure science is almost completely left out of French research, research *en français*.

Mr. Corey Tochor: Thank you very much.

The Chair: Thank you, Mr. Tochor. We appreciate that.

Now we're going to go to Ms. Diab for six minutes, please.

[*Translation*]

Ms. Lena Metlege Diab (Halifax West, Lib.): Thank you, Madam Chair.

I would like to thank the two professors who are appearing, Ms. Lagacé and Ms. Lewis.

Ms. Lewis, I saw that you had raised your hand. I'm going to give you a few minutes now to answer the question Mr. Tochor asked Ms. Lagacé.

Mrs. Nathalie Lewis: Thank you.

My thinking somewhat follows what was said by Ms. Lagacé. That aligns precisely with what I said about linguistic diversity, which goes beyond language and involves how one's ideas and one's mind are organized. It isn't just translation; it is also being able to think in French. Having studied at the University of Ottawa myself, I can say there are really different ways of organizing scientific thought. That diversity is a strength and I think it is important to preserve it.

In addition, the international Francophonie is not a minor thing. There is a francophone audience outside Canada that also deserves to be able to dialogue with us. As well, it can help us to understand experiences, particularly those in the South, that will prompt us to revisit the scientific perspective we bring to what we do. Translation alone is not always sufficient to reflect this diversity; it is just one solution. Publishing or science in French has to be encouraged in order for these multiple ways of thinking to emerge.

There is a system that drives us and drives my colleagues. You mentioned the Université du Québec à Rimouski, a city in eastern Quebec. There are few anglophones and anglophone students in that region, so there have to be sciences in French, whether they be the humanities and social sciences, a majority of which are in fact published in French, among francophones, in non-commercial journals.

To reflect this diversity, health sciences, applied sciences or social sciences also deserve to be thought about and published in French. Translation is a good option, but it is not the only one that should be promoted.

• (1900)

Ms. Lena Metlege Diab: Right.

Thank you, Ms. Lewis.

I have a supplementary question. What role do postsecondary institutions play in ensuring that their professors are able to publish in French?

It's easy for you, Ms. Lewis, because you are in Quebec.

In your case, though, Ms. Lagacé, how can you answer that question concerning Ottawa, which, as we all know, wants to be bilingual?

Dr. Martine Lagacé: As I said a little earlier, at the University of Ottawa, we try to support our researchers by creating various initiatives so they can produce knowledge and know-how in French. I mentioned the University of Ottawa Press, for example, which is bilingual and publishes pedagogical works in French, such as textbooks. I also talked about the Collège des chaires de recherche sur le monde francophone.

At the University of Ottawa, we have also, very recently, adopted a knowledge mobilization strategy that offers a huge amount of support for producing research in French and English. We have also developed multiple research partnerships, including with the Consortium national de formation en santé and the Institut du Savoir Montfort. We are working closely with partners at the international level, including in France and Belgium.

This how we are trying to create, but it is not sufficient. We are in an ecosystem. The federal granting agencies should be making more efforts to promote collaboration among francophone researchers in Canada. The research community is complex and we should combine efforts more with researchers in Moncton, Quebec, the West, and francophone Ontario. To do that, we need the help of the granting agencies, and, I reiterate, a Canada-wide strategy.

Ms. Lena Metlege Diab: That's right. You concluded your remarks with that recommendation, establishing a federal strategy. Can you tell us a bit more about that?

Dr. Martine Lagacé: I talked about a federal Canada-wide strategy to support research and scientific publication in French. It would recognize the importance assigned to research and the advancement of knowledge in French in Canada. It would allow the Canadian scientific community to play an even more noteworthy role, not just in Canada, but also elsewhere in the world. In fact, that was one of the recommendations in the 2021 study by Acfas.

We therefore need to coordinate all federal actors—the departments, agencies and research councils directly involved in research and science in French at universities that are strictly francophone or have a francophone mission. We need to provide better synergy, that being what I believe is the key word: better joint efforts or better collaboration to maximize the effects of each of the things done by the actors involved. That would ensure stable funding.

[English]

The Chair: Vice-President Lagacé, I'm sorry—

[Translation]

Ms. Lena Metlege Diab: Thank you, Ms. Lagacé.

[English]

The Chair: Thank you, Ms. Diab.

Thank you, Vice-President Lagacé.

[Translation]

I will now give the floor to Mr. Blanchette-Joncas for six minutes.

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

I would like to welcome the witnesses who are joining us this evening for this important study.

Good evening, Ms. Lewis. It is a pleasure to see you again. You are a frequent flyer at international francophone meetings relating to the humanities and social sciences, particularly in your field of expertise, sociology. Very recently, two weeks ago, you were in Tunisia to participate in the first ever Rencontres de la sociologie francophone.

Could you tell us about that experience? What countries were the participants from? Were the issues similar for every country? What did you observe on that trip?

• (1905)

Mrs. Nathalie Lewis: Thank you.

The participants largely came from the international Francophonie, in particular North and Sub-Saharan Africa. There were also a lot of European researchers and some researchers from North America. Last week was not a convenient time for North American researchers, since we are in the middle of the university session.

In terms of observations, I noted that young francophone researchers strongly wanted to meet other francophone researchers to discuss scientific issues. That need was real. As well, as I said earlier, attention was turned toward Canada and the role it could play, as opposed to other francophone countries on the African continent that are more affected by French colonization. I would remind you that we were in Tunisia.

Since my return, I have been receiving requests for guidance about maintaining science in French. However, as was mentioned earlier, the present system does not encourage francophone researchers to write and publish their work in French. Ms. Lagacé pointed this out earlier. But the fact is that the demand is there. In the present system, the way grant applications are considered favours publication in certain types of journals, generally not many being francophone.

Young francophone researchers are having to deal with this problem and we see declining interest in the Francophonie, even in countries where the scientific language is French. The present model is clearly pressuring researchers to opt for English.

Mr. Maxime Blanchette-Joncas: Thank you, Ms. Lewis.

Could you give us a few recommendations to counteract the model that pressures researchers to publish in English?

Mrs. Nathalie Lewis: Making the researchers individually responsible means expecting a lot from them, because there is an international model for publishing this way. Instead, we need Canada-wide assistance to encourage bringing research in French together. That calls for scientific publishing, which itself calls for scientific journals.

Being involved in a francophone science and environment journal, an international open access journal, I can tell you that managing a non-commercial francophone journal is a heavy burden to bear, on top of our jobs, to the point of being kind of scientific volunteer work. It is hard to operate those journals. Canada-wide assistance for francophone publishing could be, first, a way of somewhat counteracting this slowdown of science in French.

The recommendations in the 2021 Acfas report spoke volumes. French very simply needs to be promoted as a language of science. At the international level, numerous studies have shown the effect of what are called national languages, be they Portuguese or Spanish, that are often used only in the country, while the international language is English. At present, I think French can and must play an international role. Canada, with a stronger association, could help us in that regard.

• (1910)

Mr. Maxime Blanchette-Joncas: Thank you.

Could you tell us about your experience? I see that a large majority of your publications, as a researcher, are in French. I congratulate you on that. However, I would like to understand what prompted you to choose to do research and scientific publication in French.

In addition, what could you suggest to young researchers to interest them more in doing research in French?

Mrs. Nathalie Lewis: I also publish in English, but yes, for some years, I favour publishing in French. That is quite simply in order to transmit, as I was saying earlier, a way of thinking that is not expressed in the same way—

The Chair: I'm sorry to interrupt you, but Mr. Blanchette-Joncas' speaking time is up.

[*English*]

Monsieur Blanchette-Joncas, would you like to ask for a written answer?

[*Translation*]

Mr. Maxime Blanchette-Joncas: Yes, it is.

Professor Lewis, could you send us your answer in writing, please?

[*English*]

The Chair: Thank you very much.

With that, we will go to Mr. Cannings for six minutes. Go ahead, please.

Mr. Richard Cannings (South Okanagan—West Kootenay, NDP): Thank you.

I thank the witnesses for being with us this evening.

I'm going to start with Professor Lagacé.

To get something clear, you talked about a low success rate in funding competitions, presumably for francophone applicants, yet, at least from NSERC, we heard Marc Fortin testify that of the applicants from the University of Ottawa who applied in French versus those who applied in English, the francophone applicants had a higher success rate. There seems to be some difference in that. I wanted to point that out.

You also suggested giving francophone researchers help in translating from French to English. I assume that's so they could do their research in French and publish in English.

We've heard from other witnesses that if you want them to apply in French, even though they are francophone, they need help from other francophones to figure out how to best fill out those applications in French. It doesn't seem logical on the surface, but they were surrounded by people applying in English who could help them in English.

We seem to have this dilemma of accepting that the lingua franca of world publishing, at least in science, is English. It seems to me that there's little that Canada, as a country or a federal government, could do to change that.

What, specifically, could the federal government do to encourage French research in Canada, especially in the natural sciences, which is a world I come from? How can we help that while still recognizing this big elephant in the room, which is that everybody in science in the world is publishing in English?

[*Translation*]

Dr. Martine Lagacé: Thank you for your question.

It comes down to financial support, or even oversight by the federal granting councils, of the production of knowledge in French, and making it accessible and disseminating it in French-language minority communities and universities. I think we can start with that.

We cannot require that a researcher submit their grant applications in French or in English. However, I can tell you about our observation, which Professor Lewis has also made: there is an idea among francophone researchers that our success rate at obtaining grants and an international reputation depends on our willingness to produce knowledge in English.

Does that require the granting councils, the federal actors and the universities themselves to promote knowledge in French more? I think that is how it will happen. Why do many francophone researchers make the choice to switch from French to English? Surely there is a reason for that and the success rate at obtaining grants is a factor. We have figures that show that francophone researchers who submit grant applications in French, including to the Canadian Institutes of Health Research, have proportionately less success.

Recently, I was asked to help, as a reviewer, in the study of about 80 grant applications from all over Canada, including the Université de Sherbrooke, the Université du Québec à Montréal, the Université de Montréal, the University of Ottawa, and the University of Calgary. Absolutely all those applications were written in English, although some of them came from entirely francophone teams.

What is going on among francophone researchers? Have they given up because they know the success rate is too low? I don't have the answer to that, but I think the federal government has to promote knowledge in French. It does that now, but it can do it more. It also has to offer more support for the three granting councils. In addition, we have to recall that grants have not been reviewed for several years. We should maybe think about that, particularly for francophone researchers.

• (1915)

[English]

Mr. Richard Cannings: I want to comment on something that we've heard as well. It's the difference between research in the social sciences, where French seems to be holding its own, and research in the health sciences and the natural sciences, where it has declined. I'm assuming that's because in the social sciences, a lot of the research is in francophone communities in Quebec, for instance. It's logical to publish that research in French, because that is the audience you're looking at. Is that true?

[Translation]

Dr. Martine Lagacé: Do I have time to answer?

[English]

The Chair: Thank you, Vice-President Lagacé.

Mr. Cannings has two seconds left, so perhaps he would like to ask you for a written answer.

[Translation]

Mr. Richard Cannings: Yes

[English]

The Chair: We're now going to go to the five-minute round.

It's my understanding that this is going to go to Mr. Blanchette-Joncas.

