HOUSE OF COMMONS
CHAMBRE DES COMMUNES
CANADA

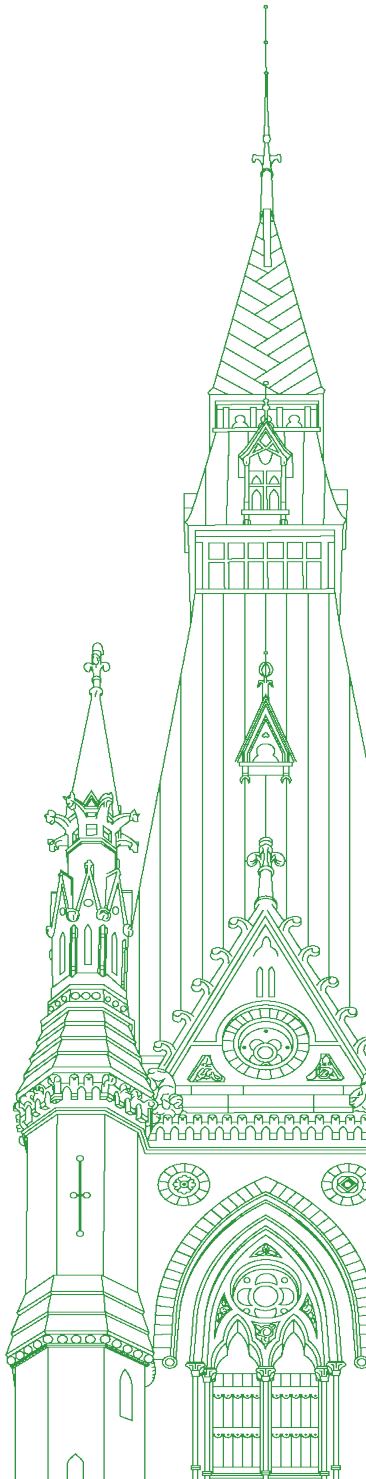
44th PARLIAMENT, 1st SESSION

Standing Committee on Industry and Technology

EVIDENCE

NUMBER 006

Friday, February 4, 2022



Chair: Mr. Joël Lightbound

Standing Committee on Industry and Technology

Friday, February 4, 2022

● (1305)

[*Translation*]

The Chair (Mr. Joël Lightbound (Louis-Hébert, Lib.)): I call this meeting to order.

Welcome to meeting no. 6 of the House of Commons Standing Committee on Industry and Technology. Pursuant to Standing Order 108(2) and the motion adopted by the committee on Wednesday, January 26, 2022, the committee is meeting to consider a draft report on critical minerals.Today's meeting is taking place in a hybrid format, pursuant to the House order of November 25, 2021. Members may attend in person in the room or remotely using the Zoom application.

First I want to thank all the witnesses for joining us. We thank them for taking time from their busy schedules to speak with us today.

We have Jeff Dahn, Professor at Dalhousie University; Benoît La Salle, President and Chief Executive Officer of Aya Gold and Silver Inc.; Meredith Lilly, Associate Professor at the Norman Paterson School of International Affairs, Carleton University; Pierre Gratton, President and Chief Executive Officer of the Mining Association of Canada; Brendan Marshall, Vice-President, Economic and Northern Affairs, also with the Mining Association of Canada; and Sarah Houde, President and Chief Executive Officer of Propulsion Québec.

Witnesses will have five minutes each for your remarks. To facilitate the proceedings, please note that I will raise a yellow card when you have one minute left, and when I raise a red card, that means you're speaking time is up. That applies to opening remarks and rounds of questions.

Without further ado, we will give the floor to Prof. Dahn from Dalhousie University.

[*English*]

Dr. Jeff Dahn (Professor, Dalhousie University, As an Individual): Thank you for inviting me as a witness.

I'm a professor in the department of physics at Dalhousie University. I'm also chief scientific adviser to Novonix of Bedford, Nova Scotia. My research group of about 30 people is funded by Tesla and NSERC from 2016 to at least 2026 under the NSERC partnerships program.

I have been working on lithium and lithium-ion batteries since 1978. From 1985 to 1990, I worked at Moli Energy Ltd. in Maple Ridge, B.C., where we commercialized the world's first rechargeable lithium battery. We also developed lithium-ion technology that was commercialized in 1994. I am a lithium-ion battery chemistry specialist who focuses on increasing the energy density, increasing the lifetime and decreasing the cost of lithium-ion batteries.

Canada has plenty of research horsepower in the advanced battery space. World-class programs exist at Dalhousie, Waterloo, Western, NRC, Canadian Light Source, Hydro-Québec and others. Just as in other sectors, Canada lacks manufacturing.

Making a lithium-ion battery is not like making toast. For toast, one puts the bread in the toaster, pushes the button and, 90 seconds later, toast pops out. Lithium-ion batteries are made by a series of precision machines, such as electrode coaters, electrode slitters, cell winding or electrode stacking machines, electrolyte filling machines and cell formation machines, etc. The specifications and use of these machines require extensive know-how and expertise.

