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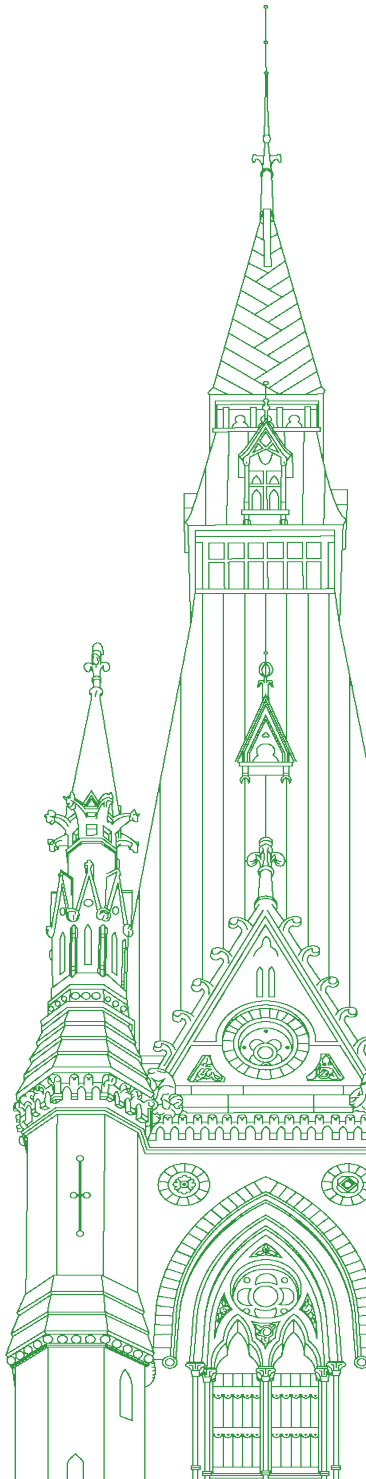

Chair: Mrs. Sherry Romanado

# Standing Committee on Industry, Science and Technology

**Thursday, May 13, 2021**

● (1105)

[*English*]

**The Chair (Mrs. Sherry Romanado (Longueuil—Charles-LeMoyne, Lib.)):** Good morning, everyone.

I now call this meeting to order. Welcome to meeting number 39 of the House of Commons Standing Committee on Industry, Science and Technology.

Today's meeting is taking place in a hybrid format, pursuant to the House order of January 25. The proceedings will be made available via the House of Commons website. Just so that you are aware, the webcast will always show the person speaking rather than the entire committee.

To the members of INDU, please note I'll take a few minutes at the end of the meeting to go over the schedule for the remainder of the session.

To ensure an orderly meeting, I'd like to outline a few rules to follows.

Members and witnesses may speak in the official language of their choice. Interpretation services are available for this meeting. You have the choice at the bottom of your screen of either the floor, English or French. Please select your preference now. All comments by members and witnesses should be addressed through the chair. Before speaking, please wait until I recognize you by name, and when you are not speaking, please make sure your microphone is on mute. As is my normal practice, I will hold up a yellow card when you have 30 seconds left in your intervention, and I will hold up a red card when your time for questions has expired. Please keep your screen and gallery view so that you can see the cards when I hold them up.

Pursuant to Standing Order 108(2) and the motion adopted by the committee on November 5, 2020, the House of Commons Standing Committee on Industry, Science and Technology is meeting today to continue its study on the economic recovery from COVID-19.

I would like to now welcome our witnesses.

[*Translation*]

Today, we are hearing from Vincent Rousson, rector of the Université du Québec en Abitibi-Témiscamingue, Geneviève Aubry, director of Collectif Territoire, as well as Denis Leclerc, president and chief executive officer of Écotech Québec.

[*English*]

Mr. John Galt, president and chief executive officer of Husky Injection Molding Systems; and Mr. Mark Mills, senior fellow of Manhattan Institute.

Each witness will present for up to five minutes, followed by rounds of questions.

With that, we will start our first round of six minutes each. The first round will go to MP Baldinelli.

**Mr. Bernard Généreux (Montmagny—L'Islet—Kamouraska—Rivière-du-Loup, CPC):** Isn't the witness going first?

**The Chair:** My apologies. I was jumping in there.

**Mr. Tony Baldinelli (Niagara Falls, CPC):** I would ask how their day was going.

**The Chair:** Thank you very much, MP Baldinelli.

[*Translation*]

Mr. Rousson, go ahead for five minutes.

**Mr. Vincent Rousson (Rector, Université du Québec en Abitibi-Témiscamingue, As an Individual):** Thank you very much, Madam Chair.

Ladies and gentlemen members of this important committee and of the government, thank you for allowing me to say a few words about the importance of universities to our country's green economic recovery, especially universities outside Canada's major urban centres, such as the Université du Québec en Abitibi-Témiscamingue, or UQAT.

Located in Abitibi-Témiscamingue, where Quebec's wide–open spaces, lakes and forests foster creativity and the emergence of talent, UQAT is a key driver in Canada's economic development. Our university has a presence not only in Abitibi-Témiscamingue, but also in northern Quebec, Nunavik, the Upper Laurentians, Montreal and on the North Shore.

Ever since our young university's inception, we have played and continue to play a leading role in bringing knowledge, applied research and technology transfer to Canadian businesses.

With a large research volume, our university's effectiveness in connecting university research to business needs makes it a key player in Canada. By carrying out and expanding our research activities in our niches of excellence, recognized the world over, we clearly help enhance Canada's international ranking.

Ranked by Research Infosource as the second most successful Canadian university in terms of research performance, UQAT has been helping economic sectors such as mining, forestry and agriculture address the challenges of climate change for nearly 40 years

The various niches of excellence in Canadian universities are without a doubt key elements in a green economic recovery.

I am thinking more particularly about the fields of mining and the environment.

Thanks to our unique approach based on collaboration with industry and government representatives, a team of seasoned researchers and state–of–the–art facilities, UQAT has an international reputation in research and teaching in the fields of mining and the environment.

The research being carried out focuses mainly on the development of environmental solutions linked to the entire life cycle of a mine and allows for changes in practice that are both sustainable and clearly oriented toward protecting the environment and creating jobs. The numerous joint ventures with mining companies and other universities around the world allow UQAT, and Canada, to develop innovative solutions that meet the real needs of the mining sector, governments and society.

I am also thinking of our universities' forestry niches.

Located in the heart of the boreal forest, our university, through its forest research institute, or IRF, is ideally positioned to host research projects with its huge open–air laboratory and an extensive network of partnerships and alliances with the forestry industry in Quebec and elsewhere in Canada, as well as with international partners.

Through our interdisciplinary approach, we help to disseminate knowledge, but also to incorporate new knowledge in cooperation with industry and the multiple users of the land.

We provide answers to forestry–related issues, from silviculture planning to primary, secondary and tertiary wood processing. The approach aims to facilitate forest certification and integrated land management, particularly by partnering with communities. UQAT is an undisputed leader in Quebec, the rest of Canada and the world in the development of new practices for the forest industry.

I am also thinking about our universities' agricultural niches.

Did you know that, by 2050, the world's population will be in the range of 9 billion people? To feed this population, we will need to increase agricultural production by almost 40%. Scientists say that there is enough arable land around the world to support future food needs. However, this arable land is not distributed evenly.

Agricultural development is booming in northwestern Quebec and northeastern Ontario thanks to a good supply of arable land. Quebec and Ontario have carried out several large–scale agriculture projects together, with UQAT playing a key role. Our university's close cooperation with farmers in both provinces helps us develop innovative research programming committed to forward–looking development suited to the current and future climatic conditions.

Canada has a unique opportunity to support universities and the agricultural sector as we move toward a greener, environmentally friendly economy that will meet the food needs of future generations.

The closer relationship between universities and local stakeholders will also guarantee success in this greener economy.

The partnerships established between our university and first nations and Inuit are one such example. A relationship of trust with indigenous peoples is absolutely essential to the partnership related to economic development.

I see that I don't have much time left, so I will close by saying that, thanks to their resources, accessibility, openness and partnerships, universities are for Canada...

I think that my time is up.

● (1110)

Madam Chair, I have three recommendations, if I may.

**The Chair:** When questions are addressed to you, you may share your recommendations. I have to interrupt you, as we have several guests today.

**Mr. Vincent Rousson:** Very well.

I will share my three recommendations with the committee a little later.

Thank you for your attention.

**The Chair:** Thank you very much.

I now invite Ms. Aubry to take the floor.

Ms. Aubry, you have the floor for five minutes.

**Ms. Geneviève Aubry (Director, Collectif Territoire):** Thank you for having me here today.

I am speaking to you today as the director of Collectif Territoire, a non-profit organization based in Abitibi-Témiscamingue, whose mandate is to unite the geniuses of science, arts and industry to produce benefits for ecosystems and communities.

Since 2018, the collective has been working on a project that is gaining support in the community, the Osisko Lake project. This project aims to rehabilitate and improve Lake Osisko, located in downtown Rouyn-Noranda, in a creative and participatory approach that unites several sectors and the population.

Lake Osisko has been damaged by human and industrial activities over the past decades, and is suffering from a variety of problems, many of which are common to different lakes in the region and across the country. These include contaminated sediments, high phosphorus levels, invasive aquatic plants, emerging contaminants, and more. In order to preserve the biodiversity and vitality of this ecosystem, it is important to find creative and adapted solutions to promote its recovery. It is therefore through the search for solutions that we are setting up a true regional innovation laboratory.

The Osisko Lake project is a research and experimentation ground for engineers, scientists, artists and other inventors, who unite their expertise and talents in the pursuit of this noble and inspiring goal. The project already has more than 40 partners. They include industrial companies, artists, universities, college technology transfer centres, schools, public and parapublic environmental organizations, and more.

Numerous people are uniting around the project because it is a positive, constructive project with multiple and powerful benefits. It is a project in which the partners find benefits. It is also a project with a territorial impact. It was selected by the Future of Good organization as one of the 100 best recovery projects in Canada.

The Osisko Lake project is a technological showcase for industrial and mining companies, mainly, that are very active in our region. Their expertise is recognized worldwide. Through this project, these companies enhance and develop inspiring practices in environmental innovation, rehabilitation of degraded ecosystems and bioremediation, and so on. There are many of them collaborating on this project, and they are proud of it.

Added to this rich contribution is that of the Université du Québec en Abitibi-Témiscamingue, about which Mr. Rousson has just given us an eloquent presentation. Researchers from UQAT are participating in the project by contributing their expertise in biology, mining engineering, ethics and digital creation.

The college centre for technology transfer associated with the Cégep de l'Abitibi-Témiscamingue, the Centre technologique des résidus industriels, or CTRI, is also involved in the project, particularly in bioremediation.

The artists bring creativity, a perspective, beauty and questioning, which give the project its colour.