Mr. Blanchette-Joncas, the floor is yours.

[Translation]

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

Ms. Lagacé, it is a pleasure to have you with us this evening. I would like to congratulate and thank you. I have listened to a podcast by the Centre for Interdisciplinary Research on Citizenship and Minorities that dealt with this evening's topic, research and scientific publication in French. It was very interesting and I invite my colleagues to listen to it.

You said that the University of Ottawa was the largest bilingual university, not just in Canada, but in the world. Would you have any figures about the percentage of scientific production in French at your university, as compared to what is done in English?

Dr. Martine Lagacé: I would like to point out that we have the oldest bilingual university press in North America. It publishes 28 to 30 academic works per year, about half of which are in French. The University of Ottawa Press has a duty to make sure it publishes as much in French as in English.

Mr. Maxime Blanchette-Joncas: Right. In general, at the University of Ottawa, do you know the percentage of scientific production in French as compared to in English?

Dr. Martine Lagacé: I don't have that number in my head, but I can certainly provide it in writing.

Mr. Maxime Blanchette-Joncas: We will be very pleased to receive it; thank you.

You addressed the impact factor, which has a great influence on the ranking of scientific publications. It is even acknowledged that the impact factor initially devalues scientific publication in French. Concerning that factor, there has been the famous San Francisco Declaration on Research Assessment, or DORA.

Is it correct that you acknowledge that the influence of the impact factor has diminished the value of scientific publication in French?

• (1920)

Dr. Martine Lagacé: You have put it well: universities are ranked using quantified indices. By definition, publishing in francophone journals that do not have this concept of impact factor means that if you publish only in French, you are kind of losing before you begin.

I think this is coming back. We talked about recommendations earlier. The universities can collaborate, but I think a joint effort needs to be made at a much higher level. It might mean rethinking the formula for ranking universities and exactly what we want to value, beyond an impact factor.

Mr. Maxime Blanchette-Joncas: Thank you, Ms. Lagacé.

You see me coming. You say that universities must contribute to the effort, as must the federal government.

I am trying to understand why the University of Ottawa did not sign the San Francisco Declaration on Research Assessment, which states that the impact factor creates a problem for ranking. Your institution is the biggest bilingual university in Canada, if not the world. You tell me that you acknowledge that the impact factor, that is, the ranking of a scientific publication, devalues scientific publication in French. So I would like to know why the University of Ottawa does not show leadership and has not signed the declaration.

Dr. Martine Lagacé: No one says we will not sign that declaration, but I can't answer you on that subject right now. However, I do have to point out that DORA is just one of many instruments.

The University of Ottawa is a leader, one that I would describe as visionary. I was talking earlier about our knowledge mobilization strategy, which is central to our research plan. That strategy values something other than the numerical factors for creating knowledge. We give our francophone researchers who are doing mobilization a lot of support.

You gave the example of the Centre for Interdisciplinary Research on Citizenship and Minorities, which weighs heavily in our support for research in French.

Mr. Maxime Blanchette-Joncas: I want to understand your perspective, Professor Lagacé. I understand that you hope to sign the declaration someday. However, I would point out that it dates from 2013, nearly ten years ago now. I understand that you are going to examine your position someday, but I think the picture is pretty clear today. Only six of Canada's 97 universities have signed the declaration.

Again, I find it hard to understand why, nearly ten years later, the biggest bilingual university in Canada, if not the world, is not able to take a position in favour of that declaration, which addresses a problem you also recognize.

If the federal government or francophone scientific actors are not exercising leadership and are not necessarily engaging in actions, how do you think things can really change?

I am trying to understand how we, actors in the federal government, can help the institutions when they themselves are not necessarily doing their share of things.

Dr. Martine Lagacé: Excuse me, but I would not conclude that not having signed the declaration—

[*English*]

The Chair: Monsieur Blanchette-Joncas—

[*Translation*]

Dr. Martine Lagacé: —amounts to lacking leadership and vision about research in French.

[*English*]

The Chair: —that's your time.

Thank you very much.

Again, we really do want to recognize all our witnesses for coming and for their time, their effort and their expertise.

We will now go to Ms. Bradford for five minutes.

Ms. Valerie Bradford (Kitchener South—Hespeler, Lib.): Thank you, Madam Chair.

Thank you to both witnesses for your time this evening.

Dr. Lagacé, I'd like to start with a more general question because of your unique situation with a truly bilingual university. What are the specific challenges faced by francophone universities and faculties in provinces with an anglophone majority?

[*Translation*]

Dr. Martine Lagacé: Excuse me, I didn't hear your question properly. Can you repeat it?

[*English*]

Ms. Valerie Bradford: Yes. For a francophone university or faculty in a province or a territory that is primarily anglophone, what are the unique challenges from an institutional perspective?

[*Translation*]

Dr. Martine Lagacé: Thank you for your question.

First and foremost, we exist in a doubly minority context, being a minority within a minority. At the university, it is often the francophone researchers who have to fight to make their voices heard and to get their place in a system that may value research in English more than in French.

One of the challenges is that the slippage is a bit more dangerous when we exist in a context like that.

[*English*]

Ms. Valerie Bradford: The next question leads into that. What types of services or assistance do researchers need to carry out their activities in French, including conducting their research, publishing their work, organizing scientific events and applying for funding? What sort of special assistance would make it easier for them to do that?

• (1925)

[*Translation*]

Dr. Martine Lagacé: I think I mentioned that earlier when I made recommendations. My colleague said that translation was only one element, to be recommended, of course, since we want to promote the creation of knowledge in French at the starting point.

We would therefore recommend supporting researchers and offering them translation services, which would enable them to write their research in French and then have it translated into English, and thus disseminate their scientific articles and scientific works, as such, more widely.

I also think there may be a role for the granting councils to play so that researchers feel they are invited to submit their applications in French. We are seeing fewer and fewer francophone researchers submitting their applications to the three granting councils in French. The councils could therefore encourage francophone researchers more openly and obviously to submit their applications in French. That might help.

We also recommend that the granting councils create a committee that would ensure fairness in the success rate for applications submitted in French. In all cases, the committee would have to make sure that the success rate of francophone researchers who submit their applications in French does not drop. Here, I am thinking of the word “oversight”, which may not be the right one, but this might be an element to apply oversight to.

[English]

Ms. Valerie Bradford: Okay, right. That's once the applications get to those funding councils, but to what extent can the services that are going to encourage the applications by francophones in the first place be provided by the university? How can the universities be encouraged to assist with or offer those services so that they get more applications to these funding councils?

[Translation]

Dr. Martine Lagacé: Our university already offers support services for preparing grant applications, whether in French or in English, since the University of Ottawa is bilingual.

Francophone researchers are encouraged to prepare their applications in French. The fact remains that many of them choose to submit their applications to the three granting councils in English, despite everything. That may be a result of some sort of distrust or fear that the success rate will be lower for applications in French. However, that situation goes beyond the support that the University of Ottawa can provide.

[English]

Ms. Valerie Bradford: What role could the federal government play in this respect, then? Is there any role for the federal government in encouraging more of these applications to be made by francophones in French?

[Translation]

Dr. Martine Lagacé: It would be a good idea to establish a permanent committee within each of the three granting councils, insofar as that is possible, so that this question of support for francophone researchers could be genuinely discussed.

As well, the federal government could help francophone researchers to get together and work jointly more, by ensuring collaboration in the francophone research field in Quebec, Ontario, New Brunswick, Manitoba and Alberta. At present, there is no mechanism to allow for such points where attachment and collaboration can occur.

[English]

Ms. Valerie Bradford: I have one more question—

The Chair: I'm sorry, Ms. Bradford. My apologies.

I'd like to thank all our witnesses.

We thank you for coming, for your time, for your expertise and for sharing your ideas. We hope that it's been a good experience for you, and we hope that you will want to come back. We'd really like to thank you.

With that, colleagues, we will suspend briefly to get ready for our second panel.

Thank you again.

• (1925)

(Pause)

• (1930)

The Chair: Colleagues, I'm going to call this meeting back to order. We're beginning panel two.

[Translation]

I'd 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 mike, 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 audio, English or French. For those in the room, you can use the earpiece and select the desired channel.

As a reminder, all comments should be addressed through the chair.

[English]

We'd like to welcome you to this panel.

[Translation]

Appearing before the committee today we have Kenneth Deveau, president of the Fédération acadienne de la Nouvelle-Écosse.

We also have Allister Surette, president and vice-chancellor of Université Sainte-Anne.

[English]

Welcome to both of you. We're delighted to have you here. Each of you will have five minutes to present. At the four-and-a-half-minute mark, I will hold up a card, which lets you know that there are 30 seconds left.

With that, we say welcome and thank you for joining us.

We begin with President Deveau. The floor is yours.

• (1935)

[Translation]

Mr. Kenneth Deveau (President, Fédération acadienne de la Nouvelle-Écosse): Thank you.

I am very happy to be with you and very grateful that you have given me the opportunity to speak to you this evening as a member of the community and president of the Fédération acadienne de la Nouvelle-Écosse.

I also have some experience in the teaching world: I was vice-president, teaching and research, at Université Sainte-Anne. I have also been a very active researcher studying the Canadian francophonie and my work was funded by the Social Sciences and Humanities Research Council.

The Fédération acadienne de la Nouvelle-Écosse was not born yesterday: it was founded in 1968. It has 29 member organizations that are dedicated to the growth and global development of the Acadian and Francophone community of Nova Scotia. The federation carries out its mission by acting as the leading spokesperson for the Acadian population of Nova Scotia. I am speaking to you this evening in that capacity.

I would like to point out that Université Sainte-Anne is one of the federation's members. I submitted a brief to you. I don't know whether you have received it. You will receive it eventually if you do not already have it. I can't present everything it contains this evening, but I hope you will have an opportunity to read it. I am first going to address a few key elements and I may be able to address others during the period set aside for questions.

In addition to being a member of the FANE, Université Sainte-Anne is a preferred partner for a majority of our member organizations, and is thus a key centre of influence for Nova Scotia or Acadia in Nova Scotia. The research into the Canadian francophonie, and more specifically Acadia in Nova Scotia, that is carried out at this institution by its researchers and the collaborators at the Association des collèges et universités de la francophonie canadienne is essential to the vitality of our communities, for numerous reasons that I can't take the time to list here.

I would like to draw your attention to an essential point in my presentation. Université Sainte-Anne and the research it does are also an essential tool for developing a sustainable and innovative economy in Acadia in Nova Scotia. That research contributes to community economic development strategies. As well, collaborations with our enterprises and entrepreneurs is an essential link in the creation of a dynamic, innovative and sustainable economy in our communities.

I would like to point out, as well, that our research also focuses on the environment and health. Sometimes, but not always, it is directly linked to the francophonie or issues relating to it. That is something we need.

I have several recommendations to make to you this evening. I am going to have to address them briefly. I would draw your attention to the recent report of the États généraux sur le postsecondaire en contexte francophone minoritaire, which describes in detail the challenges faced by francophone institutions in minority communities. I want to say that the federation supports each of those recommendations, in particular the six that deal specifically with research and publication in French.