There are two companies in Canada that have the required know-how and that make lithium-ion batteries: Electrovaya in Mississauga and E-One Moli Energy Canada in B.C. These relatively small companies have a track record of making excellent lithium-ion batteries, which does not exist elsewhere in Canada. Electrovaya supplies forklift batteries to manufacturers like Toyota and others. E-One Moli supplies Dyson for its portable vacuum products, as well as other companies. Both of these companies have applied to the strategic investment fund to expand their manufacturing operations in Canada. Electrovaya's applications have been rejected. New York State is now wooing Electrovaya for its expansion. It appears that E-One Moli's application may be successful, but the application process started in 2019. It takes far too long. These companies should be encouraged, not discouraged, and in fact even pushed by the federal government to expand in Canada.

Moving to lithium-ion battery materials and a North American supply chain, Novonix has established a synthetic graphite manufacturing plant in Chattanooga, Tennessee, which is targeted to expand to 40,000 tonnes of graphite per year by 2025. There is access to inexpensive nuclear and hydro power from the Tennessee Valley Authority. In principle, Novonix could establish operations in Quebec, where there is also access to green hydro power. However, the incentives from the Tennessee government were very attractive. Governments must realize that it's a competition to woo companies to a particular place.

Canada has lithium, nickel, cobalt, iron, phosphorous, manganese, copper, aluminum and natural graphite, all of which are used in lithium-ion batteries. However, getting lithium and graphite from the ground to a form suitable for battery material production is not a trivial endeavour. Similarly, synthesizing cathode active materials at large scale and at low cost from the metals or metal compounds requires expertise that does not widely exist in Canada.

Government support will be required to attract partners with know-how, capital and experience to develop these resources through to value-added battery materials in Canada. The selection of these partners and the structure of the deals made to attract them will require great care.

Thank you.

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

I will now turn to Mr. Benoit La Salle.

[*Translation*]

Mr. La Salle, go ahead for five minutes.

Mr. Benoit La Salle (President and Chief Executive Officer, Aya Gold and Silver, As an Individual): Thank you, Mr. Chair.

Thank you for inviting me to appear before the committee.

My name is Benoît La Salle, and I am the founder and owner of several mining sector businesses.

We operate internationally in the field of metals that are required to manufacture batteries: nickel, copper, cobalt and graphite. The only thing we're lacking is a lithium project. The race to acquire battery-related metals is the reality we face every day.

Prof. Dahn just outlined the technology and know-how necessary to manufacture batteries. Canada is a leader in this field, but, for reasons I don't understand, we haven't securely protected the inputs required in that process. That was recently brought home to us with respect to lithium, when Quebec sold its lithium projects to Australian interests, and also recently in Ontario with the Noront Resources project, which was to be acquired by BHP but is about to be sold to Australians. This is an everyday situation for us. We're mining one of the largest natural graphite deposits in the world, located in Guinea, and foreign businesses approach us every day.

Prof. Dahn said that processing companies should be supported, and he's absolutely right. The Netherlands, France, Belgium and Norway have asked us to build processing units for natural graphite, our raw material, in their countries.

The same is true of nickel. We're mining a nickel-rich massive sulfide deposit, which is very rare. We have sulfides here in Canada, including in the magnificent Voisey's Bay deposit, which was discovered in the 1990s. It was sold to Vale, a Brazilian company, several years ago.

What I'm seeing these days is demand for all the metals needed to electrify transportation. They're also in demand in many other fields, such as communications, 5G technology and information technology. All these metals are used in batteries and thus in the electrification of transportation, aeronautics, communications and defence. We're very much in demand.

As I mentioned, we have a massive sulfide deposit in Ivory Coast that's rich in nickel, copper and cobalt; it's a major find.

Do you know who's coming to visit us on site next week? A Chinese team. When their representatives saw our results, they immediately called us to express interest. They intend to come and see us and want to support and finance our operation.

Our group consists of a number of Canadian corporations based in Montreal. We mine our resources around the world, but the fact is that a real metals race is shaping up every day.

When we met eight months ago, I told you we were going to lose control of lithium. Do you know how high the price of lithium carbonate has gone up since we spoke? Did you know the price of lithium carbonate has risen 743% in the past 14 months? What Quebec sold to the Australians for $80 million is now worth $1.2 billion. The price of lithium hydroxide is up 504%, cobalt 100% and nickel sulphate 59%.

The next resource to explode will be graphite. We have graphite in Canada, in Ontario and Quebec. We also have an enormous deposit in Conakry, Guinea. People want to form partnerships with us because the reality is that it's all well and good to have the technology and to say we know how to manufacture batteries, but if the plant doesn't have inputs, we can't make anything with water, air and sand. We need nickel to produce cathodes and natural graphite to make anodes.

There's going to be a war for inputs. The Chinese, Australians and Europeans are positioning themselves, and we're helping them. We're selling them our natural resources; that's what we're doing. I have the resources so I'll work with people who want to work with us, but what's been done with lithium is unacceptable. I've said this openly, I've said it in the newspapers, but the deals have nevertheless been made and we've sold our projects.

Thank you.

● (1310)

The Chair: Thank you very much, Mr. La Salle.

[*English*]

I will now turn to Professor Lilly for five minutes.

The floor is yours.