In addition to having a strong core of local and regional partners, the project has reached out, and it has sparked partnerships elsewhere in the province, the country and the world.

The Standing Committee on Industry, Science and Technology is interested in examining how the Government of Canada, in its stimulus package, can support industries in their transition to greener, more sustainable practices, and support local and regional development and innovation initiatives.

Faced with the magnitude of the environmental, economic and human challenges doubly highlighted by the health and climate crisis, this plan is an opportunity to implement territorial development models in tune with the needs, particular characteristics and strengths of communities.

To support industries in their transition, the Government of Canada must demonstrate its confidence in community-led territorial development and innovation initiatives. You will not be surprised to hear me say that one sure way to support these initiatives is to put in place a territorial innovation support fund. This type of fund is managed by and for regional communities, and it evaluates projects based on their ability to adequately respond, in an innovative way, to community needs.

The most successful projects are often those that emerge from the regions, and whose development is not hindered by the restrictive or exhaustive criteria of certain government programs.

A territorial innovation support fund is a fund based on the evaluation of the impact potential of projects according to the needs and distinctive features of the regions from which they emerge.

An innovation support fund is a fund administered independently, by a selection committee whose legitimacy is widely recognized by people in the area concerned.

It is a fund that provides support to understand and document the impact of projects and mobilize the knowledge gained. It is also a fund that promotes the transfer and scaling of the innovations, knowledge and skills developed, to benefit other communities and regions.

I have long dreamt of such a fund, and I hope that today's forum has allowed me to make you aware that, in Canada's green recovery efforts, it is essential to give the regions a free hand to choose for themselves the projects that have the greatest potential to impact and benefit communities.

● (1115)

**The Chair:** Thank you very much, Ms. Aubry.

Mr. Leclerc, you now have the floor for five minutes.

**Mr. Denis Leclerc (President and Chief Executive Officer, Écotech Québec):** Good morning, everyone.

Thank you for inviting me to appear before the committee today.

My name is Denis Leclerc and I am the president and CEO of Écotech Québec, which represents the clean technology industry in Quebec. I am currently in the beautiful riding of Saint-Laurent.

I am also the chairman of the board of directors of the Canada Cleantech Alliance, which brings together a multitude of cleantech organizations in Canada.

As you know, the pandemic has shaken a lot of people. It has shaken all societies. It has come on top of other crises that are already very serious, like climate change, which threatens our health and well-being. We need to find an adequate response to both crises.

For more than a year, a consensus has emerged across civil society, the private sector, and government on the need for a green recovery. The scale of spending required to revive the economy does present an unprecedented opportunity to positively transform our societies. That's why stimulus packages will need to make room for projects that will jumpstart our economy and make it more resilient while contributing to a more effective fight against climate change.

In fact, I draw your attention to the fact that the World Bank has mentioned that the most promising recovery projects should have the following three elements: a very short-term benefit for economic recovery and job retention; medium-term benefits for growth; and long-term sustainability and contribution to decarbonization, among other things by better integrating low-carbon technologies and strategies.

We believe that clean technologies and environmental and energy innovations must be at the heart of this recovery. These innovations are essential for sustainable growth and for the well-being of Canadians. They could allow us to do much better with little.

Of course there are several challenges in the sector. These include financing, market access in Canada or internationally, and securing direct and foreign investment.

These are challenges, but it is by encouraging technology deployment that we can collectively seize the opportunities in the current environment and thereby build a greener, more innovative and resilient economy as we emerge from the pandemic.

These innovations will improve business competitiveness and, of course, will also create jobs within innovative companies while addressing Canada's climate, environmental and economic priorities. Together, our efforts will make this recovery a springboard to positively transform our economy to be greener and more prosperous.

I look forward to answering your questions.

Thank you for your attention.

● (1120)

**The Chair:** Thank you very much.

[*English*]

I now invite Mr. Galt to present for up to five minutes.

**Mr. John Galt (President and Chief Executive Officer, Husky Injection Molding Systems Ltd.):** Thank you very much, everyone, for giving me the opportunity to talk at this very important point. I'll have a slightly different approach from the people who preceded me.

I work for Husky, and we ultimately convert raw materials into finished goods. I've spent almost 37 years of my life around the world helping customers make things like medical syringes, IV connectors, bottles, food containers and other things of that nature. The majority of what goes through our products is plastic, although we do process other materials.

When I think about Canada's economic recovery, I start first with the plastics industry. I think that incentivizing investment in Canada's plastics industry is crucial. Responsibly managed plastics have a lower environmental footprint than any of the alternatives. On top of that, fully 73% of all medical consumables used in the world—and that number has been growing—are made out of plastic. The plastics industry employs 370,000 people across the country; it represents $35 billion of GDP; and it is led by small and medium-sized organizations, which, as we know, are at the core of the economy and an essential group when we think about engaging them to build out the business.

The second element for me is the importance of the free economy. What I mean by this is that small business is already very fragile, and the actions over the last year and a half have really put a tremendous toll on a lot of small businesses. Some 99.8% of all Canadian businesses are small and medium-sized. Those entrepreneurs are the key to unlocking prosperity for the country. They have played that role historically, and engaging that group in thinking about how to do is very substantial in importance. That's why, when it comes to plastic, I'm a strong advocate of the circular economy. I've seen it around the world. Just last week, I was in one of the largest recyclers on the west coast. We're involved directly in processing a multitude of materials, and that's the solution for Canada's economy and to grow industry and small business even further.

The third thing, which has already been mentioned, but of course is crucial, is this concept of getting this pandemic behind us and getting Canadians access to the vaccines and the freedom they deserve. Nothing has been more devastating to the economy than the lockdowns and what we've all experienced. I think we realize that we could have done a whole lot better job at managing the pandemic and the vaccines relative to our neighbours in the south, where 60% of those wishing to be vaccinated have already had both doses, and where they're now incentivizing the remaining groups of people, where the economies are opening up, where there's been an unprecedented economic boom. The six customers I visit in the U.S. are all struggling to find enough people to keep up with the incredible demands on their business. Nothing could be more crucial than opening the free economy and getting the vaccines

The last comment I'd like to offer the committee is really about how we go about this issue. I have really been harmed, I guess, emotionally, being a Canadian, by the concept of “essential” and “non-essential” citizens. I don't like that terms. Canada to me has always meant that everyone was created equal, with the right to speak, the right to pursue their purposes. My neighbours who work in businesses that are deemed non-essential, I consider essential Canadians. Any type of recommendation that comes out of this that continues to designate people as “essential” or “non-essential”, in my opinion, is un-Canadian.

Look at some of the impact on those smaller businesses, with people whom I work with, my neighbours. In Toronto, for example, there were 306 days lost since the pandemic started when it comes to restaurants. Gyms has lost299 days. Hair and nail salons have lost 277 days. Small retailers have lost 161 days. Closures have put two million jobs at risk across the country, and almost half a million working moms have lost their job as a result of the pandemic, and as of January, have not gotten those jobs back. We look at the restaurant industry in Canada, and the impact is staggering: 10,000 restaurants have closed, 320,000 jobs have been lost. Six out of 10 of those who have lost jobs in that industry are women; 50% of those businesses are run by new Canadians; and the industry is the number one source of first jobs for young Canadians.

You can see that the impact across all of these segments has been devastating, and being assigned non-essential status doesn't make sense to me. I've asked every level of government where the scientific evidence is to suggest that funnelling every person through a smaller number of larger establishments when each of those establishments has the same hygiene standards is less risky than allowing small business to perform appropriately to maintain their ability to remain open to ensure that their livelihoods are secure, while maintaining the security of people in the process. I haven't gotten any answers yet to that.

● (1125)

That's probably the most significant part, to me. We need to build. We can take the industries and grow them. I think working with small business and greening them is the right solution.

Thank you very much.

**The Chair:** Thank you so much.

I will now turn to Mr. Mills.

You have the floor for five minutes.

**Mr. Mark P. Mills (Senior Fellow, Manhattan Institute):** Good morning. Thank you for the opportunity to testify before this committee.

I'm a senior fellow at the Manhattan Institute, where I focus on science, technology and energy issues. I am also a faculty fellow at the McCormick School of Engineering at Northwestern University in Chicago. I'm a physics graduate, more than a few years ago, of Queen's University in Kingston, Ontario. For the record, I am also a strategic partner in a venture fund focused on energy tech software.

As this committee knows, the world is now recovering from the ravages of the global COVID-19 pandemic. That recovery inevitably means that as activities return to normal, energy use is rising again. As a baseline, it's relevant to note that over 80% of the world's energy comes from hydrocarbons—that's oil, gas and coal—and internal combustion engines account for 99% of all global transportation miles. Meanwhile, the wind and solar machines, the two sources of energy favoured in many policy proposals, supply less than 3% of global energy. As of now, electric cars supply under 0.5% of global road miles. Given the scale of global economies, changing the status quo presents some of the most daunting economic, environmental and geopolitical challenges our world has ever faced.

Permit me to note three basic realities, each with implications for considering technologies and policies for altering how the world, and Canada, obtains its energy. These are realities that help explain why global carbon dioxide emissions continued to increase prior to the pandemic lockdowns, despite massive investments in non-hydrocarbon energy production in both Europe and North America.

First, it's indisputable, and it's a good thing, that the world will use more wind and solar machines and more electric cars in the future. The reason for that, aside from policies that encourage all three, is anchored in the fact that those technologies are far better now than they were a decade or two ago. Given the magnitude of future global energy needs, more options are always better.

Second, it should be equally obvious that all energy machines are, necessarily, built from materials that must be first extracted from the earth. Replacing hydrocarbons with wind, solar and battery-powered machines constitutes a major shift in both the nature and the quantities of energy materials needed for society. It's a switch from using mainly liquids and gases to using mainly solids. It's a switch that, on average, results in a tenfold increase in the physical quantities of materials mined, extracted and processed per unit of energy service delivered to society.

The third point is that Canada and the United States combined are today, and will be for the foreseeable future, net importers of wind, solar and battery machines, or the key components for making them, as well as for most of the critical energy minerals that are used in the key components. As the International Energy Agency has recently noted, the realities of the scale of that mean that even the most aggressive forecasts for alternative energy sources see the world continuing for many decades to require roughly as much hydrocarbon energy as is used today.

These kinds of realities have implications in the accounting for environmental impacts and for carbon dioxide emissions. They also have economic, geopolitical and even human rights implications. While the United States and Canada in particular are essentially self-sufficient today in net hydrocarbon use, both countries are net importers of alternative energy materials and machines. This means that replacing hydrocarbons, which supply over 80% of North America's energy, with so-called green energy machines would replace a large share of the domestic GDP of both countries with imports.

Given the world as it is, and not as we'd wish it, increasing the use of green energy machines results in a de facto export of carbon dioxide emissions and an increase and a change in the character of environmental impacts. That's because mining and processing of energy minerals, and the fabrication of energy machines, in particular batteries, is inherently energy-intensive. Most of that energy use takes place offshore. Calculating the magnitude of that offshoring is complex.