The position occupied by Université Sainte-Anne within Acadia in Nova Scotia is made possible in large part by its autonomy and the fact that, by virtue of its enabling legislation, it is not bilingual, but French.

However, that autonomy brings with it sizeable challenges. In a way, we have done a deal with the devil. Université Sainte-Anne is

required to do everything that a large university does, but with far fewer resources, and, in addition, it has the responsibility of offering college programs and, by virtue of its mission, must do it in French, but also in English.

We are therefore asking that the federal government take the opportunity offered by the next action plan for the official languages to support research and scientific publication in French in Canadian francophone postsecondary institutions.

● (1940)

We are also asking that those provisions include special measures to take into account the unique challenges associated with small size, remoteness—

The Chair: Mr. Deveau, I'm sorry to interrupt you.

[English]

You have a very interested committee. I know they will want to ask you a lot of questions, and I'm sorry to interrupt.

We will now go to Monsieur Surette for five minutes, please.

[Translation]

Mr. Allister Surette (President and Vice-Chancellor, Université Sainte-Anne): Thank you for having me here this evening and for doing such an important study for the francophone postsecondary sector in Canada.

I have represented Université Sainte-Anne as president and vice-chancellor for 12 years. As Mr. Deveau said, Université Sainte-Anne is the only French-language postsecondary institution out of the ten universities in Nova Scotia. We offer university and community college programs, along with immersion programs and customized French as a second language programs. We are firmly rooted in our community and we are a preferred partner for enhancing the vitality of our small Acadian and francophone communities in Nova Scotia.

In my last 12 years at Sainte-Anne, our roots in the community have been a focus of our strategic plan. In other words, the question is how better to support our communities. We are a small establishment with about 600 full-time and part-time students. We offer our instruction and services via five campuses from one end of the province to the other, including one in Halifax. Of the other four campuses, two are in the southwest, in Pointe-de-l'Église and Tusket. The two other campuses are on Cape Breton Island, in Saint-Joseph-du-Moine and Petit-de-Grat. The Acadian and francophone regions of Nova Scotia are coastal, rural and remote regions, at least three hours' drive from Halifax airport. They are also official language minority communities.

We have distinguished ourselves over the years by our willingness to be actively involved in our communities and to promote their development, both in terms of language and culture and in other fields, to support our industries. We have centres, laboratories and observatories that serve to connect researchers among themselves and to create bridges with the other institutions, including anglophone institutions, and with enterprises and social actors as a whole.

I would now like to talk a little about research. I am certain there will be questions after that. We support what was said by the Association des collèges et universités de la francophonie canadienne and by Acfas before this committee.

These are some of the facts of life at Université Sainte-Anne. First, because of our small size, we have a lot fewer master's and doctorate level programs than the bigger institutions. There are therefore fewer students available to support professors in their research projects. However, supervision of students is one of the criteria used by the granting councils in reviewing grant applications. In addition, the more prestigious grant programs are less suited to small institutions like ours.

I would like to say a little about the Canada Research Chairs Program, since we have two of these chairs. As you probably know, if the average total funding of the granting agencies falls below \$100,000, institutions like ours are no longer eligible and may no longer host a research chair. As well, all of the active chairs have to be deactivated. We found ourselves in that situation in 2019, and that is very regrettable for our communities and our institution.

• (1945)

People often think that we, francophone educational institutions, do research only in relation to the French language or to Acadian or francophone culture. However, in our case, since we are located in a coastal region and we are the only postsecondary institution in the southwest, we also support our communities and industries in relation to economic development, for example. So we have played a key role for several years in—

The Chair: I'm sorry, Mr. Surette.

[*English*]

You're right. It goes very quickly, but you have a really interested committee here.

We want to say thank you. We welcome you and we look forward to hearing the answers to the committee's questions.

Now we'll go to our first round of questions. This is a six-minute round.

We'll begin with Mr. Soroka. The floor is yours.

Mr. Gerald Soroka (Yellowhead, CPC): Thank you, Madame Chair.

Thank you to all the witnesses tonight.

Mr. Surette, I'll start with you. What are you doing to encourage students to pursue a career in French research and scientific publications?

Mr. Allister Surette: In that case, we're hoping as many of our professors as possible can present projects to the council so that we can have projects to work on. The more professors we have who can have research projects, the better off our students will be.

However, as I was trying to mention in my opening remarks, having fewer graduate studies programs makes it more difficult for us to engage students in research. That being said, with the research we have here and the number of students we have in undergraduate studies, a lot of the students are involved in research projects. In fact, the percentage of our students participating with professors in research projects is quite high within our institution, and because we're so small, we can easily promote that within the Université Sainte-Anne.

Mr. Gerald Soroka: I have a follow-up question. With the research that's being done, one of our previous witnesses said that there's a shortage of research assistants. Are you finding that at your university, or not at all?

Mr. Allister Surette: We're not finding that in our case. In our case here, for the number of projects we have, we have a number of student applicants who are looking to work as research assistants.

We have engagement within our small population. I think it might be word of mouth or just from the culture that's been involved within our own university. We have a culture of engaging students who are very interested and who take pride in working as assistants with some of our professors.

Mr. Gerald Soroka: Thank you for that.

Mr. Deveau, your organization takes pride in promoting the growth and development of Acadian and francophone communities in Nova Scotia. I was wondering how you're able to accomplish this, or what successes you've had. Could you give us a bit more on that?

Mr. Kenneth Deveau: Sure, but could I touch on the question you just asked Mr. Surette?

Mr. Gerald Soroka: Sure.

Mr. Kenneth Deveau: I guess it's sort of some contamination between my various roles. We have a lot of undergraduate assistants, and we take very much pride in incorporating them in our projects. That is recognized by the research councils. We think, first of all, that it should be better recognized, not by the councils but by the peers themselves.

Second, it would be very important for us to be supported. To compensate for our lack of graduate and post-graduate fellows, we try to collaborate with other universities, but a lot of times we have to do that on our dime. If we could have some support built into the structure and the support we get through official languages funding—not necessarily just through research councils—to facilitate collaboration between francophone institutions, we could do a lot more with less.

To your question on successes for the Acadian federation, I think the strength of the Acadian federation is in its members. We regrouped regional organizations, so every part of Nova Scotia is covered by a regional organization. We also have provincial organizations that are sector-based. However, I think one of our real strengths is at the institutional level. We bring all of those members in together with our institutions as well. Our university and our school board are actually part of our federation, and it builds collaboration. I think our success really comes through our collaboration.

Another thing that we have.... I mean, we will challenge our governments in the courts, if need be, and we have challenged them, as have most francophone organizations. That's always a last resort, but it's sometimes a necessary one.

Notwithstanding that, we always approach our governments, be they municipal, provincial or federal, as willing partners. Essentially I think we're all in this for the same thing. We're just looking for a better community, a better province and a better country to live in, and we're trying to contribute to that. I think that's really our success in Nova Scotia.

• (1950)

Mr. Gerald Soroka: Okay. Thank you for that.

Mr. Deveau, you also mentioned that you wanted more support. Are you talking federal, provincial, municipal or private as well?

Mr. Kenneth Deveau: Yes.

Voices: Oh, oh!

Mr. Gerald Soroka: Okay, it's yes to all of the above.

Mr. Kenneth Deveau: Yes.

Essentially the support we're looking for is support that takes into account our specific challenges. Mr. Surette mentioned that we're a very small institution that's very far away from the centre, be it the centre of the province or the centre of the country. I think we're hoping that the structures—

Mr. Gerald Soroka: Mr. Deveau, I'm going to have to cut you off there, because I only have a couple of seconds.

Could you please reply to that in writing, as well as anything you or Mr. Surette had in your opening statements that you would like to supply to us?

The Chair: Thank you, Mr. Soroka.

Thank you to our witnesses.

With that, we're going to go to Ms. Diab for six minutes, please.

[*Translation*]

Ms. Lena Metlege Diab: Thank you, Madam Chair.

I would like to welcome Mr. Surette and Mr. Deveau. As a proud Nova Scotian, I am very happy that they are participating in the meeting this evening.

Mr. Surette, you talked about Université Sainte-Anne, the only francophone university of the ten universities in the province. I am well aware that you have played a key role in the creation and development of Université Sainte-Anne.

[*English*]

You said that if somebody asked you the question in English, you were going to respond in English to maximize the understanding of every committee member here tonight, because that's how important the topic that we're studying is, and there's also the fact that we have someone from the Acadian community and Nova Scotia with us.

Can you speak to us a bit about the international connection you've had outside of Canada but also the Université Sainte-Anne? How does that play, if at all, with the researchers and the work that the university itself is doing, but also in the context of what we are talking about here in this research?

Mr. Allister Surette: In the context of.... I don't know which language to use now. You started in French and went into English.

• (1955)

[*Translation*]

I will start in French.

Certainly our researchers and our professors have relationships with the other francophone and anglophone universities. They certainly have relationships with the francophone universities in Canada, especially those in minority communities. Many of the challenges we face are the same and we can share that. We also work with the anglophone universities in Nova Scotia and the entire Atlantic region. We have a network called Springboard that connects the educational institutions and enables them to share information. No university, whether anglophone or francophone, has expertise in all fields.

At the international level, it is somewhat the same situation. We have signed agreements with universities in France. We are currently looking at how to maximize the results of our efforts on various issues. We rely on the international element quite often to try to share expertise with other colleagues in the Francophonie who can help us support some of our research.

Ms. Lena Metlege Diab: Mr. Deveau, as a very active researcher, can you tell us about not just the difficulties you have encountered in publishing your own work, but also what you see in Nova Scotia, at Université Sainte-Anne and in other Canadian universities?

Mr. Kenneth Deveau: Thank you, Ms. Diab.

Much of what I have said and will probably say is related to the perspective of the Fédération acadienne de la Nouvelle-Écosse.

However, you are asking me my opinion as a former researcher. I have a number of publications to my credit. My work was funded by the Social Sciences and Humanities Research Council. I listened to a bit of the previous session and it was mentioned that the humanities were lagging behind. Personally, I am in a field where most of the specialists in Canada are from the Canadian francophonie. My research dealt precisely with the vitality of francophone minority communities, and more specifically with the role played by the French-language school in that vitality.

I have signed or cosigned 30 or 40 publications over the years. It is worth noting that the ones that are most often cited are far from being the best, but they are the two or three that are in English. Some granting councils, in particular the Canadian Institutes of Health Research and the Natural Sciences and Engineering Research Council of Canada, consider the impact factor to be very important. If my work had been reviewed by those councils based on that factor, I am not sure I would have received the grants I received from the Social Sciences and Humanities Research Council.

Ms. Lena Metlege Diab: We have done a lot of work on the subject of immigration, but not from the research angle. What role can immigration play in this area, do you think?

Mr. Kenneth Deveau: I believe that immigration offers some very worthwhile possibilities for our country, our society and our community here in Nova Scotia, from every angle. When it comes to research, the students and professors we attract, as well as the graduates, are going to really contribute to building a better society for us all. As a francophone university in Nova Scotia, we have access to a recruitment pool of these people that no other university in our province can tap.

[English]

The Chair: Thank you, Ms. Diab.

[Translation]

Ms. Lena Metlege Diab: Thank you.

[English]

The Chair: Again, I'd like to thank all of the witnesses.