Dr. Meredith Lilly (Associate Professor, Norman Paterson School of International Affairs, Carleton University, As an Individual): Thank you, Mr. Chair.

Thank you for the opportunity to be here today to speak with members of the committee. I have reviewed previous testimony to the committee, so I know that members are well versed on the importance of critical minerals to the 21st century and in powering the transition to a green economy.

The committee's previous meetings were focused on the sale of Neo Lithium to a Chinese state-owned enterprise without full national security review. I know that members have already heard a great deal about that process.

Under the enhanced scrutiny guidelines for critical mineral transactions, the government deemed that no potential harm to national security could occur to warrant a full national security review. This was despite the fact that this was a billion-dollar sale of a Canadian company in the critical mineral sector to a Chinese state-owned enterprise.

It is my view that those three simple factors—the value of the sale, the sensitivity of the sector and the involvement of a state-owned enterprise—should automatically have triggered a full national security review. Given that this didn't occur, and to address the committee's broadened mandate, I'd like to focus my time on how Canada can better use the national security review process to safeguard Canada's interests in the critical minerals sector in the future.

First, much of the evidence presented to the committee suggested that Canadian officials are focused on building Canada's own critical mineral capacity, particularly Canadian-based mines and processing. I believe this is essential. I have conducted research into how Canada can best position itself geopolitically. However, as Canada seeks to build a domestic supply chain, we are also deeply invested in the broader global context. We are, after all, a trading nation. We must make it our business to understand the global supply chain, which countries control it, and what their relationships are to Canada and our allies.

We must also be concerned about the sale of Canadian mining firms, even when the mines are located outside of Canada. My own research has examined the relationship between the viability of Canadian-based extraction in critical minerals relative to foreign-based mining. More than half of the world's supply of cobalt is sourced in Congo, often extracted with enslaved child labour, in mines owned or controlled by Chinese firms. Canada has significant cobalt reserves of its own, as you've just heard, but extraction here is often deemed not cost-effective, in part due to our comparatively steep labour costs, environmental standards and regulatory processes. But as the United States and Europe become more concerned with the national security implications of reliance of China, and as they reckon with the poor labour and environmental values reflected in the current foreign supply chains, Canada can actually become a strong competitor precisely for our high standards.

The second point I'd like to make is that while Canada should pursue its own critical mineral capacity, it is not in the interest of the international community for global supply chains to be dominated by any single country, and particularly not China. Between 2010 and 2012, China used its monopoly on key critical minerals to reduce global supply and increase prices. Fortunately, the United States, Canada and others were successful in our WTO challenge then, but I would advise against relying on a similar strategy for the future.

The current global supply chain crisis has taught us that both greater self-reliance and diversification are key for supply chain resilience. Countries such as those in Europe that are not blessed with Canada's natural bounty of critical minerals are just as reliant on them for the green transition. Current events at the border of Russia and Ukraine demonstrate why Europe has a national security interest in resilient supply chains that can't be weaponized by one or two authoritarian countries.

I'll wrap up by saying that Canada can play an important role in a global strategy for critical minerals, both through the establishment of Canadian-based mines and through a more strategic application of our national security review process in which we formally consult allies on major transactions in the sector, even if those mines are not based in Canada or extracting minerals deemed to be of immediate interest to Canadian companies. But to be such a global leader, Canada's national security process should reflect a more nuanced and strategic approach that can adapt to changing geopolitical circumstances around the world, rather than a narrow focus on individual transactions and immediate Canadian interests.

I would be pleased to answer any questions from the committee.

● (1315)

The Chair: Thank you very much, Professor.

I will now turn to Mr. Walker.

You have five minutes.

Mr. Trevor Walker (President and Chief Executive Officer, Frontier Lithium): Thank you for the opportunity to speak today, Mr. Chair.

My name is Trevor Walker. I am the CEO of Frontier Lithium, a Sudbury-based, Canadian-owned pre-production mine development targeting to become a manufacturer of battery-quality lithium to support vehicle and battery supply chains in North America.

We are developing the PAK lithium project, located in the Oji-Cree Treaty 5 region of northwestern Ontario. The resource was originally discovered by the Government of Ontario through the OGS in the late 1990s. I have personally been working on advancing the project since early 2010.

I am supported by a strong Canadian leadership team and board of directors who see the importance of building a strong northern Ontario-based company feeding supply chains that will benefit Canadians, including indigenous peoples. It is worth noting that our board representation includes a member of an Oji-Cree community located near our project.

To give you an idea of our current size, our recent preliminary economic assessment released in 2021 indicates a 26-year mine life—enough lithium chemicals to support the production of roughly 500,000 electric vehicles annually. It contains a net present value—or NPV—of $1.25 billion post-tax. We are currently growing our resource, and we are undertaking a pre-feasibility study of the project, which will be released in 2022.

The PAK project is a tier one global lithium resource here in North America, and it is a top-three resource in the world by quality. It is a resource that has attracted international interest. Perhaps more importantly, due to its size and purity, it is the key to attracting cathode and battery production to Canada and will support the battery electric vehicle supply chain on both sides of the border. It is by all definitions a strategic resource for Canada.