● (1130)

Some analyses, including that of the International Energy Agency only last week, have looked at the impact of processing battery materials or fabricating battery components in China, where a major share—in fact, the dominant share—of such industries resides. With China's 60% coal-fired grid, this leads to even higher carbon dioxide emissions elsewhere and even greater supply chain environmental impacts .

This points to the need for a realistic supply chain analysis, something largely lacking in the accounting of Canada and the United States, and it means that we should also look at expanding our respective domestic mining and mineral processing industries—something that China has been focused on, by the way, for years.

Thank you very much.

**The Chair:** That was perfect timing.

With that, we will now start our round of questions. I will go to MP Baldinelli, who has the floor for six minutes.

**Mr. Tony Baldinelli:** Thank you, Madam Chair.

Thank you to all of the witnesses for joining us today and for your testimony.

I'm going to begin with Mr. Mills and his presentation. Throughout these hearings, we've heard from other witnesses that Canada stands well positioned in terms of its natural resources to help move toward this green recovery. Your comment was that it's going to take some time because, as you mentioned, all nations are making this transition, and there is that sheer volume and the requirements that will be needed for resources and inputs.

That report you just mentioned, “The Role of Critical Minerals in Clean Energy Transitions”, just released by the International Energy Agency, talks about the global energy transition that will accelerate the demand for key minerals such as lithium, graphite, nickel and rare earth metals. That should explode, rising by 4,200%, 2,500%, 1,900% and 700% respectively by 2040.

How do we get to our targets in time? All nations are pledging to the Paris Agreement, but to your point that the cost of getting that input is going to continue, are those figures attainable?

**Mr. Mark P. Mills:** I think the short answer is no; the figures are not attainable. This is what the IEA report makes clear, and there are really two separate but closely related issues: the implications of that magnitude of new mineral demand, environmentally and geopolitically; but also separately, whether it can be done.

The IEA, in very cautious language, made it clear that none of the world's miners—Canada, Australia, China, Bolivia, Chile—are planning or have invested in the magnitude of new mining and mine refining necessary to meet those goals. What they point out is the obvious, and Canadians and Americans know this. The average time globally from finding a new viable ore body to opening a mine is 16 years. Canada, to my last examination, is one of the better nations in environmentally expediting that, but it's about 10 years, so these goals will require, as you recounted from the IEA report, percentage increases in the production of these materials in the hundreds to thousands within 10 years, yet it will take more than 10 years to even open mines to begin to supply these materials.

There is a profound disconnect between what's possible and these aspirations. I think this is a tragic mistake, because it not only has enormous implications for the environment, but also, if countries count on those minerals being available to produce these machines and resources, and they are not, then we will either not have the supply or we'll be stuck with accelerating the production of oil, gas and coal on short notice. That, ironically, is possible, but it will cause enormous price spikes that are damaging to all of the world's economies, and it won't reduce carbon dioxide emissions. This is the truly critical disconnect between aspirations and reality that the IEA has pointed out.

Again, that is cautious. They are not an advocate of oil and gas, as you know. They are, in fact, an advocate of the so-called sustainable development initiative.

● (1135)

**Mr. Tony Baldinelli:** Thank you, Mr. Mills.

Quickly, in the time I have available, I want to go back to our first witness, Mr. Rousson. He mentioned that he had three recommendations he'd like to present.

Mr. Rousson, could you make those recommendations?

**Mr. Vincent Rousson:** Thank you, Mr. Baldinelli.

[*Translation*]

First of all, we need to increase funding so that we can attract, train, and retain talent in this country, that is, the brains, the students that we train.

Second, we need to invest in the research tools and infrastructure of Canadian universities.

Third, in connection with all of this morning's testimonies, we must support initiatives to add value and transfer research to industries to allow for better support. This is very important. This goes back to what Mr. Galt, Mr. Leclerc, Ms. Aubry and Mr. Mills mentioned. The government should invest to support universities in technology transfer to industries to encourage innovation and the green economy.

[*English*]

**Mr. Tony Baldinelli:** Thank you.

Madam Chair, how much time do I have?

**The Chair:** You have one minute and 12 seconds.

**Mr. Tony Baldinelli:** I'll go now, quickly, to Mr. Galt and his presentation.

The federal government has committed $1 billion over five years to attract private sector investment in clean tech projects.

The question is, as we've heard from other witnesses, how do we ensure that kind of money gets down to your point, to the small and medium-sized enterprises, which have more difficulties accessing those types of funds that are available from the federal government?

**Mr. John Galt:** That's a great question. I don't know that I have a perfect answer. The point, however, is that it is exactly what we need to do.

First of all, we have to begin with the dialogue. How do I green my business? Do we agree on the same goals at the end, to lessen the impact on the economy? Can we turn that entrepreneurially into an opportunity to hire, to engage and to build a larger industry? Those are the things at the core of it that people need.

What they don't need are the concepts of regulations.

One I'm facing right now is the whole push back on plastics. I've been around the world for the last 10 years supplying customers with technology to support the circular economy. Plastic melts at 280 degrees, aluminum at 660 degrees, and glass at 1600 degrees. If we talk energy, plastic has the lowest environmental footprint if it's collected and reused.

What I myself, and all small businesses, find at times is not having the opportunity to engage.

I'm sorry. The time is up.

**The Chair:** Thank you very much.

**Mr. Tony Baldinelli:** Thank you, Madam Chair.

**The Chair:** You're very welcome, MP Baldinelli.

We'll now go to MP Erskine-Smith. You have the floor for six minutes.

**Mr. Nathaniel Erskine-Smith (Beaches—East York, Lib.):** Thanks very much, Chair.

Mr. Mills, just to clarify, if we're thinking of a recommendation along these lines, the idea would be that we would recommend that Canada presumably work in partnership with the United States to ensure an integrated supply chain in relation to the coming of electric vehicles and batteries for other devices, that as we see the transition towards a cleaner economy, we are integrating our supply chains to that end. That includes mining, as you say, but all the way down the supply chain.

● (1140)

**Mr. Mark P. Mills:** I've written many times and advocated both before Canadian organizations and U.S. Congress for a better integration of the Canadian and U.S. energy supply chains.

This is a magnificent continent with incredible resources. We have the capacity to do environmentally sensible mining, extraction and production of everything, whether it's oil and gas or the production of plastics or whether it's in the lithium and cobalt nickel domains. However, we've really lagged in doing this with the essential metals and minerals.

Candidly, Canada has done better than the United States, but lately it has been slipping. I think this is a mistake, given what the world wants to do.

**Mr. Nathaniel Erskine-Smith:** I spoke to someone recently, and as we look to electrifying more things, it makes sense to you that we would then model out what that electricity demand is likely to be and then ask, how are we going to fulfill that electricity demand with clean sources of energy?

**Mr. Mark P. Mills:** Let's use copper as an easy mineral example.

The world's demand for copper under the clean energy plans will go up several hundred percent. The world's current mining capacity and plans for mines are declining over the next two decades. Nobody is planning to expand capacity or spend the money on it yet. Electrification needs more copper. You have something like 400% more copper per car if it's electrically powered versus an internal combustion engine. These have really important implications.

I think the main point I would make is the failure on two counts: sensible integration of physical resource policies and in refining and processing.

On the role of plastics, I want to reinforce that my colleague from Husky is absolutely right. This vilification of plastic is silly. It's hype. It's how you get to the goals, with lightweighting things.

As well, there is a failure to understand the time frames. This is a long process. I hesitate to use the word “silly”, but I will: these silly goals of 10 and 15 years. Energy transitions of the kind we're talking about do not happen, and have never happened, at that velocity globally. They in fact won't happen. I just have to say, in all candour, it's just not possible.

We just have to be more realistic and more sensible, and frankly, we're doing neither.

**Mr. Nathaniel Erskine-Smith:** Mr. Galt, I want to give you the opportunity to build on some of your opening remarks.

When you look at federal commitments, we've seen federal commitments since 2016 towards a cleaner transition. We've seen in December an update to the climate plan, and then further announcements in budget 2021.

How would you articulate exactly what might be missing and where you think this committee ought to make recommendations to the government going forward?

**Mr. John Galt:** Okay, but I'm going to start on plastics again, where I can speak more broadly. On plastics, it really comes down to three primary issues. The biggest problem worldwide, which has been solved by Norway and Germany—so I'm using their examples for how it can be done—is to establish and harmonize waste collection systems. What we don't recognize yet is that what we call “waste” today will be resources tomorrow. The steel industry realized it years ago, when they moved from the large mill that used ore to the mini-mill. There's always going to be a balance of the two, and plastics can be infinitely recycled.

I went across the country. We have different recycling standards per province. We have different ones per municipality. I live 15 minutes away on a farm and I have different materials.

Anybody who understands the economics of recycling will tell you that the first and most critical thing is bale quality, and getting the material back is the best. Harmonizing our collection systems and getting enough of the material is key.

The second thing for us is to mandate certain recycling content standards. The industry's supportive of it. We're building technologies that do it every day. Customers using our equipment already have 100% content in many parts of the world. Why is Canada not pushing more recycled content?

I think the third thing is to incentivize investment in recycling. I know of three recycling plants that were planned for Canada but put on hold when the government tabled the toxic designation of plastic. The shareholders couldn't invest tens of millions of dollars in Canada when they were uncertain about whether they would be legislated out of existence.

The three most critical things that would reduce our environmental footprint by about 60% from plastics—which are already the superior material from a carbon perspective—are also the most practical. I've been a strong advocate for them over the last months and years.

● (1145)

**Mr. Nathaniel Erskine-Smith:** Thanks very much.

Those are my questions, Chair.

**The Chair:** Thank you very much.

[*Translation*]

Mr. Lemire, you now have the floor for six minutes.

**Mr. Sébastien Lemire (Abitibi—Témiscamingue, BQ):** Thank you, Madam Chair.

It is an honour for me to welcome the new rector of the Université du Québec en Abitibi-Témiscamingue, Mr. Vincent Rousson, whose appointment is welcomed with great enthusiasm in a region like Abitibi-Témiscamingue. Last summer, the Standing Committee on Industry, Science and Technology welcomed his predecessor, Mr. Denis Martel.

Mr. Rousson, during your testimony, you stated that, to financially support universities in the regions is to optimize our chances of achieving a green and sustainable economic recovery.

Are research support funds sufficient for universities? Could improvements be made to allow us to shine more brightly?

**Mr. Vincent Rousson:** Thank you very much, Mr. Lemire, for your kind words. I also thank you for the question.

Investing in universities and, in particular, universities in the regions, is indeed a key element, because we are close to natural resources and we have a direct link to communities and businesses.