I'd also like to recognize that Ms. Kayabaga joins us tonight, and we thank her as well.

Now we're going to go to Mr. Blanchette-Joncas for six minutes.

• (2000)

[Translation]

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

I would like to welcome the witnesses who are participating in the second hour of the meeting.

Mr. Deveau, if I understood correctly, the Acadian community in Nova Scotia is still having trouble carrying out scientific research, and publishing the results, in French. That being said, I want to congratulate the francophone scientific community in Nova Scotia on its vitality.

Do you think the federal government is supporting you enough to enable you to ensure the continuity of your research and teaching activities in French in a lasting and sustainable manner?

Mr. Kenneth Deveau: Thank you for your question, but I believe Mr. Surette is in a somewhat better position to answer it than I am.

We are grateful for the support we receive, but we need more and we need it to be more formative. There are a lot of costs associated with working in French. In addition, since we live in an anglophone community, our collaborations with the scientific community are often in English.

I have alluded to support in connection with collaboration. For example, the universities in Halifax often find the collaborators they need across the street. In our case, we have to find them in Ontario or, often, in Quebec, and this involves costs.

We have the support of the government of Quebec for those kinds of partnerships with Quebec. We would like to have more support from the federal government for our collaboration activities. We would particularly like it to recognize the additional burden they create for us in our context, in connection with the mobility of master's and doctorate students and of researchers, and the frequent obligation to do it in both official languages.

Mr. Maxime Blanchette-Joncas: Thank you, Mr. Deveau.

Mr. Surette, I'm curious to hear your opinion about this.

Mr. Allister Surette: We recognize the support we have had to date and we are doing relatively well.

We have a number of challenges in Nova Scotia, where Université Sainte-Anne is the only francophone postsecondary institution. We are working in a majority anglophone setting, and this is a challenge within our own province. As well, we serve coastal and remote communities, as the only postsecondary institution in those regions.

We do everything in our power to conduct research activities in French and to offer services in French, while preserving Acadian culture and the francophonie.

As I said in my opinion remarks, we have to support our industries, be it aquaculture or fishing. A number of the people who work in fishing or aquaculture are francophones. We are a bit divided, since we have to conduct a certain number of research activities in English but we still have to meet the needs of our Acadian and francophone communities.

Small institutions like ours face a number of challenges. Université Sainte-Anne has only had its own research office for a year. We created it to try to support our professors, for submitting applications, for preparing them, but it remains a challenge, since our resources are limited.

One of the things the federal government could do is create a research assistance service to provide more support for our researchers in French. In fact, I think that was one of the recommendations by the *états généraux des universités de la francophonie canadienne*. The federal government could certainly do more of that to promote research in French and support the submission of applications in French in a way that is equitable with English.

As I said, we recognize the support that the federal government has given us to date, but there are still things that need improvement in order to support our researchers more.

Mr. Maxime Blanchette-Joncas: Thank you, Mr. Surette.

You talked about making things equitable. Based on the current data, the number of grant applications submitted to the three granting agencies of the federal government in French is lower than the number of applications in English.

I would like to know your opinion on the solutions that might be considered. Should a proportion of the funding be reserved for research and scientific publishing in French? Should the three granting agencies have to establish criteria, incentives, to encourage research and scientific publication in French?

Mr. Allister Surette: That is what I am seeing to date. Obviously, I understand very well the concerns of francophones and anglophones and the challenges faced by linguistic minorities.

However, “equitable” doesn’t mean “equal”. So we have to make special efforts to assist our researchers. We have to create structures to support them.

I don’t think there need to be quotas imposed or specific funding amounts. However, we do still have to support research in French, whether to ensure that research in French is mobilized and made accessible or to support our researchers in submitting applications in French.

Because research published in English is much more widely consulted and visible than research published in French, we may also have to institute a system of support for translation or a way of promoting research done in French more.

• (2005)

Mr. Maxime Blanchette-Joncas: Thank you, Mr. Surette.

Mr. Deveau, do you want to answer as well?

The Chair: Your speaking time is up, Mr. Blanchette-Joncas.

[*English*]

I’m sorry; that’s the six minutes. Perhaps someone will follow up with Monsieur Blanchette-Joncas’ questions. Thank you.

Now we will go to Mr. Cannings for six minutes, please.

Mr. Richard Cannings: Thank you to the witnesses for being here this evening. It was very interesting to hear about Université Sainte-Anne and the Acadian Federation of Nova Scotia.

I’ll start with Mr. Surette and the Université Sainte-Anne.

You’ve talked about a lot of the challenges that you face in funding research and funding your programs. It seems that a lot of those challenges come from simply being a small institution. I’m wondering if you could indicate how much of those problems are from the size of your institution versus the fact that it is francophone in an anglophone world of Nova Scotia. Have you any sense of where those challenges come from?

Mr. Allister Surette: That’s a great question. I think of a chicken and the egg. We’re obviously one of 10 universities in Nova Scotia. I guess the positive part is that when we talk about differentiation between the universities, it’s quite easy for us to position ourselves as different from the others: We’re the only one that operates completely in French.

We’re not a bilingual institution. We operate completely in the French language, which on the other hand limits us in terms of recruiting, for example, with the number of students in Nova Scotia who speak French. We have a French school board, of course. That’s one area where we can recruit, and the immersion programs in the English school boards are fantastic these days, so that’s another recruitment pool for us, as it is for the other Atlantic provinces and Canadian provinces. We also go internationally now, and we have over 15 different international countries represented here in the student population.

We’re doing fairly well in terms of holding our own and actually improving our numbers, but we still remain small compared to the bigger universities in this province and in other parts of Canada, and economies of scale are always a challenge for us.

In terms of programs, we’re doing fairly well. We’re trying to identify programs in which the French language is a value added to our students—education, for example. They can teach in an immersion program or in the French school board. And all of our students are fully bilingual, so they can even teach in the English school board. That’s one example.

The other part that I really feel is part of our responsibility is to support the Acadian regions of Nova Scotia. As you probably know, the four main Acadian regions are all coastal regions. They’re largely based on the fishing industry, or aquaculture these days, and there was no research facility in southwestern Nova Scotia, which has the highest landings of lobster, for example, in probably the entire country. Over the years, we’ve had the support of the provincial and the federal government to develop a lobster quality research centre in this part of the province. We might be seen as supporting the French language and the Acadian culture, but we’re also supporting the economy of these regions here. When we’re talking about the vitality of some of these smaller regions, as I mentioned earlier, let’s remember that we’re at least three hours from the main airport in Halifax, with no public transit to these regions here, so we’re in rural remote areas that need the support, and an institution such as Sainte Anne can really play that role.

• (2010)

Mr. Richard Cannings: Just to follow up on that, you mentioned—

The Chair: Mr. Cannings, I’m sorry. Could I just ask you to take your mike slightly away from your face? Thank you. I’m sorry to interrupt.

Mr. Richard Cannings: Thank you.

Just to follow up on that, Mr. Surette, we were just talking about some of the challenges of being small and being the only francophone institution. Not to diminish those challenges, but are there any opportunities, any pluses, to being the only fully francophone institution in Nova Scotia, not just for attracting students but for attracting funding from all levels of government because you are playing that role? Do you see any advantages there?

Mr. Allister Surette: We certainly have the support of the provincial government in terms of our operations, as do most of the other institutions, but because of our minority situation, we've had great support from the federal government under Canadian Heritage, for example. We also have great support from ACOA with respect to official languages in terms of economic development in this region, so yes, we're positioned quite differently from the anglophone universities in this province. We serve a very specific niche in terms of our francophone population, which includes anglophones who speak French, the francophone immigrants who are here now and, as I mentioned earlier, our communities.

Depending on where we're at, whether it's entrepreneurship or economic development or programming, we can tap into different levels of government, especially the federal government, if we're looking at new programming or ways of doing things differently. The operational funding comes mostly from the provincial government or from our student tuition and so on, but for special projects we've had great support from the federal government.

The Chair: Mr. Cannings, that's the end. Is there a written question?

Mr. Richard Cannings: No, that's fine. I can't see your cards from here. I was just going on gut feeling.

Thank you very much to the witnesses.

The Chair: Thank you, Mr. Cannings, and thank you to our witnesses.

We'll now go to our five-minute round, and this time we go to Monsieur Blanchette-Joncas.

[*Translation*]

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

Mr. Deveau, we note that the federal government is making efforts to recognize French as an official language. In fact, that was also mentioned by various witnesses during the study of Bill C-13. Strangely, it is still not the case in 2022.

Are you an optimist or a pessimist when it comes to scientific research in French in Nova Scotia? Is the government doing enough? I'm trying to see how we could help you.

In Nova Scotia, for the last 20 years, there has been a decline in the number of speakers of French as a first language, so it is hard to be served in French or have French as the language ordinarily used, in Nova Scotia. So I am trying to understand how to ensure that French will be truly sustainable in science.

Mr. Kenneth Deveau: Bill C-13 is a good first step. We worked with the Fédération des communautés francophones et acadienne du Canada and our elected representatives to put that bill together.

The bill is probably not perfect, but it is good, in my opinion. We would like it to be passed as soon as possible. I recognize that there are provisions in the bill that will avoid our having to wait as long as in the past, since the bill provides for a ten-year review of the new Official Languages Act.

In addition, regarding statistical data, there is starting to be a problem with the way that Acadians or francophones in Nova Scotia are counted, that we need to think about.

That gives me the opportunity to make a connection with a question you asked earlier.

In the past, special envelopes were given to the Social Sciences and Humanities Research Council for research on the Canadian francophonie. I think it may be time to think again about whether we really want to support those communities. We have to be given ways to study ourselves and understand ourselves. Community organizations, like the Fédération acadienne de la Nouvelle-Écosse and the organizations that belong to it, also have to be given an opportunity to hire researchers in our institutions.

That could be done through the future action plan for the official languages or by having an innovation fund. It could help people to understand our situation better and find innovative solutions, like immigration. Immigration could be a lifeline for the future of our community, but we must not just bring new people in, we also have to integrate them into our society.

● (2015)

Mr. Maxime Blanchette-Joncas: Thank you, Mr. Deveau.

Just now, you talked about structures. Obviously, we understand that francophones in minority communities in Nova Scotia feel isolated.

Should that isolation not be broken somewhat, by organizing conferences with francophone researchers and establishing relationships, in particular with Quebec and the various francophone communities in Canada?

Mr. Kenneth Deveau: I spoke about that briefly earlier, so thank you for giving me the opportunity to come back to it.

If you have a chance to read my brief, you will see that I talk precisely about the importance of recognizing the remoteness. We are remote for a reason. If you know the history of Nova Scotia, you know that we are a small, remote community for a reason. There are historical facts that explain our position in Nova Scotia. I won't offer a history course here, because we don't have the time, but in my brief I talk about collaboration, mobility and dialogue between researchers and students. It is very important that the federal government support that mobility.

Mr. Maxime Blanchette-Joncas: Thank you.

Madam Chair, I want to give Mr. Surette an opportunity to tell us his opinion about these issues, but I would inform you that I will have to interrupt him to introduce a motion.