It's important to acknowledge that in the advancement of our business, we have been the fortunate recipients of government innovation funding, namely through Ontario's invest north program, to help in the advancement of the chemical-processing portion of our planned business.

I understand that the Standing Committee on Industry and Technology produced a comprehensive report on the development of critical mineral supply chains last year. I am hoping that my experience in bringing the PAK lithium project towards production will be helpful to you in advancing at least some of your current areas of study so that we can enhance Canada's response to this critical and important issue.

Canada is blessed with an abundance of critical minerals and is well positioned to be a world leader in green technologies. To realize our competitive advantage on the world stage, however, we must answer one question: How do we use our advantages and overcome a myriad of domestic and business complexities, all within a time frame dictated by the market, while preserving value to shareholders and the strategic interests of Canadians more broadly?

To do this, we have to understand what our advantages are, be honest about the complexities we face, understand the markets we're working within, revise our plan as required and expedite its implementation.

Given the time I have, I will explore this question and walk through what I see as possible solutions.

In my mind, the advantages that Canada has are as follows: an abundance of natural resources, including minerals, water, energy and renewable energy; critical minerals like lithium, on which the battery supply chains are dependent; proximity to supply chain end-users and markets, such as car manufacturing in Ontario and Michigan and the North American market; mature resource and financial sectors; a skilled workforce; the low relative costs of mining inputs such as land, power and water; rule of law; political will; business-minded indigenous peoples; entrepreneurial spirit; and resolve.

Complexities I see include the fact that our critical mineral deposits are often remote, not proximal to infrastructure, and we have become reliant on industry to permit, design and fund their development. Additionally, mine development and processing, though predominately a provincial jurisdiction, can be regulated federally and municipally and require strong relationships and input from indigenous people; it is very complex.

● (1320)

Our regulatory systems, by their complexity and lack of time limits, inhibit us from achieving the first-to-market advantage and jeopardize our ability to be leaders and, in some cases, even players. Unpredictable permitting timelines needed to permit the development of a mine, the infrastructure, and to locate and build chemical-processing plants are a barrier and can leave mine developers financially weakened and at risk of being taken over by larger, often foreign-owned, entities. We're facing that now.

The Chair: Mr. Walker, I'll have to ask you to conclude. We're past the time.

Mr. Trevor Walker: Sure, no problem.

In conclusion, as I've said before, Canada is blessed with an abundance of critical minerals. We have to live up to our potential. We must advance beyond rhetoric and focus on timely, coordinated actions to overcome the barriers we're seeing right now.

We need action.

● (1325)

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

[*Translation*]

I now turn the floor over to Mr. Gratton and Mr. Marshall from the Mining Association of Canada.

Go ahead, Mr. Gratton.

Mr. Pierre Gratton (President and Chief Executive Officer, Mining Association of Canada): Thank you very much, Mr. Chair.

My name is Pierre Gratton, and I am president of the Mining Association of Canada, as you said. I'm here with my colleague, Brendan Marshall, who is vice-president for economic affairs.

[*English*]

To help frame the issue, it's important to differentiate between the two general categories of critical minerals at the heart of the supply chain security-sustainability nexus: rare earth elements and clean energy materials. Materials from both categories are listed on Canada's critical minerals list, but the policy actions required differ.

Nickel, cobalt, lithium, manganese and graphite are the predominant battery minerals presently. Canada is in possession of all these materials, some at production scale and others being developed. In the case of nickel, we have world-leading upstream and downstream nickel extracting, smelting and refining capacity. We produce the second-lowest carbon intensity nickel in the world. Relatively significant volumes of low-carbon cobalt are also produced in Canada. Manganese and graphite are produced in smaller volumes, while manganese, graphite and lithium advanced projects are all in various stages of development.

Being in possession of the minerals and metals needed for battery production, however, does not equate to having the capacity to produce value-added battery-grade materials. Canada does not as of yet manufacture battery-grade nickel, cobalt, graphite or lithium. All of its current production goes into other uses.

To position ourselves for success, we need government policies like enhancing targeted public geoscience, increasing incentives for exploration of critical minerals to find new mines, reducing bottlenecks in the regulatory approval process, and incentivizing the production of value-added battery-grade materials that address the entire value chain. We also need to avoid unintended policy outcomes such as climate change actions that put Canada's current and future off-grid mines at risk when those very mines supply the feed to grid-connected world-class smelters and refineries that export metals with the lowest carbon content in the world.

Beyond battery minerals, a recent McKinsey report on critical minerals and clean technology identified 17 materials, including uranium—of which Canada is the second-largest producer and without which getting to net zero is impossible—copper, zinc and steel—coking coal and iron ore—many of which are on Canada's critical minerals list. Without vastly expanded quantities of critical minerals, the desired carbon transition will never materialize, and the world is frankly better off on climate when they come from Canada, because of our carbon advantage.

No set of materials characterizes the security of supply dilemma more than rare earth elements, used in a wide range of essential battery, medical, energy and advanced manufacturing applications. To date, China has dominated the market for these key materials, controlling the majority of production and distribution, and that's creating an overreliance on one country for procurement.