There is a reason why my university is ranked second in Canada this year in terms of research intensity performance. In recent years, we've often been first, because we can link business and the university to get research grants, which is really important.

It's difficult for very small and medium-sized companies to get funding for the research and development side of things, because it's sometimes complex and companies don't always see the added value. Yet we are able to double, and sometimes triple, the return on every dollar that these companies invest in research and development, in conjunction with universities, which is driving innovation and developing new technologies.

Investing in universities, whether through dedicated research funds or through resources tied to training, which will ensure that their performance is enhanced, will result in more people being trained. In doing so, there will be more people in the industry with the essential skills to take us to the next level. You may say I'm sold on the cause, but investing in universities is, in my opinion, a guarantee of our collective wealth as a society.

**Mr. Sébastien Lemire:** Without wishing to be chauvinistic, I would like to point out that the city of Rouyn-Noranda, where the main campus of the Université du Québec en Abitibi-Témiscamingue is located, was ranked last week as the second best place in Canada to study at a university, in particular because of its proximity to nature and resources, as has been mentioned.

One thing I would like to mention, by the way, is that UQAT, like the other universities in the Université du Québec network, is not part of the famous U15 list of universities that get a large share of federal funding. They are all independent universities, in the regions, but they work in collaboration. It is important to emphasize the very independent nature of each university and the fact that the federal government needs to think about its strategy for investing in the campuses of these universities rather than in a network.

Ranking second in Canada for its research performance according to Research Infosource, UQAT has been helping the mining, forestry and agricultural industries, among others, to meet the challenges of climate change for 40 years.

Mr. Rousson, can you tell us more about the successes of Abitibi-Témiscamingue and the Université du Québec en Abitibi-Témiscamingue?

**Mr. Vincent Rousson:** There are several, but I'll keep it short.

Many of the things that Dr. Mills mentioned are related to our university and industry. It's unusual in this world to get mining companies around the table to invest in environmental protection. In the last few years, six mining companies in the region have invested over $30 million in changing their environmental practices regarding the life cycle of a mine. All of this has revolved around our university and the innovative deployment of our researchers. This is not a common practice in the world, and it is one of the unique things about our university.

With respect to the forest sector and everything related to carbon sequestration and management, it is extremely important to plan well for the life of the forests, to operate them for, by and with the indigenous communities here. That's a hallmark of our university, and that's how we should be doing it.

Finally, I'll talk about the agricultural area. On carbon sequestration, I mentioned that we need to increase our agricultural production capacity by 40%. Organic farming is going to be an extremely important part of that, as it will produce more per hectare than other sectors of the industry using traditional ways of farming.

So it is the work of academics, in conjunction with farmers, industry and forestry companies, that allows us to think about a better future for a greener economy in Canada.

● (1150)

**Mr. Sébastien Lemire:** I completely agree with you.

As the member of Parliament for Abitibi-Témiscamingue, I can attest to the exemplary partnership that exists between the Université du Québec en Abitibi-Témiscamingue and indigenous peoples. This partnership was born of the desire for mutually beneficial cohabitation of the territories and the desire to meet common challenges relating to collective well-being, more specifically.

In your opinion, what is the scope of this exemplary partnership? How can it contribute to a greener economic recovery?

**Mr. Vincent Rousson:** The UQAT motto is to work for, by and with our indigenous partners, whether they are first nations or Inuit. This is the key to success.

In fact, it's a recognition of the equality of their cultures and status. It is important to have a partnership based on respect, since this is how we manage to get our partners in Quebec, Canada and abroad to work with us. In fact, many academics or people from other countries come to see our winning practices with these communities.

In my opinion, a key to the success of the Canadian economy is the integration of indigenous people into that economy and the integration of their vision for the environment.

**Mr. Sébastien Lemire:** I sincerely thank you for your participation, Mr. Rousson.

**The Chair:** Thank you very much, Mr. Lemire.

[*English*]

Our next round goes to MP Masse.

You have the floor for six minutes.

**Mr. Brian Masse (Windsor West, NDP):** Thank you, Madam Chair.

Thank you to our witnesses. I'm going to ask Mr. Rousson a question, but after he's finished I'd invite any other of our witnesses to chime in as well.

Mr. Rousson, the recent Canada-U.S.-Mexico agreement included labour and environmental measures as practices. It's interesting because originally the first deal didn't have that. In my opinion, it's good that was scrapped and that the Democrats included this change because, coming from my sector, auto, tool and die, mould making and so forth, we've consistently been undermined by labour and environmental subsidization in terms of competition.

This brings us into a first-ever agreement where we have it within the agreement and then there are measurables. Mind you, they're pretty complicated at some points, but they're there at least to start.

I'd like your opinion about our trade, including some type of measurables within the agreement for environmental labour standards.

Once you've completed your answer, Mr. Rousson, I would invite any other guest to give me their reflection on that too.

[*Translation*]

**Mr. Vincent Rousson:** Mr. Masse, thank you for that excellent question.

In fact, the relationship with our U.S. economic partner has been in existence for a long time, and it's important that we keep it going in keeping with an environmental perspective. The new party in power in the United States, the Democratic Party, is bringing a new way of doing business and a new environmental vision, which is greener than the previous administration. Yet they are also looking to centralize, much like the Republican Party did in recent years with the Buy American Act. They are working hard on that.

Workforce planning to help us meet our targets and goals will not be simple. The academic sector is challenged to properly align the training needs of industry and the needs of our communities with the new trade realities that are developing between the three countries, Canada, the United States and Mexico.

I think a key element that could support us in planning for a focused workforce would be the continuing education component. Just because you come out of a university, college or educational institution with a degree doesn't mean you should stop learning. The continuing education offered by educational institutions is important.

In addition, the Government of Canada can adopt measures aimed at businesses to facilitate the transfer of knowledge, and for businesses to enable their employees to access continuing education throughout their life. I think this is a key element that will help us plan well for this workforce element given the Canada-United States-Mexico Agreement.

[*English*]

**Mr. Brian Masse:** Great. Thank you.

Would any other witness like to offer some comments on that?

Mr. Galt, I see your hand up—a tool and die mold-maker. Thank you. I know you're just up the highway from me. Please go ahead.

**Mr. John Galt:** Thank you very much.

We look at the challenge of getting the right people and ensuring the skills bridge is there in Canada, because this is critical. The world is moving quickly. The requirement for technology is there, and digitalization is having a role in everything we do.

About five years ago, just to talk about this talent issue and the development of the right kind of talent, and importantly, the transition of talent to the new base of skills, we invested in industrial digitalization—Industry 4.0, as you might know it in Europe. We were honoured in Luxembourg, one of the seats of the European Union for Industry 4.0, as an absolute leader in this field. We have facilities there, also.

What we've recognized is that the nature of the types of jobs Canadians want to seek is changing. After the Second World War, European immigrants worked with their hands. They were tradespeople, so we had lots of tool and die makers. Today there are few people who want to make a career out of that. There are some who do, and they are invaluable, but few people want to be part of that.

Most people want to develop digitally, and so what we recognized is that rather than working the machine tool, people get really inspired by building automation, robotics and algorithms to operate machines intelligently. We're fortunate in Canada to have a lot of universities, which is great for people coming out of university. Nevertheless, we also have a lot of mature people in the workforce who aren't as comfortable with digitalization. One of the biggest efforts we make is what we call the “skills bridge”. What talents do I have today? What talents do I need to accommodate and work within the digital environment?

What's been mentioned here in this idea of assisting Canadians with the education required to make them more relevant inside of a digital environment, to me, is absolutely crucial both for the performance of Canadian businesses and to ensure the employment of Canadians.

● (1155)

**Mr. Brian Masse:** Thank you, Mr. Galt. Are there any others?

I'm not sure how much time I have, Madam Chair. I have just a minute.

Then I'll go just go really quickly to Mr. Galt again. I'm just curious about a side issue. Are you having difficulty right now getting any of your salepeople or service people back and forth across the border for contracts that you have? We're having a really difficult time down here. Again, you're not too far from me. I'm just wondering if that's a problem for you as well.

**Mr. John Galt:** Absolutely, we are. I mean, 97% of everything we produce has been exported, so our customers are all around the world.

**Mr. Brian Masse:** Yes.

**Mr. John Galt:** We can support our customers in some ways, but in other ways we need to be there. It's been enormously difficult for us to get people across the border to provide the necessary services to keep the production of things, like these IV connectors, going, and at the same time to get them back across the border with a two-week quarantine before they can go back again. I can tell you, after doing that three or four times, many of our service people are saying, “I can't do this anymore. There's too much time away from my family.” We really need to find a way to ensure that...so that those who are necessary have a seamless and easy way to make it happen. Canada's an export country. If we can't perform and support our customers, we're in trouble.

**Mr. Brian Masse:** Thank you, Mr. Galt and Madam Chair.

**The Chair:** Thank you very much.

We'll now start our second round of questions. Our first round goes to Monsieur Généreux for five minutes.

[*Translation*]

**Mr. Bernard Généreux:** Thank you very much, Madam Chair.

I thank all the witnesses. Everything we are hearing this morning is really very interesting.

I would like to ask questions of Mr. Leclerc and Ms. Aubry, but I will put one to Mr. Mills first.

[*English*]

My mother used to say, “If nothing gets created, nothing gets lost.”

[*Translation*]

Mr. Mills, earlier you talked about exports in relation to the greenhouse gas issue. If we want to create an electric car fleet in a time frame that I too find completely unrealistic, it will require mines, as you said. In Quebec, it takes 10 years to open a mine.

They want to create new mines to extract the raw material needed to manufacture the batteries in question and export it to China, where the batteries will unfortunately be manufactured, and then import those batteries here to install them in electric vehicles. There's something unrealistic about that.

We all live on the same planet. We all want to make the transition at some point. What are your thoughts on this transition?

[*English*]

How long is it going to be? How long is it going to take?

**Mr. Mark P. Mills:** The short answer is the transition will take many decades to effect, given the magnitude of the materials involved just in the electric car supply chain—never mind the other green machines. It's just the electric car side. Any serious analysis sees this as taking many decades—not one or two.

Given the state of the world today and what we know now about where these minerals are produced.... Most cobalt is in the Democratic Republic of Congo, while 90% of all cobalt refining in the world is in China on a grid that's 60% coal-fired. The majority of the world's neodymium is refined in China on a coal-fired grid.

If you do the accounting properly, we have to be honest. We don't really know what the emissions are upstream in many cases, because the mines in countries don't co-operate—and are not required to—to tell how they do their processes.

For those estimates—and there are estimates—you can reasonably conclude that there's no net change. In fact, in some cases there's even an increase in global CO2 emissions associated with the nature of the process we have today to replace an internal combustion engine with a battery-powered vehicle.

Again, this is not a policy statement or a political desire one way or the other. These are just the physical facts of the processes that exist.