Mr. Allister Surette: I would like to clarify something on the subject of isolation. With the technology that exists today, we don't feel so isolated. In any event, we are less so than in the past. Our institution's five campuses are to a large extent technology-driven. As well, we have close ties with the other universities in the Canadian francophonie outside and inside Quebec. In fact, I chaired the Association des collèges et universités de la francophonie canadienne for five years, as well as the Réseau des cégeps et des collèges francophones du Canada for a while.

So there are structures in place that enable us to dialogue and form partnerships...

Mr. Maxime Blanchette-Joncas: I'm sorry to interrupt you, Mr. Surette. If you have other information to give us, we will be happy to receive it in writing. Thank you.

Madam Chair, colleagues, I want to share my thoughts and a rather striking observation concerning this study, which is extremely important to me. It was originally planned that we would hear a total of 34 witnesses in this study. However, I have observed that to date, almost 50% of those witnesses have been unable to testify. I have counted 14, apart from the Minister, who was to testify, and Mr. Quirion, who was to testify in the third hour of this meeting but will be replaced by another person from his organization.

Obviously, I am puzzled. I don't see how I could end this study without having the opportunity to hear almost 50% of the witnesses. I understand that when we make a witness list, we do not expect to hear 100% of them, but so far, almost every second witness has not yet had an opportunity to testify.

I have done a comparison with the other studies we have done, compiling the number of witnesses and the number of hours for each study. For our current study on research and scientific publication in French, only 16 witnesses have testified up to now. In our study on small modular nuclear reactors, we heard 27 witnesses; we heard 32 in the case of the study on attracting and retaining talent. For our first study, which was broader, we heard 37 witnesses.

My motion therefore asks the committee to hold one more meeting as part of this study to allow the witnesses to join us and tell us about their expertise and their varying views on this subject. I therefore move:

That, as part of its study on scientific research and publication in French, the Committee allocates one more meeting, Monday, November 28th, in order to allow witnesses who did not get the opportunity to participate in the current study to be heard by the Committee.

I am giving my motion to the clerk, who will then be able to send it to you. It has already been translated.

• (2020)

[English]

The Chair: It's in order. Thank you, Mr. Blanchette-Joncas.

Are there any comments from the floor?

Ms. Lena Metlege Diab: Before we go to the motion, my question is out of respect for the witnesses on the screen. Are we finished with questioning them so that they are free to leave? We've done this before with other witnesses, and sometimes witnesses

have stayed sitting there for an hour, and I quite frankly felt that it was not appropriate.

I want to put that on the table so that we decide out of decency and respect for the witnesses who are there. Are we finished with the questioning of our witnesses?

The Chair: Thank you, Ms. Diab. That's for the committee.

Mr. Tochor, go ahead.

Mr. Corey Tochor: I was going to offer that if the witnesses would like to stay on and hear the end of this, that would be fine, but I wouldn't be insulted if they tuned off.

They might have some insight on why witnesses weren't showing up at this committee; I'm not sure.

The Chair: Thank you, Mr. Tochor.

Is there anybody else?

Go ahead, Mr. McKinnon.

Mr. Ron McKinnon: I believe my question slot is next. I'd be okay with thanking the witnesses and letting them go. I think we only have seven minutes left anyway.

The Chair: Thank you, Mr. McKinnon.

Are there further comments, colleagues?

Are you going to keep debating this motion? We do have witnesses who have come. Do you want to keep asking them questions, or are you going to debate this now?

Mr. Ron McKinnon: Madam Chair—

The Chair: Go ahead, Mr. McKinnon.

Mr. Ron McKinnon: The motion is moved. I think we have to deal with it.

The Chair: We do, Mr. McKinnon, yes. That's what we're doing. We're just trying—

Mr. Ron McKinnon: I wanted to speak to that. I would like to inquire of the clerk about why the witnesses who have been invited have been unable to attend before we ask for another meeting.

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

To our excellent clerk, are you able to address this, please?

The Clerk of the Committee (Mr. Keelan Buck): It is case by case in each one. Many emails and phone calls remain unanswered. Others provide a reason by saying that they have a conflict for all these dates. I follow up as much as I can, and at a certain point, we move on to the next ones, but each witness who declined would give a different reason.

• (2025)

The Chair: Mr. McKinnon, do you have your hand up again, or is that a legacy hand?

Mr. Ron McKinnon: No, it's a fresh one.

I'm not sure that having another meeting is really going to help us if the witnesses have been unable to make it for all the meetings up to now. I'm not sure that extending it one more time is going to do any better.

The Chair: Thank you, Mr. McKinnon.

Is there further discussion on this point?

Monsieur Blanchette-Joncas, go ahead.

[*Translation*]

Mr. Maxime Blanchette-Joncas: Madam Chair, I would like to reply to my colleague's last comment.

One of the witnesses who was to be present this evening is not with us. Either he had a scheduling conflict or it was simply impossible for him to join us.

You will recall that a committee meeting was cancelled more than two weeks ago, at virtually the last minute, and this limited the possibility of certain witnesses appearing. Some of the witnesses who were invited to that meeting before it was cancelled whom I have been able to contact have just told me that it was not possible for them to attend another committee meeting despite receiving another invitation. That explains the present situation.

You will understand that I am disappointed. Almost 50% of the witnesses on the list have not yet testified, whether because of a scheduling conflict or they are not available. That is almost half of the witnesses, as compared to recent studies.

[*English*]

The Chair: Is there further discussion here?

Go ahead, Monsieur Blanchette-Joncas.

[*Translation*]

Mr. Maxime Blanchette-Joncas: I am even prepared to propose that the clerk communicate with the witnesses again who have not yet appeared. If they still cannot or do not want to testify, we will make adjustments. We still have time to do it. The committee meets next week and we have already planned other meetings.

I think we do have to give these people an opportunity to confirm that they will not be coming. We are talking about more than 15 witnesses in total who have not had the opportunity to testify as part of this important study.

[*English*]

The Chair: Committee, I'm looking for some direction here. This is your committee, so we need to come to a decision.

I see Mr. Collins and then Mr. Cannings and Mr. Lobb.

Mr. Chad Collins (Hamilton East—Stoney Creek, Lib.): I think Mr. Cannings was before me, Madam Chair. I'll go after that.

Mr. Richard Cannings: Thanks.

I would just point out that I'm not really convinced by Monsieur Blanchette-Joncas' argument. I don't think we can compare the number of witnesses who appeared at this study to any other study because each study is different. For each study, we've assigned a different number of meetings. I believe we've had the number of meetings in this study that the original voted motion called for. I remember that in the first study we did, I wanted to call many, many more witnesses, and that was turned down.

I think that if we do this for every study, we will be taking longer and longer. I would just make that original point: Each study is going to be different in terms of how many witnesses will be necessary to hear the full story, and each study will be different in terms of how many different voices we need to hear. I believe we have covered the bases on this study.

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

We'll go to Mr. Collins now.

Mr. Chad Collins: Thank you.

It has been a very important study, and I agree with Richard. I think we've accomplished what we set out to do in terms of the number of meetings. We can certainly dissect the reason why certain witnesses for all studies haven't been able to attend. However, I think back to the point of how many meetings we've had, and we're starting to hear a lot of repetition from the witnesses who are coming forward. There are some common themes. We're going to hear that and see that, I think, in the final committee report. We have dedicated four meetings to this subject, so I'm not certain what more we're going to hear beyond what we've heard through four meetings.

We're at the point where our friends on the other side of the table have been giving their time to our Bloc member, which is fine—the rules certainly permit that—but I think it says something about where we are with the study, so I'm not supportive of giving any more time to this one. I think we've covered all the bases, to use Richard's term. I think we need to move on to the next study. I look forward to seeing the analysts prepare the report and to going through the recommendations.

• (2030)

The Chair: Thank you so much, Mr. Collins.

Mr. Lobb is next.

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

I guess all I would add to the conversation here is that it's just one more meeting, really. I understand that's an entire week, but it is one more meeting. We did miss a week a couple of weeks ago, so that would be fine. In addition to that, if any of your witnesses aren't available, it's understandable. We all understand that. They'd all be able to put forward a written submission to the committee as well.

I think we could do another meeting, and then they can have written submissions on top of that. Then we can get on to the next study, right?

Thank you.

The Chair: I'm not hearing agreement here. Is there further discussion? If not, I think this has to go to a vote.

Is there further discussion?

Go ahead, Monsieur Blanchette-Joncas.

[Translation]

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

I just want to come back to the comment made just now about the number of witnesses. I understand that comparing the number of witnesses may not be the main argument. However, those 14 witnesses were on the list made up by all members of the committee. That list was surely not made up because it was nice outside; it was because those people are experts who were to come and share their concerns with us about the subject of the study. I think the fact that almost half of the witnesses scheduled, 14 people out of 34, have not yet been able to come, for various reasons cited by the clerk, speaks volumes.

I think we have to let these people have an opportunity to say very clearly whether they want to testify or not. They can simply confirm this for us. I even indicated that I was open by saying that if the witnesses confirm that they will not testify, we can simply continue with the current plan. However, we can't let almost 50% of the witnesses, 14 witnesses, precisely, who are already on the list, just fall by the wayside. It seems to me to be very important to consider those witnesses in connection with this important study.

[English]

The Chair: Thank you, Mr. Blanchette-Joncas.

Is there further discussion from the committee?

I think I see Mr. Tochor getting ready here.

Mr. Corey Tochor: Yes, Madam Chair.

This committee is fairly non-partisan. We like to hopefully find common ground here and compromise. If we agree to have another meeting in two weeks' time, that would give the clerk the ability to send those invitations out and fill that meeting. If that meeting in two weeks doesn't get filled, for whatever reason, we would back-fill it with moon shot witnesses so that we are not out any time.

It is unfortunate that we had to miss the one meeting a few weeks ago that would maybe have facilitated some more witnesses. I think it would be a respectful thing if we could grant.... We're not talking about weeks of additional studies. It's just one more meeting.

I would encourage colleagues to vote in favour of this motion.

The Chair: Thank you, Mr. Tochor.

I see that Mr. Cannings has his hand up.

Mr. Richard Cannings: On the point that Mr. Tochor made, I would like to ask the clerk how this would affect planning. I understand that next week's meeting has already been planned with witnesses. What about that next meeting two weeks out? Would that involve changing witnesses' scheduling?

I guess what I'm feeling is that if we have a number of witnesses who really wanted to put forward ideas, we could ask them to submit briefs if they haven't done that already. We're already starting this next study momentarily. I think we should try to move on to that as best we can. In my experience in committees, we rarely get to hear all the witnesses. It's unfortunate, but we do get briefs. We've heard a lot of good information in this study, but I think we have to manage our time as best we can.

It's my opinion that the best way to move on would be to use written briefs for those who haven't been able to appear and move on to the next study.

• (2035)

The Chair: Thank you, Mr. Cannings.

Is there further discussion?

I do not see agreement here. Do you want to put this to a vote? As Mr. Tochor says, this committee is generally very collegial, but there does not appear to be agreement.

Maxime, would you like it to go to a vote? Okay.

Let's make sure we're all voting on the same thing. Is this on the original motion or what Mr. Tochor put forward?