Unlike battery minerals, Canada does not have a pre-existing supply chain for REEs and has fewer established strengths in this space than with battery minerals. Canada has deposits, with companies seeking to develop them, and it produces some rare earths as by-products from the smelting processes of other metals. Much of the rest of the world is similarly import-reliant on China and lacks a pre-existing world-leading mining industry to build upon.

While more work needs to be done to establish an REE supply chain in Canada than with a battery supply chain, Canada should not be deterred from leveraging its competitive advantages to create greater supply of REEs for domestic use and export. Doing so presents a significant opportunity for the country.

Development of the critical mineral strategy presents an opportunity to solidify a recognition of the essential nature of Canada's mining industry to the government's broader climate change, clean technology and reconciliation objectives. It will position Canada as a reliable, secure, sustainable critical mineral supply chain partner over the long term, while simultaneously increasing our domestic attractiveness as a destination for sought-after large-scale downstream clean-technology manufacturing investments. The sooner these signals can be sent to the market, the greater Canada's overall propositions for these investments become.

In the interest of time, we have distributed to you our key recommendations, which I will thus refrain from reading out to you. Brendan and I both look forward to your questions.

Thank you.

● (1330)

[*Translation*]

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

I now give the floor to Sarah Houde, president and chief executive officer of Propulsion Québec, for five minutes.

Ms. Sarah Houde (President and Chief Executive Officer, Propulsion Québec): Thank you very much, Mr. Chair and members of the committee, for this opportunity to speak to you.

My name is Sarah Houde, and I am the president and CEO of Propulsion Québec, Quebec's electric and smart transportation cluster. On behalf of our 250 members, I would like to thank you for this invitation to present our vision of Canada's position as a responsible source of critical and strategic minerals, or CSMs, as I will call them to save time, and of the Canadian electric vehicle battery industry.

As the previous speakers noted, Canada occupies a unique global position as a result of its vast CSM resources, particularly those in high demand as we enter the energy transition, deploy green technologies and build a sustainable post-COVID-19 economic recovery. It also has recognized expertise, a point that I believe was clearly made by Prof. Dahn, who is a worthy representative of that expertise. Canada has excellent and acknowledged expertise in responsible industrial development. It also has an energy mix dominated, in certain parts of the country, by types of renewable energy that have a low carbon footprint and are available at low cost; one of the strictest environmental regulatory frameworks in the world; a skilled labour force; and, especially, a stable and predictable geopolitical situation. All this gives Canada a competitive advantage, as the previous speakers mentioned.

These strengths have solidified Canada's position as a supplier of CSMs and batteries that are safe, stable and responsible, three terms that must be central characteristics of any long-term Canadian strategy to develop the CSM and battery sectors.

If Canada wants to develop these sectors successfully, it will have to add a hitherto missing fourth dimension to those key characteristics: a truly national approach to this strategy. As the other major international players active in these same sectors have previously shown—Canada is well organized and we do have an advantage—no other regional entity alone is capable of combining natural mineral resources, the technical and technological capability to exploit those resources and the essential financial capacity to develop these sectors solely within its borders without interstate synergies.

That is why it's extremely important that the Canadian government take on the role of coordinating the actions of all provinces and territories by establishing a broad Canadian alliance dedicated to developing the CSM and battery sectors relying on the strengths and assets of each of the provinces.

This should be achieved within the framework of the Canadian industrial policy for the entire electric and smart transportation industry. That industrial policy must cover all aspects of the industry's development, from the supply chain, furthering research and development and financing the manufacturing industry to developing an extensive world-class talent pool to support the exponential growth that awaits those businesses here in Canada.

Canada must also take advantage of its historical position as an ally of the United States to work toward establishing a Canada-U.S. coalition to enable the Canadian CSM and battery industrial ecosystem to position itself as a safe, stable and responsible supplier of value-added materials and components, not merely unprocessed raw materials—once again as other speakers before me have stated—for these fast-growing markets, including those for electric vehicles and the energy transition.

We are genuinely seeing a regionalization of Asian, European and North American supply chains, and, thanks to our continental North American position, we can definitely be a strategic partner and consolidate a strategic advantage.

Canada today has an immeasurable economic opportunity, possibly the greatest in its history. It is an economic opportunity that we very much need as we begin the economic transition that will culminate in carbon neutrality in 2050. We will have to transit from a hydrocarbon-based economy to other economic models and should absolutely seize the economic opportunity lying here at our door. This is truly a unique opportunity to rebuild our economy on a new foundation, a much more promising one for the future, and once again to play an absolutely key role on a continental North American scale.

Thank you.

● (1335)

The Chair: Thank you for your testimony, Ms. Houde.

We will now begin the first round of questions.

Ms. Gray, go ahead for six minutes.

[*English*]

Mrs. Tracy Gray (Kelowna—Lake Country, CPC): Thank you, Mr. Chair.

Thank you very much to all the witnesses for being here.

My first questions are for Dr. Lilly.

We have heard concerns raised now from a U.S. congressman on the Neo Lithium purchase. You referenced this purchase in your testimony today. There was an article today where Congressman Mike Waltz raised questions about whether Canada had even informed the Biden administration about the sale.