● (1200)

[*Translation*]

**Mr. Bernard Généreux:** Thank you very much.

Ms. Aubry, I found your idea about a support fund for regional projects interesting. Incidentally, I happen to live in a region.

I have the impression that Mr. Rousson and Mr. Lemire are related, because their voices sound the same to me.

Even if I've only ever been to Abitibi-Témiscamingue once in my life, I think it is an absolutely wonderful place. I also think that you are doing fantastic work there with industry. The city of La Pocatière has a strong academic sector, which includes the Institut de technologie agroalimentaire and the Cégep de La Pocatière. The city has established relationships with industrial businesses that have had a presence in the region, such as Bombardier, and now Alstom. Links have been created between the universities and grant sources.

You said that a support fund should be set up to help grassroots projects. That is music to my ears. Can you tell us a bit more about this?

Mr. Leclerc, I would like to hear your take on this as well, because I believe that Écotech Québec is also present everywhere in the province.

**Ms. Geneviève Aubry:** Thank you, Mr. Généreux.

We have been working on the Lake Osisko project for two years now, and we have managed to find quite a few partners, including financial backers. One of the hurdles that we are facing, however, is the selection criteria. On the one hand, we are often asked to submit innovative projects that have high potential, but on the other hand, the criteria for the programs are often inflexible.

At the end of the day, we find ourselves having to scale down our ambitions and our vision to meet established criteria which in many cases are out of synch with our reality. Moreover, the projects are often evaluated within a strict framework, regardless of...

**Mr. Bernard Généreux:** So there is no flexibility.

**Ms. Geneviève Aubry:** Who is better placed to evaluate the projects if not people from the region?

When I talk about having a legitimate selection committee, I'm not just talking about the need for representation. We really need a selection committee whose members are from the region and whose legitimacy, transparency, analytical skills and desire to work for the common good are widely recognized by regional stakeholders. This would be a game changer.

**Mr. Bernard Généreux:** Thank you.

Mr. Leclerc, can you please talk about this aspect, particularly in a regional context?

**Mr. Denis Leclerc:** We can talk about criteria, but we have to change our approach. We should be talking about desired results and not criteria. Results bring about innovation and allow us to realize a clear objective. We should abandon the notion of criteria and concentrate on the desired result.

**The Chair:** Thank you very much, Mr. Généreux.

[*English*]

Our next round of questions goes to MP Amos.

**Mr. William Amos (Pontiac, Lib.):** Thank you, Madam Chair, and thank you to our witnesses.

[*Translation*]

We are so pleased to have our witnesses here with us today. This is a very interesting subject, a new direction for the Canadian economy and the way to get to zero deficit. Of course, we are talking about the role of the state, but also that of the private sector. It will also be very interesting to discuss the research that is taking place in post-secondary institutions.

My first question is for Mr. Rousson, who is representing the Université du Québec in Abitibi-Témiscamingue, or UQAT, and who talked about the investments made by the federal government since 2015. According to the information I have here, the Natural Sciences and Engineering Research Council of Canada provided almost $15 million in funding to UQAT in the areas of natural sciences and engineering. We know that our government has provided the most funding to our research organizations in our country's history, particularly since the 2018 budget.

Mr. Rousson, can you tell us what type of funding you received and how it was used?

Could you also talk to us about grants from the Canadian Foundation for Innovation? This is another important source of funding. I know that UQAT has received grants from it as well.

● (1205)

**Mr. Vincent Rousson:** Thank you very much, Mr. Amos.

That is an excellent question. I tip my hat to the Government of Canada, which has invested heavily in academic research over the past few years to help us find the tools we need and acquire the necessary hi-tech infrastructure. You mentioned the Canadian Foundation for Innovation, the CFI. My university has received quite a lot of funding, and other universities in the region, in Quebec and elsewhere in Canada have also been beneficiaries.

We have to keep the momentum going. We got the ball rolling. The teams are getting better and we have a circular relationship going. Indeed, the better the teams perform and the better they work with industry, the more industry invests in university research and the more funds can be used in tandem with the grants that we receive. As the circular relationship gets more and more firmly established, there is more research, more innovation and more investment in enterprise.

The Government of Canada should keep funding Canadian grant organizations, whether it be in the natural or the social sciences. Social sciences are extremely important. We should invest more in our grant organizations, because innovation not only happens on the technological front, but also in terms of human and social progress. We have to continue to invest.

I am talking about investing in human beings who help us to pursue development in a different way. We have received quite a bit of funding which has allowed us to receive more Canadian research chairs. These research chairs are allocated proportionally based on research. Our university was allocated four new chairs recently because of our research. Canadian universities are currently enjoying tremendous momentum.

**Mr. William Amos:** Thank you, Mr. Rousson.

I am happy to hear you confirm that the Government of Canada has invested heavily in UQAT. This has allowed for real co-operation between the private sector, civil society and researchers and will help us get to a greener economy. I know that quite a number of these investments are aimed at clean energy.

[*English*]

Maybe I'll turn this to all witnesses, starting with Mr. Leclerc and Mr. Galt. I'll be quick.

Budget 2021 recently made massive investments in the net-zero accelerator fund. We're talking about $8 billion in funding that will enable greenhouse gas emission reductions across many industrial sectors.

Mr. Galt, could you comment on the pertinence of such investments?

**Mr. John Galt:** It's not really that useful for us. When you think about Husky Energy, when you think about the small and medium-sized enterprises across Canada involved in the plastics industry, the toxic designation and the failure to focus on recovery of the materials have more to do with the economic stress we're feeling right now than seeing this current point in time as an opportunity.

**The Chair:** Thank you. Unfortunately, MP Amos, that's your time.

[*Translation*]

Mr. Lemire, you have two and a half minutes.

**Mr. Sébastien Lemire:** Thank you, Madam Chair.

I would simply like to say to the honourable member from Pontiac that his riding is enormous and includes the municipality of Grand-Remous, which is close to the UQAT centre in Mont-Laurier. Our ridings are neighbours.

Ms. Aubry, the city of Rouyn-Noranda will soon be celebrating the 100th anniversary of its foundation. The city is not as old as Montreal, which will be 400 years old soon, or La Pocatière, but it will nonetheless be marking its centenary and you will probably be involved in the celebrations.

What can you tell us about the role Collectif Territoire is playing in our economic and environmental recovery in terms of regional innovation and helping industry to transition? What role can Collectif Territoire play in this recovery?

**Ms. Geneviève Aubry:** Collectif Territoire is a middleman in the world of innovation. A middleman plays a vital role when there is a systemic vision for innovation which calls upon the skills and expertise of various organizations. This role is all the more important when stakeholders are using the innovation ecosystem to bring key actors together and tear down silos and borders. This is the role we are playing.

We add value to the transfer of scientific knowledge to industry, as Mr. Rousson mentioned, because we bridge the gap between applied and pure research. We also work to foster scientific awareness among school-aged children by encouraging artists and cultural organizations to contribute to efforts aimed at gathering knowledge, teaching and communication.

All this contributes to a holistic vision and ensures that we are not only talking about radical innovation, but also reworking existing innovative projects that will lead us to a sustainable green recovery.

● (1210)

**Mr. Sébastien Lemire:** Your president, Patrick Martel, who works at TechnoSub, has a vision and keeps an eye on new technologies and trends and the best innovative work being done all over the world. Is that useful to you? If it is, how?

We know that the aim is that people can once again swim in Lake Osisko, which is near downtown Rouyn-Noranda.

Do you think that is feasible?

**Ms. Geneviève Aubry:** That work is extremely useful. Mr. Martel is in contact with divers from OceanX, a Dutch organization, which is developing...

I see that I have no more time left. I'm sorry.

I will just end by saying that it is very useful to us.

**The Chair:** Thank you very much.

[*English*]

Now we'll go to MP Masse for two and a half minutes.

**Mr. Brian Masse:** I'll let Ms. Aubry continue and finish her statement there.

Please, go ahead and finish your statement.

[*Translation*]

**Ms. Geneviève Aubry:** Thank you very much.

We are indeed in contact with researchers from all over the world who communicate with us thanks to the fantastic network of contacts that Mr. Martel has set up. What's more, TechnoSub is a regional business. It has recently been awarded a prestigious label from the Solar Impulse Foundation for its innovative product called MudWizard, which separates mud from water, thanks to tablets which are potato-based. Innovation is everywhere in Abitibi-Témiscamingue.

[*English*]

**Mr. Brian Masse:** You seem particularly excited about that. If it's potatoes, I know my friend Wayne Easter, who's not on this committee here today, would be particularly fond of that.

How long has this technology been in development? I'm just curious because it's very clever. How long has this been in the works?

[*Translation*]

**Ms. Geneviève Aubry:** I am not overly familiar with the product, but I believe that MudWizard has been on the market for two years or so. It is already being used everywhere in the world. What's more, TechnoSub is special because it sells solutions, not just products and processes. Buyers of MudWizard also get support from the TechnoSub company, whose mission is to enable its business partners. It helps them to go further. I would invite you to watch their videos on the Internet about the MudWizard technology. You will understand how it works.

[*English*]

**Mr. Brian Masse:** Thank you, Madam Chair. Those are all of my questions.

Thank you to the witnesses.

**The Chair:** Okay. We will now go to MP Dreeshen for five minutes.

**Mr. Earl Dreeshen (Red Deer—Mountain View, CPC):** Thank you, Madam Chair.

It's certainly great to have this discussion this morning. Finally, we are having some discussions about the realities of the future of renewable energy, with the reality of the energy that is going to have to come from the non-renewable resources. I think that's really important.

We've talked about the 10 years it takes to develop mines here in Canada. That would be if we didn't have any environmental groups fighting against our having them. I think that's something we need to consider.

I'd like to speak to Mr. Mills. We've talked about a net-zero journey, so when you calculate the full life cycle of global CO2 emissions, is there an opportunity for us to think that it is a realistic timeline to hit by the year 2050?

**Mr. Mark P. Mills:** Well, I think the question of realism is that you put it in a calculation and an estimate, as opposed to what we know could happen.

Again, I would refer to the just-released 280-page report by the International Energy Agency, which is the pre-eminent source of information for governments on this particular issue. What you'll find is that they cast doubt on the calculation showing it's possible, given what's going on. In fact, they clearly doubt it; given the world as it is—that is, how we actually access minerals, how we process them, and where they're processed—you can't get there. They're not saying it's physically impossible in the pantheon of science and engineering; it's just not possible given what we now know and what we're now doing.

They give many specific examples. In fact, I would recommend the staff or the committee look at one particular graph they have summarizing data about electric vehicles. Under ideal circumstances, electric vehicles on average cut CO2 emissions, counting the mining and processing. That's on average. But it ranges from something like a 50% to 70% reduction, not zero. This is a big reduction, 70%, but it can go up to a slight increase. The range can involve an increase in CO2 emissions from using electric vehicles.