[Translation]

Mr. Maxime Blanchette-Joncas: It won't take very long, Madam Chair. The motion is going to be transferred to the clerk, who can read it for us and distribute it to committee members.

[English]

The Chair: Okay.

Clerk, for the sake of time, could you read it out loud, please?

[Translation]

The Clerk: The motion reads:

That, as part of its study on scientific research and publication in French, the Committee allocates one more meeting, Monday, November 28th, in order to allow witnesses who did not get the opportunity to participate in the current study to be heard by the Committee.

[English]

The Chair: Is everyone clear on what the motion is?

Do we put this to a vote, then?

(Motion negatived: nays 6; yeas 5)

The Chair: Thank you all. Thank you, Mr. Blanchette-Joncas.

We're going to briefly suspend. Then we're going to start our new study on the moon shot.

• (2035)

(Pause)

• (2040)

The Chair: I call this meeting back to order.

I'd like to welcome our witnesses.

We are excited. We are beginning a new study. It's pursuant to Standing Order 108(3)(i) and the motion adopted by the committee on Monday, September 26, 2022. We're beginning the study of international moon shot programs.

• (2045)

[*Translation*]

I'd like to make a few comments for the benefit of the 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 mike, and please mute yourself when you are not speaking.

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

As a reminder, all comments by committee members and witnesses should be addressed through the chair.

[*English*]

With that, I'd like to welcome our witnesses. We're very pleased to have you here. The committee is excited to begin this new study.

Tonight, from the Mila – Quebec Artificial Intelligence Institute, we have Yoshua Bengio, scientific director. From X-energy Canada, we have Rosemary Yeremian. She is the vice-president of corporate strategy and business development.

We welcome all our witnesses. You will have five minutes to present. At the four and a half minute mark, I will raise this yellow card. It lets you know that you have 30 seconds left.

With that, we will begin with Mila and Dr. Bengio. The floor is yours.

Mr. Yoshua Bengio (Scientific Director, Mila - Quebec Artificial Intelligence Institute): Madam Chair, I would like to tell you about why I think such moon shots are important and, more specifically, where I think our government should focus and the kind of effort that it should focus on.

Mr. Yoshua Bengio: Madame la présidente,

The successes of science that have ended up having transformative impacts on our society arose thanks to funding of curiosity-driven research, which also trains the needed talent, followed by mission-oriented R and D.

As an example, in my own career, I've worked on deep learning that has fuelled the current AI revolution. These advances were made possible by really broad investments in curiosity-driven research on neural networks, much before the applications became a possibility. Then that was followed by major industrial investments in R and D.

In many cases, government funding has been crucial in our society to kick-start major innovation-driven sectors of the economy. A really well-known historical example is that of the DARPA funding that created the Silicon Valley ecosystem.

However, the profit motive of industry is not always sufficient to get this transfer to happen, because it's not always well aligned with the needs of society. This process whereby we rely on industry to create the innovations that follow the basic research doesn't always

work, particularly in areas such as health, environment, education or social justice, which are typically the domain of the government.

I'm going to tell you about one really striking example that I know all about, and that is antimicrobial resistance, which means bugs that are mutating to become resistant to our drugs. For example, we're now facing bacteria that we don't have any drugs to defend ourselves against, and it's going to get worse. It's already costing Canada billions per year and it's going to increase tenfold over the next two decades. Right now, there are already 1.2 million deaths per year globally. That's projected to grow to 10 million deaths per year. That's comparable to COVID-19 or more, and the costs globally are going to grow to \$100 trillion U.S.—that's a projection, of course—if we don't do anything.

You would think that the pharma industry would develop the required drugs to protect us, but it's not happening because of a complicated market failure that makes it not profitable for industry to do the required R and D to protect us. Similarly, there are other related market failures that happen in other areas where we need R and D—for example, to fight climate change. Generally, there's a lack of innovation culture and innovation investments regarding government-funded services.

Of course, government is already investing a lot in R and D funding for industry as well as academics, but usually it's based on the formula of matching funds with contributions from industry. That's advantageous, because it makes it easier to choose what projects to fund. Presumably, if some company thinks it's worth putting in money, then it's probably not a bad idea. Unfortunately, that process discards missions such as the ones I mentioned, for which there's a really important social value but not a sufficient profit incentive.

For academics, there has been movement on the side of NSERC Alliance funding, which helps to fund academic research when there is a non-profit involved, but this kind of funding is not really focused on the sort of strategic missions that I think governments should be thinking about. On the other hand, for government funding of industry R and D, like the superclusters or R and D tax credits, there's really nothing to try to focus the investment on for these kinds of social missions, because they also rest on this cost-sharing method.

It's really crucial for governments to provide the necessary incentives. It could be financial, regulatory or both. What I mean by “regulatory”, for example, is that increasing carbon pricing is going to create innovation to fight climate change, so we can develop a new sector of the economy, springing from an ecosystem of innovators, to solve these socially important problems. We need to do that in a way that combines both our strengths in academia and the more mission-oriented culture of the private sector.

• (2050)

I can understand that it may be difficult for government to decide on which projects to consider—

The Chair: Professor Bengio, I'm sorry to interrupt. That is the five minutes. It goes very quickly, but you have a very engaged committee that will want to ask many questions. We thank you for being here. There will be lots of questions, I assure you.

Can we go to Ms. Yeremian for five minutes, please?

Ms. Rosemary Yeremian (Vice-President, Corporate Strategy and Business Development, X-energy Canada): Thank you.

I'd like to begin by asking you all to imagine what a net-zero Canada would look like.

In our vision, the transportation sector is powered by non-emitting electricity and GHG-free hydrogen; northern communities, especially remote communities, have 24-7 access to affordable, non-emitting power and heat; Canada has a distributed energy system in which consumers can buy and sell power from and to the grid to meet fluctuating demands; Canada's oil and gas sector uses non-emitting technology to extract and process resources; heavy industrial users rely on abundant, baseload, carbon-free heat and power; and hydrogen production and water desalination are abundant and use non-emitting technology.

Advanced small modular reactors—or ASMRs, as I call them—are one of the only options that can provide heat, steam and power to achieve deep decarbonization in Canada.

For the electricity sector, ASMRs can provide emissions-free baseload power for on-grid or off-grid applications.

In the agricultural sector, ASMRs can provide heat for greenhouses and clean hydrogen for agricultural equipment. They can be used in a cogeneration mode to heat buildings. For heavy industry, they can provide power, heat and steam for large industrial users, and they can provide emissions-free power and hydrogen to enable our transition to the electric vehicle market. For the oil and gas sector, ASMRs can be used to provide emissions-free power and steam for SAGD extraction and operations.

ASMRs are not your grandfather's technology. They use a new form of fuel called TRISO, and I encourage you to ask me about it. The U.S. Department of Energy calls it “the most robust...fuel on earth.”

The design of these innovative ASMRs makes them simpler and easier to transport, which makes them cost-competitive with other forms of generation.

ASMRs also have the smallest land footprint of any emitting or non-emitting technology.

Canada has an opportunity to be a real leader in this emerging lucrative market. We're blessed with a strong and capable nuclear sector and nuclear supply chain in Canada. Our current supply chain can be built out across the country, resulting in significant economic benefits for Canada that will position Canada to take advantage of this market, which it is estimated will be \$150 billion by 2040.

To achieve real decarbonization in Canada, we will need to deploy ASMRs as part of a national strategy that should include, one, the acceleration of deployment of ASMRs through public investment capital for both public utilities and private corporations; two, the modernization of regulatory frameworks to provide climate considerations, including streamlining regulatory requirements such as impact assessment timelines; and finally, supporting the Canadian supply chain to develop the capability needed to supply ASMRs and to allow Canada's economy to benefit from early adoption.

In closing, we believe Canada must seize this opportunity to decarbonize a variety of sectors using ASMRs, while at the same time positioning us to benefit from the enormous economic benefits of being a leader in the emerging global ASMR market.

Thank you.

• (2055)

The Chair: Thank you, Ms. Yeremian.

I'd like to thank both of our witnesses. We're really grateful you've come tonight. It's late at night, and we're looking forward to hearing more about your expertise.

We are now going to hear from our committee. It's the six-minute round. Tonight we begin with Mr. Mazier.

Welcome. The floor is yours.

Mr. Dan Mazier (Dauphin—Swan River—Neepawa, CPC): Thank you, Chair.

My questions are going to be for X-energy.

The United States is investing in nuclear energy as a clean source of energy. While our American neighbours understand the importance of technology over taxes, here in Canada the Liberals plan to triple, triple, triple a carbon tax on working Canadians.

The United States Department of Energy has announced millions of dollars in funding towards nuclear energy through their Advanced Research Projects Agency. They stated in a recent press release, “Nuclear power is one of the most reliable sources of energy in America, and the largest domestic source of clean energy—providing approximately 50% of the nation's carbon-free electricity, and about a fifth of U.S. electricity overall.”

In 2018, Canada's environment minister tweeted that “it's time to close #Pickering Nuclear plant and go for #renewables.

What do you say to Canada's environment minister, who refuses to publicly support the development of clean, renewable nuclear energy?

Ms. Rosemary Yeremian: Thank you.

We're going to need everything. We're going to need every form of technology—renewables, non-renewables and anything that's not emitting. The beauty of advanced small modular reactors is that they can pair with renewables. They can load-follow up and down to meet fluctuating demand.

Renewables are an intermittent source of electricity. They only work when the sun is shining or the wind is blowing. That's okay, because advanced small modular reactors can fill the gap there. We've designed our SMRs to specifically pair with renewables and maximize the contribution from renewable energy.

Mr. Dan Mazier: If I heard you correctly, though, we need all the government departments moving in the same direction.

Ms. Rosemary Yeremian: That's correct.

Mr. Dan Mazier: Thank you.

The Americans appear to be embracing nuclear energy as a reliable and clean source of energy. To do so, countries around the world are also investing in nuclear energy. When I was on the environment committee, we consistently heard that the only way to meet our net-zero targets is through nuclear energy. Do you agree with this?

• (2100)

Ms. Rosemary Yeremian: Yes.

Mr. Dan Mazier: Since we are studying international moon shot programs, do you think Canada should view the development of nuclear energy as a moon shot program to reduce global emissions?

Ms. Rosemary Yeremian: I do.

Mr. Dan Mazier: Can you expand on that? What would be the difference in the type of approach of doing a moon shot program?

Ms. Rosemary Yeremian: Renewables can only get us part of the way there. They're really ideally suited for electricity generation. The beauty of advanced small modular reactors is that they can do more than just electricity generation. They can replace the steam generators in the oil sands. They can replace diesel generation up north. They can fill more gaps than what renewables can do alone.

As an example, Dow chemical, in the U.S., just bought one of our Xe-100 plants to provide both power and heat for their operations. There is an ability to sell power back to the grid when they're not using it, so this can actually be cost-competitive for large industrial users.

Mr. Dan Mazier: If we took the moon shot type of approach, as in the United States, what difference would that mean in nuclear development in Canada? Would that be a good thing? How would we go about doing that?

Ms. Rosemary Yeremian: Right now, we're seeing a lot of developers building in the U.S. as opposed to Canada because of their recognition of nuclear energy as a clean energy option. If we were to develop a moon shot program around advanced small modular

reactors, we would give public recognition to advanced small modular reactors.