Can you touch on the importance of Canada needing to communicate and collaborate with our allies when it comes to critical minerals and company acquisitions around that?

Dr. Meredith Lilly: I didn't see today's news, but it is certainly very important for Canada to consult with allies on major purchases. The United States is our closest trading partner and our historic ally.

With the United States in particular, when it comes to critical minerals, there are a few essential issues. One is that the United States takes a very broad view of what national security is or isn't, and it takes the position that threats to domestic industry represent national security threats. For that reason, it is very important for Canada to ensure that any sales or major transactions that we're engaged in with other partners aren't in any way going to jeopardize that relationship.

The other piece that's really important in this case is around the rule of origin in autos, because we have an integrated auto supply chain. The United States, in particular, has interests in how that supply chain is developing as electric vehicle batteries are developed.

It is really important that Canada consult with the United States on these issues. We don't know the extent to which that did or didn't occur in the case of this particular sale.

Mrs. Tracy Gray: The next question is.... We're the only country in the Five Eyes group that has not restricted Huawei, and we heard that there was not an Investment Canada Act extra 45-day security review. I recall the former U.S. trade representative putting forward trade challenges against Canada, while calling Canada a “national security threat”.

If Canada does not collaborate with our allies on national security concerns like critical minerals, are you concerned about any potential repercussions?

Dr. Meredith Lilly: I am concerned. The issue I tried to touch on previously was that the United States, using section 301, takes a much broader view of national security than many countries do, and this is the reason for which Canada came under national security tariffs under the previous administration; it was ruled that the domestic steel and aluminum industries in the United States were vital to the national security of the United States.

This issue is not something that we can litigate at the WTO or elsewhere. It is part of American law, and we can't challenge it. For that reason, it is quite vital.... We can and should challenge the country, but the United States' use of these measures is not something that we can effectively challenge using major multilateral forums. For that reason, it is quite critical that we constantly remain in touch with the Americans on these issues and try to work together when we can.

Mrs. Tracy Gray: I want to ask you about access to critical minerals, their geopolitical effects and how China presently has a commanding position in critical minerals.

What risks do you foresee for Canada if one country has such a dominant control of supply chains on critical minerals?

Dr. Meredith Lilly: It's never in Canada's interests for any country to have a dominant role in any supply chain, including in this area. Particularly because the sector is changing so much right now, there is lots of movement and many countries want a piece of this. There are a number of potential risks.

With the case of China in particular, we've seen in the past that it has willingly used its control over certain parts of the critical mineral supply chain to restrict access to global partners. In the past, that has been challenged at the WTO successfully. China did comply with the ruling and prices were stabilized again. However, as we've seen, China does not always observe the rule of law, and there are certain areas of international law in which we have lots of examples to demonstrate that.

We need to be constantly aware of the dangers of one country having control of the supply chain, and even more so when it's China.

● (1340)

Mrs. Tracy Gray: Thank you.

To tag on to that, do you think Canada should be strengthening its measures through things such as the Investment Canada Act, or are there other measures that you see to ensure that the IP and the know-how we have right now in critical minerals are not lost to foreign state-owned enterprises?

Dr. Meredith Lilly: Yes, I think we should be using the Investment Canada Act more broadly. I was surprised that the recent transaction was not subject to national security review, for the very reason that this was an extremely large transaction in a critical sector with a state-owned enterprise. I think that decision should have been revisited.

I would say that, yes, it's essential that we use that and that we also work with allies on a much broader view around issues like intellectual property in international trade.

The Chair: Thank you very much, Madame Gray and Professor Lilly.

I'll now turn the floor to MP Dong for six minutes.

Mr. Han Dong (Don Valley North, Lib.): Thank you, Chair.

I want to welcome all witnesses and thank them for coming to the committee today to answer some very important questions.

My first question is for Professor Dahn.

You're one of Canada's top researchers, and you're working with Tesla Motors to improve the energy density, increase the safety, decrease the cost and improve the cycle and calendar life of the batteries. In your view, what direction is this technology going globally?

Dr. Jeff Dahn: The technology is going in a good direction. The cost is coming down. The lifetimes are becoming longer. The safety is becoming better. Everything is becoming better over time.

I really don't know how to answer your question, except to tell you that things are getting better all the time.

Mr. Han Dong: With all these positive signs, what inputs from lithium processing and mining does Canadian industry need to advance to the next stage, particularly related to support from the government? Do you have any specific recommendations to the committee?

Dr. Jeff Dahn: I'm not sure I'm the right person to be answering that question. There are probably others in the mining sector who would be better. All I know is that lithium in the ground and highly pure lithium carbonate or lithium hydroxide are not the same. To go from one to the other requires a huge investment and a lot of know-how. It's that missing step that I'm not 100% sure we have in Canada.

For example, Nemaska Lithium has partnered with Livent, which is a big U.S. lithium producer. I think that's probably a good thing, in terms of getting the lithium out of the ground and into value-added materials as expeditiously as possible.

Mr. Han Dong: You mentioned there are very few manufacturers in Canada currently to support the growth of future EV battery manufacturing. Give us a sense of how wide the gap is between what we have right now and where we want to go to achieve a carbon-neutral economy by 2050, as we propose to do.