The fastest way to reduce CO2 emissions, which no one is proposing anywhere in the world, to my knowledge, is subsidizing more efficient internal combustion engines. That's just economic and engineering reality.

● (1215)

**Mr. Earl Dreeshen:** In terms of the situation, when we talk about electric vehicles, if we did have this great influx of them, the only idea that I'm familiar with is that you'd have to have some massive battery storage projects in order to make that happen. The electrical grid, as we have it, would not be able to manage it. Then we'd be downloading all of this into municipalities in an attempt to be able to supply what they need.

I'm a former math and physics teacher. Perhaps with your physics background you could explain somewhat to folks just how easy that would be.

**Mr. Mark P. Mills:** You know, as a former physicist, when I used to practice as one, I would tell people that this was really arithmetic, not physics. We can look at the energy storage capacity of the batteries that are being planned and proposed for the world or Canada or the United States and compare it with the amount of electricity consumed in any given year or any given hour. What you'll find is that even these incredible increases that are being proposed will store minutes' worth, not hours' or days' worth, of electric supply. There's actually no possibility, given current plans, to operate electric grids on episodic power using batteries.

The only feasible means will be to do what Germany did and effectively build two grids, which costs more than twice as much. One grid is wind and solar with some batteries. The shadow grid is about 80% of the original hydrocarbon grid, which is there to provide electricity when the sun and wind obviously don't. It's an extraordinarily expensive solution. It can be done, but it doesn't eliminate carbon dioxide emissions. It just increases mining around the world.

**Mr. Earl Dreeshen:** I think that's the point.

I know that you did a YouTube presentation that talks about this. If you wish to give the clerk that information, I certainly think a lot of us could learn from that. I will leave that with you.

Thank you very much, Madam Chair.

**The Chair:** Thank you so much.

With that, we will now go to MP Jowhari for five minutes.

**Mr. Majid Jowhari (Richmond Hill, Lib.):** Thank you, Madam Chair.

Thank you to all the witnesses. This has been quite informative.

I'll start with you, Mr. Mills. You spent a lot of time in your testimony talking about electrical cars, wind and solar, energy material extraction, processing, fabrication and the integrated supply chain. I'd like to talk about another dimension of what I believe is our government strategy around net zero, and that has to do with the hydrogen strategy.

I'd like to get your feedback or your thoughts on the plan we're introducing, starting at the end of 2021, as it relates to the hydrogen strategy. What are your thoughts on this strategy and the role it can play in the green economic recovery?

**Mr. Mark P. Mills:** That's a very good point.

The use of hydrogen in many respects is far more significant than the use of lithium batteries as an energy storage mechanism. I think it's important—and I'm sure you know this—that hydrogen is largely unavailable on planet earth. It left a long time ago. We have to produce hydrogen the way we produce electricity. You have to use energy to store it in an intermediate form. Electricity is inherently a clean way to use energy, but we have to use energy to make it. Hydrogen is similar.

I would say, again, when you look at the physical resource and the economic requirements, the same conclusion one reaches is that, given the chemistry we have and the energetics we know on how to make hydrogen, at scales that a country needs, it will take a very long time to have a significant effect with hydrogen. But it will be more significant, faster, than batteries. A fuel cell with hydrogen is also very expensive, like lithium batteries, but far more effective. However, there are no means known to produce at the scale and the prices that society is currently willing to pay for energy. It's a very expensive path, with many technical problems. Hydrogen is hard to store. It embrittles steel. When you store it, it requires much more rigorous safety procedures than natural gas does. Roughly 99% of the world's hydrogen today, as you know, is produced from a process called “reforming” natural gas. It's basically a way to use natural gas more cleanly, but it's roughly twice as expensive as using natural gas to make electricity.

● (1220)

**Mr. Majid Jowhari:** Thank you.

I'm going to go to Mr. Galt.

Mr. Galt, in your released sustainability plan you mentioned that sustainability is a top priority for Husky. You also mentioned that your plastic “packaging and other end products meet specific regional design requirements, particularly with regard to recycling and recycled content in the packaging itself.” I understand that you talked about the waste collection strategy. You also talked about the recycling standards and some of the other jurisdictions that are doing this and about providing incentives for recycling. What I want to get your input on specifically is the recyclability of some of these plastics.

What are your thoughts on that one, sir?

**Mr. John Galt:** First of all, almost all plastics are recyclable indefinitely. They're hydrocarbons. They're molecules. If you look at PET, the one that's familiar, in this container for example, it's made out of four primary molecules. They are the same four molecules that make up 96%, by weight, of the human body. That's fundamentally what we're working with.

In terms of the material itself, there are four types of technologies currently available for the purposes of recycling.

The first most and widely used is mechanical recycling, where you chop it up, you wash it and you put it through an elevated temperature and a vacuum to remove volatiles, and reprocess and sanitize it. That's in use in Canada today. About an hour away from Husky's facility here in southern Ontario, there's a company that's been producing these containers for 10 years from 100% recycled material. That's mechanical recycling.

The second is what we call chemical recycling. Chemical recycling actually breaks the plastic back down into its basic materials, and then reconstitutes it. This container right here is made from 25% chemically recycled materials. It's the first time in the world. What's attractive about this technology is not only that it can be used bottle to bottle, but that I can also mix clam shells in with it, I can melt [*Inaudible—Editor*] in it, I can mix all kinds of materials in it.

What I want to say is that I have these because they are samples that we're providing. Even to simplify it further, if you want me to do that, what you might have noticed is that there's no label, because we're now laser imprinting them, marking the top of the containers to make them easier to recycle. Most caps are made from a different type of plastic. This is the new invention we came up with to make the cap out of the same material as the bottle.

What I'm saying is that they're infinitely recyclable and there's a family of technologies we and others are bringing together to make it even easier and more economical to do so.

**Mr. Majid Jowhari:** Thank you.

Thank you, Madam Chair.

**The Chair:** Thank you so much.

I didn't want to cut you off because it's very interesting. Thank you so much, Mr. Galt.

**Mr. John Galt:** Sorry.

**The Chair:** No, don't apologize.

With that, we'll start our third round of questions.

The first round goes to MP Poilievre.

Mr. Poilievre?

If he's not available, we'll go to the next person and then I'll go back to MP Poilievre.

MP Lambropoulos, you have the floor for five minutes.

**Ms. Emmanuella Lambropoulos (Saint-Laurent, Lib.):** Thank you, Madam Chair. I'd like to thank all of our witnesses for being here with us today.

[*Translation*]

My first question is for Mr. Leclerc.

Mr. Leclerc, you talked about the take-up of new clean technologies and you mentioned that technological innovation is at the heart of our efforts to launch a green recovery.

I wholeheartedly agree with you on this in terms of using clean energy. I will come back to the second point a little later.

How can the federal government encourage businesses and the various sectors of the economy to adopt these new clean technologies?

● (1225)

**Mr. Denis Leclerc:** Thank you for the question.

The net zero accelerator, which is bringing billions of dollars in investments, is one of the concrete measures provided for in the budget. To speed up the development and use of clean technology made in Canada, Canadian industry players that receive these millions or billions of dollars should have to adopt Canadian innovative technology. We have to build a bridge between our industrial players and the SMEs doing the innovation.

I will make a hockey analogy. You are not going to make the playoffs if you don't give grants to industry players. To make the playoffs, you need a team. This team will be made up of players going from the first to the fourth line. The team will include industrial businesses who are looking for innovation. In Canada, hundreds and hundreds of businesses have developed new technologies and they would like to see them used here in the country.

That's one of the examples from the recent budget whereby Canada can further encourage ties between industrial players and innovative SMEs.

**Ms. Emmanuella Lambropoulos:** Thank you very much. This is fascinating.

My second question is for Mr. Mills.

[*English*]

Mr. Mills, you spoke about clean energy sources. In other panels we've heard from witnesses who say that solar and wind energy are a lot more expensive than the alternatives we currently use—and I know that many of my Conservative colleagues agree with this. Supply and demand, obviously, have a big role to play here, and over the next decade things would become more affordable. How can we make it more affordable now, sooner, rather than just waiting for technologies to improve and for the current ones to get old? How can we get there at a quicker pace? Is there any way forward that would make it easier for provinces and companies to adopt cleaner energy sources?

**Mr. Mark P. Mills:** It's a very important question to sort out the policy framework to accelerate whatever technology it is. When one wants less expensive technology, it's always the case that technologies have a learning curve. They get cheaper in time. The unfortunate thing is that what most governments are doing around the developed world is that they're accelerating the deployment of what I would unkindly call “yesterday's technologies”. By accelerating subsidies and spending on what you can build today, it means you're not investing in the future. You're not providing incentives for innovation. You're providing more money to those who already know what exists.

To accelerate the learning curve, there's not a pleasant, easy answer to do that. It doesn't work well through the direct subsidies for building yesterday's machines. You have to think about what innovation is and how it works, and this gets to the points that we have heard already in some testimony. What I'll call a “heavy-handed” regulatory approach to instructing jurisdictions on what to build, or accelerating what is being built today, doesn't necessarily take into account how industry really works.

I'm not giving you an easy answer because there is, unfortunately, not an easy answer. We need a framework that stimulates and rewards innovation, to make new and better things. Frequently, the thing that we'll want to use—let's say, profoundly better solar arrays, profoundly better electric vehicles—do not exist today. How do we get those? Well, we want to provide incentives for that kind of risk-taking by both private equity and private capital, because a lot of it's private. We want to avoid the disincentives that stop that from happening, which is the transfer of great technology out of universities in both Canada and the United States into making new companies.

I wish there were an easy answer. In policy circles, which I work in as well, we all like easy answers, sort of like a slogan. But that's it.

● (1230)

**The Chair:** Thank you so much.

We'll go back to MP Poilievre for five minutes.

**Hon. Pierre Poilievre (Carleton, CPC):** My apologies, Madam Chair.

Mr. Mills, I'd like to ask you about the supply chain behind today's so-called green technologies. You pointed out that the mining inputs necessary to create solar panels and batteries are largely sourced from countries like China. I'm going to quote from the International Energy Agency report you mentioned:

> The Democratic Republic of the Congo...and People's Republic of China...were responsible for...70% and 60% of global production of cobalt and rare earth elements respectively in 2019. The level of concentration is even higher for processing operations, where China has a strong presence across the board. China's share of refining is around 35% for nickel, 50-70% for lithium [needed for batteries] and cobalt, and nearly 90% for rare earth elements.

By subsidizing the battery-powered vehicle, are we effectively driving more production to China?

**Mr. Mark P. Mills:** The short answer is yes, unavoidably, because we don't have the capacity outside of China for either the mining, or, as the IEA pointed out, the refining.

Thirty years ago, North America—the United States and Canada together—produced 80% of the world's rare earth elements. Those are neodymium, presidium, dysprosium...these magical-sounding minerals that are critical to all kinds of high-technology machines, including those using green energy..