Some of our legacy history is a social licence. While X-energy and many others have been doing a lot of consultations with indigenous groups and unions at the grassroots level, as a private sector company, we can only do so much. With a moon shot program, we would have both the government's backing for this technology as well as some incentives, hopefully, to help us make this a reality.

Mr. Dan Mazier: Thank you.

I'm going to read some press releases that were issued by the Advanced Research Projects Agency for energy in the United States.

“U.S. Department of Energy Announces Up to \$10 Million to Study Low-Energy Nuclear Reactions”.

“U.S. Department of Energy Announces \$36 Million to Reduce Waste from Advanced Nuclear Reactors”.

“DOE Awards \$38 Million For Projects Leading Used Nuclear Fuel Recycling Initiative”.

“DOE Announces \$40 Million to Reduce Fuel Waste From Advanced Nuclear Reactors”.

The U.S. clearly sees the moon shot as an opportunity with nuclear energy. Do you think Canada should focus more on advancing nuclear energy?

Ms. Rosemary Yeremian: Yes.

Mr. Dan Mazier: The floor is yours. Go ahead and add on to that.

Ms. Rosemary Yeremian: The U.S. is a great example of what can happen when a government stands behind their technology. For instance, X-energy was provided with \$1.2 billion to develop and deploy our Xe-100. What I think makes the government backing of a technology successful is that it's more saleable to private sector companies and to other countries. This large investment encourages private sector companies to adopt this technology.

Mr. Dan Mazier: Could I ask you to table some of the misinformation and misconceptions about nuclear energy to the committee for our study? That would be just fantastic.

Ms. Rosemary Yeremian: Would you like that in written form?

Mr. Dan Mazier: Yes.

The Chair: Thank you, Mr. Mazier.

Now we will go to Ms. Bradford for six minutes, please.

Ms. Valerie Bradford: Thank you so much to both of our witnesses tonight, and congratulations on being our first witness panel on this exciting new study we're doing.

Mr. Bengio, you gave us a good overview in your initial opening comments about the two different streams, mission-oriented research as opposed to curiosity, sometimes referred to as high risk, high reward. Can you talk to the committee about the benefits and limitations of both mission-oriented research and curiosity-driven research? Is there one that is more useful than the other in a moon shot program?

Mr. Yoshua Bengio: Really, you need both, and they play different roles.

The initial phases of research cannot be completely directed, because it's not clear ahead of time where the moon shots are going to be. The curiosity-driven research helps us figure out what the moon shots are and what directions are worth having a significant investment.

Most of the curiosity-driven research is happening in academia, but there is also more applied research in academia. The more mission-oriented research is important, because it focuses the efforts in a particular direction; it doesn't explore very widely. Also, you have to realize that it's quite costly to do these things. There are more engineers than researchers, for example. You need both things.

One thing I would like to add here is that I don't think we currently have the right funding style and programs to do moon shot research right now in Canada. Even our funding of industry research tends to be all across the board and not very directed.

As I said, there are good reasons for that. It's not so easy to decide what the right orientations are. That's a place where people like academics, who do the kind of more basic research, can really be helpful and help governments both to identify moon shots and then to evaluate proposals and projects that may come from industry.

• (2105)

Ms. Valerie Bradford: Thank you for that.

Building on that, how can the government best support a mix of both curiosity-based research and mission-oriented research? As you said, we need to do both.

Mr. Yoshua Bengio: Yes. One thing government already does in some of the programs that are funding academia is force the industry partners and academic partners to work together for the funding to happen. I think this is a good part of the recipe.

I would add something that is currently missing, especially in the funding that we do for the private sector like the superclusters and so on. It is that we're lacking the strings attached to these research contracts to really facilitate the sharing of the data and the knowledge that is generated.

I'll go back to my example of antimicrobial discovery and the discovery of new antibiotics and techniques to do that efficiently, such as AI. We need the knowledge and the data that are generated by the biological assays and the new algorithms to be shared across the ecosystem of companies and academics who will be developing this. This is not the usual way of doing things when most of the in-

vestment comes from industry, for reasons that have to do with how our economy works, which is reasonable, but when the money comes from government, it's a big waste of effort if the discoveries that are made by one organization cannot be used easily by other organizations.

I think there's an opportunity here to change the ways we're doing it to make it much efficient for our tax dollars to reach the moon shot goals.

Ms. Valerie Bradford: This is a bit of a shift of topic.

I understand that you're concerned with the social impact of AI and whether it benefits everyone, and that you have contributed to the Montreal Declaration for a Responsible Development of Artificial Intelligence. Can you tell the committee more about the declaration? What role do ethical considerations have in developing moon shot-type programs more generally?

Mr. Yoshua Bengio: AI is one technology that is becoming more and more powerful as we develop it more. There are other technologies—like biotechnology, for example—that can have immensely positive uses as we develop them in society, but can also be misused. It's very important for governments to regulate, incentivize or intensify the development that is going to happen to make sure that those efforts work for society in general, for the benefit of democracy, for the benefit of our well-being and so on. That's what was behind the general ideas of the Montreal declaration in going through 10 ethical principles.

If I focus now on the moon shot thing, the important message here is that we can't just leave it alone to the markets to decide what interesting directions are needed. I gave the example of antimicrobials, but I could give examples in the context of the discovery of new materials for carbon capture or better energy storage.

There are incentives—

• (2110)

The Chair: Professor Bengio, I'm sorry to interrupt. The worst part of this job is having to interrupt good testimony, but hopefully someone will pick up on that line of questioning.

[*Translation*]

We will now go to Mr. Blanchette-Joncas for six minutes.

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

I would like to welcome the witnesses who are joining us for the third hour of this meeting.

Mr. Bengio, it is a pleasure and a privilege to have you as a witness this evening. Allow me to highlight the contribution of your scientific expertise, and also to congratulate you on recently being named as one of the most influential researchers in the world, according to the annual list published by Stanford University in California. It is a source of pride to have you in Quebec, along with the Quebec Artificial Intelligence Institute, Mila, that you created.

The aim of my questions is to determine how the federal government can adopt a vision that is focuses more on moonshot projects. You are an expert in artificial intelligence. Do you think that Canada's vision at present is sufficiently detailed?

As well, you said that we must not let the market dictate priorities, and I would like to hear more from you on that subject.

Mr. Yoshua Bengio: I think that certain priorities can be and actually are being dictated by the market.

However, because of the market failures that I explained, there are needs that are not being properly met and sectors that are being poorly served. The government can act as a spark plug to get things moving. In some cases, this is urgent. Given climate change or the health problems associated with the pandemics that could be looming in the next few years, we can't wait for things to change in the markets.

I am trying to explain that it is obviously difficult to decide on good moonshot programs. Each organization or company is going to propose its ideas. In my presentation, I did not have time to talk about the importance of international discussions for determining the greatest needs on the planet. I gave the example of climate change, but in what field do we have the greatest need for innovation, and what directions have the most potential for positive change to enable us to face those challenges?

I think we should rely more on a consultation with our international partners and the international organizations that are working on these questions in order to establish the objectives of moonshot programs. We should also rely more on our academics, who are experts in various fields and are a little more neutral than the people with something to sell.

Mr. Maxime Blanchette-Joncas: Thank you, Mr. Bengio.

I want to come back to artificial intelligence, a field you are very familiar with. Quebec is one of the leaders, since it ranks seventh globally in the field of artificial intelligence, according to Tortoise Media's Global AI Index.

Whether the issue is actions or a strategic plan, can the government draw inspiration from certain actions of the government of Quebec, which has decided to invest in artificial intelligence?

Mr. Yoshua Bengio: I have to correct you: the Pan-Canadian Artificial Intelligence Strategy is an initiative of the federal government. In Quebec, we have been lucky to have a relatively visionary government that decided to double down. So at Mila, the artificial intelligence institute where I work, the investment comes two thirds from the provincial government and one third from the federal government.

What is important isn't that; rather, it is that we work together to determine what missions are most critical. Working with our international partners is also important.

Mr. Maxime Blanchette-Joncas: As you say, the important thing is to work together.

How would you describe the collaboration between the federal government and the government of Quebec in the field you work in, artificial intelligence?

• (2115)

Mr. Yoshua Bengio: It's quite good. In my opinion, that is not where the problems lie.

There are more problems in fields like health data, where it is obviously very fragmented. There are other problems elsewhere, but I will leave it at that for now.

Mr. Maxime Blanchette-Joncas: Mr. Bengio, I would like to talk about the annual report of the Advisory Council on Artificial Intelligence, which you co-chair.

We see that Canada is trying to position itself as a world leader in artificial intelligence. However, the planet-wide competition is relatively fierce.

What can we do, in concrete terms? What are Canada's assets and what aspects need to be improved? What form might an artificial intelligence moonshot program take? Are there foreign models we could draw inspiration from?

Mr. Yoshua Bengio: I think we have incredible opportunities in Canada that enable us to distinguish ourselves even more as compared to what we have already done. I am talking not only about fundamental research, in which we are already a very impressive leader, but also about developing innovations that are going to affect society directly.

There are numerous areas where artificial intelligence can be applied and have an extremely transformative effect. However, the intersection of artificial intelligence and biotechnology has consequences for economic growth and for society, from the point of view of both the economy and health. Our biotechnology and pharmaceutical industry is actually very developed. Our artificial intelligence ecosystem is one of the best. We are finding ourselves at a junction and these two elements could, together, truly change the world.

[English]

The Chair: Professor Bengio, I am very sorry. Thank you, Monsieur Blanchette-Joncas. You know I aim to be fair, friends.

With that, we're going to go to Mr. Cannings for six minutes, please.

Mr. Richard Cannings: Thank you, Madam Chair.

Thank you to the witnesses. This is very interesting.

I would like to stay with Mr. Bengio. It's very fascinating to me to hear about how we could develop moon shots. By definition, as you were saying, these are immense projects, very complex, international in scope, and they are tackling the big questions of our time, whether it's health, climate action, etc.

You talked about how we need to decide what the best moon shots are and how this has to be developed with our international partners. Are there any other projects that we've done recently in the world that have shown us the way to do this, how we can decide as a world community to get together and put our forces together to tackle these problems?

Mr. Yoshua Bengio: I have several examples. The IPCC is doing an amazing job in the area of climate to point out problems and areas that need more effort.

Here in Canada we have an organization that has been extraordinary. It funds moon shot research at a very small scale. That's CI-FAR, the Canadian Institute for Advanced Research. Actually, the deep learning origin in Canada happened because of their investment.

The way this works is they put out a call for proposals. Hundreds of groups put out first a short proposal. Then these are evaluated by international scientists in various areas. We have ways of doing these things in the scientific community to compare and evaluate and make these kinds of decisions. Of course, we also need people from governments, from industry, to be part of these discussions, because this is going to be to solve societal problems; but I think there are processes that we already know about to do these sorts of things.

• (2120)

Mr. Richard Cannings: Once we've decided on what moon shot we're doing, once we've come up with a strategy, a plan, of how we're going to tackle this, of course that will help us find out what further information we need and what data we need to share. I know that in a federation like Canada, data sharing is complex, difficult or impossible at times, let alone around the world.