Dr. Jeff Dahn: Well, the gap is enormous. The governments have very nicely realized the importance of electric vehicles in eliminating tailpipe emissions. At the same time, we have to be able to get more renewables onto the energy grid, solar and wind, and for that we need energy storage, be it by batteries or other means. That whole part has been basically ignored so far at the same level of interest compared to electric vehicles. I think the number of batteries that are going to be required for energy storage will be equal to or greater than the number required for electric vehicles. This is a place that...government needs to think about.

How do we get rid of burning coal in Atlantic Canada? How do we get rid of burning oil to heat our homes and so forth? There's a huge challenge going forward.

● (1345)

Mr. Han Dong: The reason I'm asking all these questions is that we now realize that there is quite a bit of a gap between the raw material—the critical minerals we're studying right now—and the product the industry or the market is requiring or demanding right now in Canada. Is it not true that we need to develop this industry and the market first, so we can use these critical minerals in Canada? Is it true that we need to focus on developing that industry first, before we do more to look at the critical minerals situation?

Dr. Jeff Dahn: No, I don't think that's right. The market is there at the moment.

In my role with Novonix, we're developing energy storage products for residential homes. To try to get lithium-ion batteries for those products from tier one manufacturers is virtually impossible. You go to them and they say they're sold out until 2024. You say, “Well, you're expanding your gigafactories left and right”, and they say the output from those is sold out until 2024 or 2025.

There's such a demand for lithium-ion cells. It's incredible. If you build a factory in Quebec or wherever, the output will be snapped up.

Mr. Han Dong: Thank you.

My next question goes to Mr. Walker.

It was very interesting to hear about what you do in northern Ontario, and I have read about the ethical and environmental concerns surrounding the critical mineral mines around the globe. What engagements and partnerships have you undertaken with indigenous communities in northern Ontario? Do you think that Canada can be a leader in mining ethical sources of critical minerals?

The Chair: We have time for a very brief answer, Mr. Walker.

Mr. Trevor Walker: At Frontier Lithium, we have taken very active and early steps to engage indigenous communities in proximity to this world-class jurisdiction that we're operating in. We've developed exploration agreements for early to advanced stage exploration, which really form the basis of the foundation for future agreements to cover production scenarios. It's a process. It takes time and building trust. We have very good relationships.

The second part of your question talks about building a brand. In simple terms—I know there's not much time—we think about the circle of life. It correlates very well to the concept of recycling and reuse, which really forms the basis of the purpose of energy storage. Based on that—

The Chair: Mr. Walker, I hate to have to cut you off again. You have my apologies for that. Hopefully, you'll have time in the next round of questioning.

[*Translation*]

I now give the floor to Mr. Lemire for six minutes.

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

Thanks to all the witnesses for their presentations.

I sincerely feel this is one of the most instructive meetings we've had in this committee. The content we've heard in the last half hour should really be broadcast in prime time. It's very much in the interest of all Quebeckers and Canadians.

My questions are for Ms. Houde, from Propulsion Québec.

I'd like to know a little more about the strategy. Could you possibly give us some details on the subject? I'd especially like to know what your expectations are for this Canadian strategy and the federal government's role in it, particularly regarding the dynamics of federal-provincial relations involving the provinces and Quebec. Do does any of this scare you?

We know the context is favourable. Would you please give us the parameters for the right moment to seize this opportunity?

Ms. Sarah Houde: Thank you very much for your question.

As the other speakers noted, we're in a race that has begun around the world. The demand for electric vehicles is absolutely extraordinary, which means that all suppliers in the supply chain will be inundated with orders. If our corporations have to do business with Asian suppliers, for example, and we find ourselves having to manage a long list of orders, we may face shortages and a lack of access to that economic growth or be unable to benefit fully from it.

Other nations are getting organized for this historic economic transition, which will require planning and coordination. I think that's precisely what the federal government should be addressing by developing an industrial policy in all sectors, research and development in particular. We have to determine the areas where we have a chance of winning and focus our efforts there.

Prof. Dahn cited specific examples of businesses that are treated as though they aren't part of a strategic sector. However, that sector has to be treated as a highly strategic sector. We have to act quickly to assist those of our businesses that are working in research and development. That sector isn't technologically mature; it's still developing.

We absolutely must continue to be the best in research and development. We have to develop world-class talent. These businesses will need employees, but training programs aren't yet widely available to them in universities across Canada. We also have to strengthen our supply chain and secure its verticality.

We're facing a lot of challenges. A colossal national undertaking lies ahead, and we have to attack it. That requires coordination, and that's what I expect from the federal government. What I fear is that we won't be quick enough and that we're missing our opportunity.

The beautiful thing is that all of Canada could benefit from this. Every province could benefit from it in a way that complements every other. This is a rare opportunity for the federal government to have a decisive impact on many provinces at the same time.

● (1350)

Mr. Sébastien Lemire: If my understanding is correct, it isn't too late, but we're still late to the table.

Urgent action is needed on decarbonization. I'm sitting a few metres away from the truckers' protest, and I can say the need to go electric is definitely urgent.