I would say that we sort of chased those businesses off the North American continent, and China eagerly embraced the expansion of mining.

**Hon. Pierre Poilievre:** Right.

**Mr. Mark P. Mills:** It just takes time to.... Even if tomorrow in Canada, which as I've said before is friendlier with the United States, with the new mines—

**Hon. Pierre Poilievre:** Right.

**Mr. Mark P. Mills:** —I think you've already experienced the challenge in northern Quebec—

**Hon. Pierre Poilievre:** Yes.

**Mr. Mark P. Mills:** —and in neighbouring Greenland. That is what it takes to open a new rare earth mine.

**Hon. Pierre Poilievre:** Well, the opening any mine in this country is subject to a lot of governmental delay. We have some of the slowest and most cumbersome processes to even get the government out of the way and let construction begin.

China powers many of its industrial and mining activities with coal-fired electricity. In other words, we increase global emissions of greenhouse gases whenever we drive more production to China. Given that the component parts of electric automobiles come from coal-fired mines in China, when you look at the life cycle of the vehicle—including its original mining and production through to the disposal of the vehicle—is it true that electric vehicles have lower emissions than, say, small Toyota Corollas or Honda Civics?

**Mr. Mark P. Mills:** Really, the honest scientific answer is, “We don't know.” The slogan “reduces emissions” is actually not knowable. However, we do know, when we look at the points you raised, that it can be the case, depending on the exact source of the minerals, that an EV driven in Canada emits more carbon dioxide to the atmosphere than a very efficient, best-in-class internal combustion engine. I think that's a serious problem to sort out.

**Hon. Pierre Poilievre:** Right. Presumably, the reason we are subsidizing these electric vehicles is that they are supposedly better for the environment. If the production of the battery technology...if the mining of the minerals that go into the vehicle emits far more greenhouse gases than are saved by having that vehicle on the road, then it is a counterproductive subsidy. Would you, in a word, agree with that?

**Mr. Mark P. Mills:** Absolutely. It's profoundly counterproductive.

**Hon. Pierre Poilievre:** On that point, just yesterday, Elon Musk announced that he is no longer accepting payment in Bitcoin. Why? Because Bitcoin is mined using fossil-fuel-powered electricity. Can you confirm today that his automotive company, Tesla, has decided it will no longer source any raw materials from China that are extracted in mines or manufacturing facilities powered by coal-fired electricity?

● (1235)

**Mr. Mark P. Mills:** He didn't make the comparable pledge. He should also pledge to stop using the Internet. The global Internet uses twice as much electricity as the country of Japan and is necessarily fuelled—at the same ratio as the rest of the planet—with hydrocarbons. Forty per cent of the global Internet is coal-fired and 30% is natural-gas-fired. We should stop doing the Zooming we're doing right now, because we're consuming hydrocarbons all over the planet.

**The Chair:** Thank you very much, Mr. Poilievre.

**Hon. Pierre Poilievre:** Can I make one quick, concluding remark?

**The Chair:** Make it very quickly.

**Hon. Pierre Poilievre:** Yesterday Mr. Musk said he is no longer going to use Bitcoin. Today he'll announce that he's not going to import any more Chinese minerals for his automobiles, and tomorrow he'll announce that he's cancelling the Internet altogether.

**The Chair:** Thank you very much, MP Poilievre.

We will now go to MP Lemire.

[*Translation*]

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

**Mr. Sébastien Lemire:** Thank you, Madam Chair.

This meeting is making us realize how important it is to bring the various sectors together, especially in the regions. The contribution of civil society and artists and their creativity is obvious. This can clearly have an effect on industry.

Mr. Rousson, we also saw the influence that your institution, as a research university, can have on regional economic development.

Can you please give us more concrete examples? In the northern regions, such as Abitibi, Bay James, the north-east bordering Ontario, Nunavik and northern Quebec, how can UQAT's research help green the economy?

I am referring to the work done by Mr. Vincent Poirier in agriculture, such as soil carbon sequestration, as well as the efforts of Mr. Osvaldo Valeria in forestry and those of the Institut de recherche en mines et environnement, the IRME, in the mining sector.

Over to you.

**Mr. Vincent Rousson:** Thank you, Mr. Lemire.

That's a great question. In terms of the work done by universities in regions such as ours, but not only ours, I have to say that nature is all around us and we are in direct contact with stakeholders. As Ms. Aubry mentioned, the flexibility that we enjoy in our work and our operations allows us to go to the heart of the problem in order to find a solution. It's precisely because we have direct ties with stakeholders in the region that we are able to find innovative solutions and suggest to industrial players that they can do things differently.

We have different approaches in terms of carbon sequestration, depending on whether it is the northern coast, Témiscamingue or near the Pontiac region. Mr. Généreux, I am thinking of you. Our university works with educational institutions in his region. He spoke of the Institut de technologie agroalimentaire. There is also the Cégep de Victoriaville which offers a full suite of courses on organic agriculture. How can we do things differently? This will have a profoundly different impact. The first nations and the Inuit are also making us look at things through a new lens. How do we help the economy and further development?

We have been working closely with the Cree communities for nearly 40 years. These people are entrepreneurs. They want to develop their economy and protect the environment, and have a stake in research.

**Mr. Sébastien Lemire:** You have 30 seconds left.

**Mr. Vincent Rousson:** It's by linking up the academic institutions, the universities everywhere in Canada and by having those relationships with the various sectors that we will find innovative solutions. The Lake Osisko project, which Ms. Aubry spoke of, is a fine example of an initiative that brings together people from the social and the cultural sectors, the universities and the businesses. That's when the magic happens.

**Mr. Sébastien Lemire:** You therefore seek to improve the funding allocated to each university research project. I hear you.

Thank you, Mr. Rousson.

[*English*]

**The Chair:** Thank you.

Our next round of questions goes to MP Masse.

**Mr. Brian Masse:** Thank you, Madam Chair.

I'm going to ask Mr. Galt a question about plastics, because I know he works with them extensively. I was very proud of the work we got done. It was a motion I had in the House of Commons that was passed, and that was then followed through by the Harper administration in terms of regulation banning microbeads. Those were some of the plastics that were in your toothpaste, in your shampoo and so forth.

I know that all plastics are not created equally, so I do understand the differences, but perhaps you could delve into that a little bit, because I think what we're looking at is trying to find the balance of the single-use and unnecessary plastics versus some of the plastics that we use for lightening the weight of cars and other types of mechanics of different machines and so forth that could be more useful.

Can you give a little insight about that, please, Mr. Galt?

**Mr. John Galt:** Certainly. I'll do it efficiently to try not to get the red flag or yellow flag here.

**Mr. Brian Masse:** It's okay; you have two minutes here. If you get the flag, you won't be kicked from the game, but you have two minutes.

**Mr. John Galt:** The first thing is the broader use of the word “plastics”. Everybody defines it differently.

We talk about microplastics. A lot of the focus is on microplastics. The number one source of microplastics in the oceans is tire residue. The next top two sources of microplastics in the ocean are fibres—when you wash your clothes and they become lighter—and road markings. Most people lump that all in.

First of all, I think I have to narrow it down to say that there are a lot of man-made materials that find their way into the environment—and that's why I'm such an advocate of better recovery systems—that are defined as plastics. However, if we narrow it down to the ones that we're mostly familiar with, let's say the ones that are in a bottle or a particular package of materials, the most common materials used for packaging have been chosen because, first, they're medical grade. They're completely stable molecules. They're completely hygienic. They don't interact with the substance inside. That's why an aluminum can has a plastic liner, every one in the world; otherwise, there would be a reaction between the contents and the aluminum. That's the first reason.

The second thing is that there are about three grades of plastic that represent most of the things we use: PET, polypropylene, and polyethylenes. The thing that a lot of people don't appreciate is that they're very versatile materials. A bottle and a blood tube are made out of the same material. The heart stent that goes to correct in heart surgery is made out of the same material.

The first thing we have to appreciate is that there's a family of materials that are highly used, very hygienic and very recyclable.

Second, there's a category of what I would call “hybrid materials”. That's where you're mixing two types of materials, or let's say, overusing materials. That's why lightweighting and finding smarter ways to get the performance you need without these composite structures are part of what's a big focus in the industry.

Hopefully that helps a bit.

● (1240)

**The Chair:** Thank you so much.

We'll now go to MP Poilievre.

You have the floor for five minutes.

**Hon. Pierre Poilievre:** Mr. Galt, I'll give you the opportunity to tell our committee what essentials of life require plastic. I'm leaving it open-ended.

**Mr. John Galt:** That's a big subject.

I brought a few samples in, which are real projects we're involved in. In fact, 73% of every medical device in the world uses plastic, and that number has been growing by about 2.5% per year. It's unbreakable, hygienic and mouldable. That's big.

I could bring EpiPens and blood tubes. Last week, I was working on new syringes, because as a result of the pandemic, we found that we have a global shortage of one- and three-gram syringes. We're talking about new releases of technology for syringes that also protect health care workers better.

Shampoo bottles and cellphones couldn't be made. We provide technology to help make these devices today. There's not an electronic communication device that wouldn't use plastic. Cars, makeup and the containers for the food and beverage we're familiar with, glasses, contact lenses and all the PPE used today use it.

**Hon. Pierre Poilievre:** It sounds like really nothing important.

**Mr. John Galt:** Nothing important....

It's also Canadian money. I don't know what you think of that.

**Hon. Pierre Poilievre:** Well, it's becoming less and less valuable, so maybe that's not the best example.

**Mr. John Galt:** Yes, it's in everything: the chair I'm sitting on, the table I'm working at, the carpet that's on the floor, the manufacture of the wallpaper, what goes into the wallpaper and that thermostat on the wall. I could go on.

**Hon. Pierre Poilievre:** How easy would it be to just replace all of that plastic with something else?

**Mr. John Galt:** It would not be possible today.

**Hon. Pierre Poilievre:** Presumably all the people whose lives are saved by these medical devices would then be lost. All the devices that make our quality of life infinitely more advanced than it was in the past would be gone, and so too would the quality of life on which we depend. The kids who are standing in protest and demanding a ban on plastic would not be able to organize that protest, because their phones would not be possible without plastic; and they wouldn't be able to get to the protest in the first place, because of the plastic that's required to make their automobiles.

Really, regarding this idea of declaring plastic to be a toxin, what do you think will be the impact on our lives here in Canada if it goes ahead?

**Mr. John Galt:** It will drive two important streams of investment out of Canada.

First of all, 370,000 people in Canada rely on it. Are you going to invest in Canada versus a market that is responsive, supportive and encouraging investment south of the border? Absolutely you're going to move south of the border. That's why many of these large plans have stopped.

The second thing is that, as the pandemic proved, Canada is completely dependent upon medical devices from foreign entities. I have the percentages here. I won't go into them. We don't have a domestic industry for our own supply of these absolutely critical items. Who is going to set up shop here to do that?