I come from a background of trying to cross-log data across provinces, and it's very frustrating. When we're talking about these issues, it's even more so.

Then it comes down to the funding as well. Yes, some funding will come from industry if they see a role in it, if they see an advantage for them, but a lot would have to come from various levels of government. Again, are there examples elsewhere in the world that Canada can look at to improve our models of funding?

Mr. Yoshua Bengio: Let me answer maybe partially by telling you about a particular kind of moon shot that happened recently around what's called a cell atlas. It was about mapping out what different cells in different organisms were doing. This is of interest to both academics and the pharmaceutical industry. By the way, this project was led by somebody who's now heading Genentech, which is one of the big biotechs.

The way this happened was fairly decentralized. There was not just a single source of funding. Scientists from around the world met together and tried to define their thoughts on how they should join forces and what the big questions were, and they drafted proposals for what should be funded and what efforts should be made. Then different organizations and different researchers in different countries went after their funders and convinced them to fund them for these things.

The important thing was that it was coordinated internationally, so all the results were put together and made available to the whole scientific community.

This is interesting. It is more organic, in a sense. Instead of having one big funder that decided everything, it came about because of a consensus of scientists thinking that this was important and that these were the different things that needed to be done. Then individual groups went after their funders—philanthropy or government—to fund different parts of it. This has been an immense success.

Mr. Richard Cannings: Thank you.

Madam Chair, do I have any time left?

The Chair: You have 30 seconds left.

Mr. Richard Cannings: Quickly, perhaps, Mr. Bengio, could you talk about the transparency that's needed with the public, the trust from the public and getting the public behind these moon shots? I think that's really core to their success.

Mr. Yoshua Bengio: Yes. I completely agree.

To come back to the previous question about the Montreal declaration, one thing we talked about, which I think is really important for the development of responsible AI and also when we fund expensive research, is transparency—transparency on the process to decide where we invest, transparency on how the work is done, and transparency on the results. This is going to help speed up progress and make sure we don't waste our money.

The Chair: Thank you.

Thank you, Mr. Cannings. Thank you again to our witnesses. We're really grateful you're here tonight.

We're now going to go to the five-minute round. I understand Mr. Lobb and Mr. Tochor are sharing.

I will hand it to you, Mr. Lobb.

Mr. Ben Lobb: Thank you, Madam Chair. The first question is for Madam Yereimian.

My question is in regard to moon shots and nuclear reactors. Bruce Power is in my riding, so I'm obviously very familiar with nuclear energy and have been an advocate for years, but here's the problem I see: The moon shot maybe needs to be about how we speed up the environmental assessment approval process.

Bruce Power's site is probably the most studied site in the world over 50 years, and yet I understand that about the fastest you could get an assessment done for a new reactor is probably about eight to 10 years. If we really want to have a moon shot and make progress on the environment and emissions and everything else, wouldn't that be the place to start—to figure out how to do it in two or three? What do you think?

• (2125)

Ms. Rosemary Yeremian: Absolutely. I'm a big fan of environmental assessments. I don't want to cut corners, but seven years for the Bruce Power environmental assessment was just way too long for a site that has been studied beyond anything that anyone could possibly ever do more.

I was literally, just on Friday, in a meeting with a mining executive in Saskatchewan, who told me that if the environmental assessments are longer than two years, they're just going to go to diesel generation because there's no problem there. It's really a matter of the environmental assessment piece being a competitive disadvantage for Canada.

Mr. Ben Lobb: Thank you.

For Mr. Bengio on Zoom, this goes to what I see in my many years as a member of Parliament, and I know Chair Duncan probably feels the same way: There are issues that have been around for 14 years that are still issues. There are issues about the backlog and getting people processed for immigration applications. There are our port systems; it doesn't matter what end of the coast you're on, there have been issues with the ports forever. We just talked about environmental assessments, and then there's our health care system, homelessness, drug addiction. It goes on and on and on, to the point where you can't even put children's Tylenol on the shelves in this country anymore.

Do we need a moon shot in common sense? How do you think we can fix this? We're trying to do the craziest things that would maybe solve society, but we can't even do the simplest of things. What do you think? How can you help us here?

Mr. Yoshua Bengio: This is a great question. I wish I had answers, but let me try something.

I had a sentence in my pitch about the lack of an innovation culture in everything that has to do with government services. I don't know how to fix this, but Canadians need the services our governments give to be improving and getting better. The kind of culture and investment in R and D that happens in the private sector is not happening so much, not nearly enough, for the things that governments provide. I think this is something that needs to be addressed.

Mr. Corey Tochor: Thank you, Madam Chair.

I'm running out of time here, but X-energy runs different kinds of fuel through the reactor. Can you explain that a little bit further for the committee, please?

Ms. Rosemary Yeremian: I'd be happy to.

We use a form of fuel called TRISO fuel. The beauty of this fuel is that it's been called, as I said in my opening remarks, "the most robust fuel on earth". If you'll let me geek out for a moment, I'll tell you a bit about it.

We take a poppy seed-sized kernel of uranium carbon and oxygen. We then coat it in three layers of ceramic using pharmaceutical-grade technology. Nineteen thousand of those kernels are then put in a ball and covered in graphite. Graphite doesn't melt under any temperature a nuclear reactor can get to, so you're left with a very safe, very robust fuel that nobody can take apart and do anything nefarious with. It's sealed. It's contained. If someone walks away from the control room—not that they would, but if they did—the reactor would just slightly go up, and then shut down on its own. That's the beauty of our fuel.

Mr. Corey Tochor: Wonderful. Thank you.

The Chair: Thank you very much, Mr. Lobb and Mr. Tochor.

Again, we're grateful to our witnesses.

Now we're going to go to Mr. Collins for five minutes, please.

Mr. Chad Collins: Thanks, Madam Chair.

Thank you to the witnesses for attending this evening.

I want to start with Professor Bengio.

Sir, are you aware of best practices or design principles for deploying moon shot programs? You've jumped around, I know, because time is limited tonight, and you've given some examples of programs here in Canada that have been supported. Is there a blueprint outside of Canada that we should turn to as a starting point for developing policies related to the same?

Mr. Yoshua Bengio: I already mentioned the cell atlas project. Let me mention another organization that was recently created in the U.S., called BARDA. I don't remember exactly the breakdown of the acronym, but it's like "Biomedical Advanced Research" something. What it's meant to do is fund mission-oriented research and development to protect Americans from potential biomedical threats. That includes pandemics and also bioterrorism and things like this.

I think this is a great initiative. We don't have to do exactly the same thing, but I think there are a lot of interesting lessons to take. I already mentioned how DARPA, which has been around since the 1960s, has completely transformed the American economy. It was meant to fund military research, but as a side effect of wanting to develop better electronics, it gave rise to the revolution that you know about.

Having these mission-oriented organizations—and I'm not saying they're perfect; they're interesting examples—in places where the markets would not have gone or would have gone much later is really essential. I haven't done a study to compare all of these things, but this is something that could be done.

• (2130)

Mr. Chad Collins: I have a follow-up question.

You talked about the traditional funding model that we're used to, and that is matching funding between the government and our private industry partners. Then you referenced that we need to attach some strings to a new funding scenario or program that might be created by the government. What do those strings look like in terms of additions or criteria?

Mr. Yoshua Bengio: Thanks for asking.

The strings would be first on the topics. Right now, if you look at R and D tax credits or superclusters.... I mean, superclusters are somewhat in a limited area, but overall, the money is spread out very broadly, and that can have nice advantages. However, for these moon shots, that's not what we need. We need to have a much clearer picture of what needs to be done and only fund those efforts that are sufficiently aligned with that. That's number one. That's kind of obvious; that's the point of a moon shot.

Number two, which is less obvious and maybe more difficult, is to force the organizations that are going to be using government money to do that work to be transparent, as I was talking about before. That means sharing the knowledge that has been generated, sharing the data that has been generated, sharing the code. In some cases, we also want to make sure that the IP or the licences that are going to be attached to the created property are easily and cheaply transferable, for example, to developing countries. The reason this is important is.... Think about pandemics or climate change. We really want poorer countries in Africa to use the technology we might develop so that it's going to protect us against climate change or future pandemics. However, we need to put that up front in the contracts that we sign with companies.

Mr. Chad Collins: Are there examples of those strings and conditions in other countries around the world that have moon shot programs and funding available to academia and the private market?

Mr. Yoshua Bengio: Yes, for these kinds of licences, one example I know about is the Bill & Melinda Gates Foundation. The Bill & Melinda Gates Foundation is a huge funder of moon shot things and it has such clauses. I think other foundations have similar things.

Mr. Chad Collins: All right.

My last question—

The Chair: Mr. Collins, that's the end.

Mr. Chad Collins: Okay. Thank you, Madam Chair.

The Chair: Thank you, Mr. Collins.

Again, thank you to the witnesses.

Because we started late, we will go for five more minutes. That will give Mr. Blanchette-Joncas and Mr. Cannings their last two and half minutes.

Mr. Blanchette-Joncas, the floor is your.

[*Translation*]

Mr. Maxime Blanchette-Joncas: Madam Chair, I'm not sure I understand.

In the last round of questions for the other subject, we could not get more speaking time. Now, however, we are being given extra minutes. In both cases, we lost time because of technical problems.

Can you explain why it is now possible to add speaking time?

• (2135)

[*English*]

The Chair: Mr. Blanchette-Joncas, we aim to be very fair in this committee. I cannot help it if one of the witnesses had technology issues and we lost many minutes. Then we lost in the second round because of debate. We try to be fair, and I think you all know that I am fair to a T.

If you would like your two and half minutes, the floor is yours.

[*Translation*]

Mr. Maxime Blanchette-Joncas: Am I correct in thinking that in the event of technical problems, we can seek the unanimous consent of committee members to extend debate?

[*English*]

The Chair: Could you repeat that, Mr. Blanchette-Joncas?

[*Translation*]

Mr. Maxime Blanchette-Joncas: Am I correct in thinking that when there are technical problems, we can seek the unanimous consent of committee members to extend debate?

[*English*]

The Chair: Thank you for the question.

That's for an individual speaker. You would ask for unanimous consent. It does not apply to an agenda item. Again, I cannot help if there were technology issues. The committee ends at 9:30. I'm trying to be as fair as possible. It's unfortunate that in the second hour time was lost during debate.

Would you like your time for this?

[*Translation*]

Mr. Maxime Blanchette-Joncas: That's fine for me, Madam Chair. Thank you.

[*English*]

The Chair: Okay. Thank you, Mr. Blanchette-Joncas.

Mr. Cannings, would you like your last two and half minutes?

Mr. Richard Cannings: In the interest of time—I know it's late where you are and it's not so late where I am, but I haven't had dinner yet—I will cede my time as well, especially to let the translators and the staff get home after a very long day.

Thank you all.

The Chair: Thank you, Mr. Cannings.

With that, I'm going to say, colleagues, thank you to our clerk, to our analysts, to our interpreters and to everyone else who supports this committee and works so hard for all of us.

I'd like to really thank our witnesses. We appreciate your expertise and thank you for joining us so late. We hope you had a good experience and that you will come back and join us.

The meeting is adjourned.

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