We build the tooling to do it. We sell the tooling to foreign nations. Those foreign nations export those goods to Canada. Why aren't we building domestic supply chains for these crucial items? I don't get it.

It's just going to drive investment out, it's going to make us more dependent on foreign entities, and we're still going to require these items every day. That's not solving the problem. We need to be responsible.

● (1245)

**Hon. Pierre Poilievre:** We'll just buy them from abroad.

**Mr. John Galt:** Just buying them from abroad doesn't solve the problem.

**Hon. Pierre Poilievre:** Right, and that's just what we do with oil. We've prevented the construction of a nationwide pipeline, so we have to import oil from abroad in eastern Canada, and right now we're in the embarrassing position of having to ask the Governor of Michigan to sell Canadian energy to Canadian consumers because we can't build our own pipeline connecting all our Canadian provinces. We're going to do the same thing with plastics and drive production out of the country.

We won't stop using plastic, by the way. We'll just buy it from foreigners who will make all the money and take all the jobs while we pay for it by credit card. That is currently the direction of our country.

Why can't we just reverse that approach and produce and recycle the plastic here in Canada in an environmentally responsible way? You're the expert on this. Can we make that happen?

**Mr. John Galt:** Absolutely. Canada has the potential with its natural resources, with the recyclability in Canada, with the technology here, to establish itself as a global leader, and I mean a global leader, in turning waste into resources, into recovering and reprocessing those resources and putting higher-valued secondary quality goods back to the Canadian public, creating jobs and safeguarding us in a future pandemic.

Without a doubt, we can do that.

**Hon. Pierre Poilievre:** How does plastic rank as a recyclable material?

When I was a kid growing up, my teachers always told me the best way you can help the environment is to reuse and recycle. Is plastic well ranked as a recyclable material?

**Mr. John Galt:** I got a red flag from the chair. I don't know if I can answer.

**The Chair:** Mr. Galt, please answer very quickly.

**Mr. John Galt:** It has the lowest environmental footprint, lowest NG content, lowest energy use to recycle of any competitive material.

**Hon. Pierre Poilievre:** Thank you.

**The Chair:** Thank you very much.

We'll now go to MP Ehsassi. You have the floor for five minutes.

**Mr. Ali Ehsassi (Willowdale, Lib.):** Thank you, Madam Chair; and thank you to all of the witnesses for appearing before committee today.

Mr. Mills, I wonder if I could pick up where you left off. You were explaining to us the need to stimulate innovation and risk-taking, and things of that nature.

Given that you explained to us how it's important to incentivize risk-taking to spur innovation, I take it that you look at it from a comparative context. What jurisdiction or country would you say has done the best job on that particular front?

**Mr. Mark P. Mills:** Traditionally, it has been the United States and Canada. This has been the epicentre of new business development. New small business formation has been in North America, not in Europe. In fact, whatever measure you use to look at new companies, new formation of companies, North America has been, up until very recently, what we'll call the "friendliest jurisdiction" in which to be an innovator, an entrepreneur or a small business.

That has become more difficult, certainly in some areas, especially resource extraction. Most small, privately funded mines have left the United States a long time ago, and Canada has had the same trouble. However, it has been the best jurisdiction.

Germany, France and Italy have lagged. This is not a criticism of them as people; it's just the reality of the governance.

Let's go back to BlackBerry, the beginning of the smart phone revolution. It's traced to Canada, frankly, and then the United States, of course, because Apple did one better. I still like my BlackBerry, by the way. I don't use one anymore, for obvious reasons.

Those are good examples.

We hope and expect to have that kind of innovation in physical resource areas like mining and oil and gas. It's a tougher one because they're [*Technical difficulty—Editor*] industries. Innovation is harder because of the scales involved, but not impossible.

**Mr. Ali Ehsassi:** If you could share with us some concrete measures to incentivize private industry, to incentivize, I believe you mentioned, hedge funds, to actually invest in innovative technologies, what would those concrete recommendations be?

● (1250)

**Mr. Mark P. Mills:** Well, let's clarify. [*Technical difficulty—Editor*] hedge funds with private equity, which is a different category of private money. Hedge funds have a notorious role because they hedge investments, so to speak.

For most innovation, obviously there's a role for government. This is a very old debate, and a very important one, especially in modern times. [*Technical difficulty—Editor*] last 80 years since World War II, we've talked about how governments can play a role. However, the essential answer is because of the nature of risk in doing something different than everybody else is doing today, if you want to reward the innovator, you have to give them the latitude to do it, which means they have to find money. It's always still the money.

The risk-taking is taxed. Let's just use a specific example. If you tax risk-takers the way you tax non-risk-takers, you get fewer risk-takers. It seems unfair to reward the risk-taker for the outsized gain in lower taxes, but what you don't see is behind the scenes, for every successful company, there are hundreds that fail. As we all know, it's an old truism, but it's a true truism. Therefore, simplistically, if you want more of it, tax less of it.

**Mr. Ali Ehsassi:** Okay. That's fair enough.

You also touched on rare earth minerals. You talked about how, 30 years ago, North America was essentially leading the way, but things have really changed both in the U.S. and in Canada in the past several decades.

Do you have any specific recommendations on that front, given how critical these minerals are?

**Mr. Mark P. Mills:** It's a pretty easy, generic one, but it's a very tough one to implement.

It's the same point. Mine sites, if you assume no regulations, still take a very long time to establish. They're physically demanding pieces of engineering. Everything we do to delay that makes it riskier, so risk capital goes to where it's easier to build the mine faster.

By and large, what that means today is that the epicentre of new mining development is Africa, largely through Chinese investments. We all know why. It's because of the far too lax, in my view, environmental regulatory environment.

What we're doing is trading two extremes, essentially no regulations versus too much regulation, so the mines are opening up where there are no regulations, so to speak.

**Mr. Ali Ehsassi:** Thank you, Mr. Mills.

**The Chair:** Thank you very much.

That ends our third round.

First of all, I thank the witnesses for being here today. That was excellent testimony.

[*Translation*]

Thank you so much for your statements.

Mr. Leclerc, I am with you: go Habs, go!

[*English*]

I'll say goodbye to the witnesses and I'll ask the members to stick around because I'm going to go over what we have in the cooker for the next couple of weeks, to see if we can work out something so that we can get everything done before the House rises.

With that, thank you very much to the witnesses for being with us today. If you have anything you would like to submit, I know Mr. Dreeshen had suggested a YouTube link. If you'd like to submit it to the clerk, the clerk will then circulate it to the committee members and we'll be able to watch those videos.

Now I feel as though I failed science class and I just got a refresher course, so thank you so much.

We will let the witnesses leave and then go with our plan for the rest of the session.

Members, thank you all for sticking around. We have a few minutes. I just want to connect because we have a couple of things still outstanding, one of which is that we have some witnesses who we invited to speak at the COVID recovery meeting and they weren't able to be with us during the times we had booked.

We have some witnesses who would like to appear on May 27, which is the Thursday when we come back after the riding week, so we will allocate that meeting for those final witnesses on the green recovery study.

As you know, we also have three reports that we need to hopefully finalize and table in the House before the House rises. I've been working with the clerk on that. As we are still in public, obviously we can't talk about what's in those reports, but we're trying to make sure that we can finish the session tabling those reports but also dealing with the piece of legislation that was referred to our committee yesterday, Bill C-253.

I have a plan. This committee has been pretty good about collaborating to get us across the finish line. I'll have the clerk circulate that once we kind of agree to it.

Next week is a riding week.

The following week, on May 25, we will invite the sponsor of the bill, MP Gill, to come and present for the first hour on Bill C-253, and then we'll go in camera and look at affordability and accessibility in telecommunications, because we will be receiving the second draft of the report probably by the end of this week. It will give us some time to look at it then.

On May 27, we will have the last meeting on green recovery.

What we'll then do is spend the first hour of each of the remaining meetings dealing with Bill C-253 and the second hour finalizing any reports. We need to get those reports finished by June 10 so the analysts can do what they do to get them back to me so I can table them by June 18.

In a perfect world, and I think we can do this, we can probably get everything done before the House rises for the summer. Again, I don't know how many witnesses people will want for Bill C-253, so I want to give us a bit of wiggle room. However, I think we can actually do this.

I want to put that proposal out to the committee members, just so you know also what you have on your record, and get some feedback if you all think this is a good plan.

I see some thumbs up.

It also gives us a bit of flexibility in case we need to allocate a little more time for a specific report versus another one. I want to just lay that out. I think we can do this.

[*Translation*]

Mr. Lemire, you have the floor.

● (1255)

**Mr. Sébastien Lemire:** Thank you, Madam Chair, for suggesting this.

I think this is absolutely in line with our objectives. I understand that we have a little wiggle room. If we can all agree on a version of the report and if we are able to adopt it in five minutes, and we can then immediately go on to the next report during the same meeting.

I have a question for the analysts.

Do they think it would be possible to have a first draft of our reports on the aerospace industry, on the acquisition of Shaw by Rogers and, obviously, on the green recovery?

[*English*]

**The Chair:** I will turn to our analysts on that. I don't think it's possible to have it before the end of June, but there might be one that's possible.

I'll turn it over to Monsieur Lord.

[*Translation*]

**Mr. Francis Lord (Committee Researcher):** Thank you, Madam Chair.

We believe that the committee's reports on the aerospace industry, the acquisition of Shaw by Rogers and competitiveness in Canada as well as the green recovery will be ready when you reconvene in September. We are assuming that the committee will not meet during the summer.

**Mr. Sébastien Lemire:** From what I understand, they will all be ready at the same time.

Wouldn't it be possible to give ourselves a bit of leeway in order to be able to present a report that would be ready earlier than we thought?

There is a strong possibility of an election being called during the summer, which would bring the session to an end and would greatly impede the adoption of all these reports. I would like us to take that possibility into account. Otherwise, the proposed plan A is also fine with me, Madam Chair.

**The Chair:** In order for us to be able to present a report before September, the report would have to be finalized before then. Our analysts are working terribly hard for us and we are very grateful.

I do not know if it will be possible to have a report ready before September. However, we will be able to continue our studies when we resume in September, as we have done during this session. If there is a change, I will certainly advise you.

[*English*]

Are there any other comments on the plan?

I think we can do this. I'll have the clerk send it around with a little game plan. If we're disciplined, I think we can get everything done.

Good? Perfect.

With that, I want to thank everyone.

MP Baldinelli, thanks for that catch at the start. I was going right to the rounds. It was a little bit of a news day today, so I was a little distracted.

Thank you, everyone, for your time today.

To the analysts, of course, thank you for your great work.

Mike and everyone in the room, thank you.

[*Translation*]

I would also like to thank the interpreters.

[*English*]

With that, I call this meeting adjourned.