However, should the government take immediate action to develop industries designed to produce batteries and components for electric vehicles in Quebec? Should it provide more support for the transition by helping to develop and assemble electric vehicles in Quebec and Canada?

Should the government's posture be aggressive? Should it provide large-scale funding equivalent to what it granted to the oil sands industry?

Ms. Sarah Houde: Absolutely.

We don't build motor vehicles in Quebec. We build other types of vehicles, which are very popular.

In future, mobility will be much more shared, much more optimized, and there will be a lot more smart vehicles. Those vehicles will be in high demand. Ontario is focusing more on the individual passenger electric vehicle.

Many public policies can be adopted, including federal zero-emissions legislation for personal vehicles, but also for medium and heavy vehicles. That project is already under way in Quebec, and in California, and it has done a great deal to help accelerate the adoption of electric vehicles. These are all measures that could stimulate both supply and demand.

Mr. Sébastien Lemire: I agree with you that legislation on zero-emission vehicles must be passed as soon as possible, even urgently.

What should we change about the way we address the value chain associated with battery manufacturing, including the various stages leading up to the final product, to vehicle assembly?

Do you think the decision to locate intermediate processing businesses near raw minerals and tailings sites is valid and desirable? Should we do the processing near the resources?

Ms. Sarah Houde: That would be desirable, assuming we process the resource rather than send our natural and strategic resources to be processed abroad. We should definitely keep them in Canada and do the processing near the resource. Battery cells could be produced in Quebec and then integrated into battery packs and vehicles in Ontario. That could be done by the automobile industry in Ottawa and Michigan.

This wasn't mentioned, but battery recycling should also be encouraged.

Mr. Sébastien Lemire: Thank you, Ms. Houde.

The Chair: Thank you Mr. Lemire and Ms. Houde.

Over to Mr. Masse now, for six minutes.

● (1355)

[*English*]

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

Thank you to our guests.

Mr. Dahn, one of the challenges the industry had at the very beginning when moving to battery electric vehicles was the discussion—sometimes almost a false argument or a phony argument—about range. There was the perception that you needed to have 400 or 600 kilometres of range, and most consumers only go 50 to 60 kilometres around their immediate neighbourhoods, and so forth, but it led to a really big innovation period to increase the range.

I know Tesla has been involved in the advancement of some of this, but most recently, I think because of supply reasons, they're are actually going to be providing another vehicle line with less range in a battery. Can you outline the difference between the two and the quality of the metals resources for that? That's my understanding as to the status quo.

Dr. Jeff Dahn: Thank you for that question. It's a really nice one.

The moderate-range, lower-cost vehicle will have a battery chemistry based on lithium iron phosphate. This is really quite good, because iron and phosphorus are highly abundant and very sustainable.

Another good thing about that technology is that it supports many charge/discharge cycles and many years of life. Those batteries and those vehicles could be used for things like vehicle-to-grid. The vehicle, when parked, could be storing energy from the grid when the sun is shining or the wind is blowing, and then at night or when the wind is not blowing, deliver it back. This, I think, is a really good move. Those vehicles still get a pretty decent range, probably 400 kilometres.

The other side of the coin is the extremely long-range vehicle, 600 kilometres or so, which uses more nickel-based positive electrode materials and has higher costs. People are actually worried—in the longer term, beyond 2035—about the availability of nickel. This is a concern. Tesla is going to be around for who knows how much longer—maybe a century, I don't know—but they're concerned about the availability of nickel as electrification just goes up on a giant hockey-stick curve.

I think it's really good to see the two streams of the technologies coming along and that each has a place. I think many consumers are going to vote with their wallet and go for the lower-range, lower-cost vehicle that's going to last a really long time.

Mr. Brian Masse: Even regarding the argument for combustion engines, there's still a place for them, in my opinion, for different types of travel, and for vehicles that we have at the current moment. Maybe there will be a day when that fully transitions out.

I don't know if you can answer this question. If you can't, it's okay. I've always been curious about this. As we do research and development partnerships.... For example, where I'm from, the University of Windsor and others have been doing so. Is there an interest for Canada to also help get transferable technology into other types of devices? As consumers, we're finally starting to see them become more involved in lawn equipment, other types of e-vehicles and so forth.

I'm curious.... You have an academia background. I've always believed that's kind of being put on the sideline for some reason right now. Obviously the trucks, the cars and the newest models are always the sexy things out there, but when you're talking about lawnmowers, cutting devices and all kinds of yardwork stuff, you're also reducing emissions. I'm just not sure whether that area is getting the attention. Perhaps we could actually carve out a special niche for other types of vehicles and mechanizations.

Dr. Jeff Dahn: It's quite likely.

One thing about these electric-powered yard machines is that they're incredible. I don't know if you own one.

Mr. Brian Masse: No, I don't at this time, but I've been looking at them.

Dr. Jeff Dahn: They're awesome—no oil changes, no gas.

Mr. Brian Masse: Yes.

Dr. Jeff Dahn: It's incredible. They're so great. I have an electric lawnmower and so on. It's awesome.

In Quebec, there are all kinds of companies—and Sarah can talk about this—that make things like electric snowmobiles, electric jet skis and whatever the heck electric recreational vehicles. There are all kinds of things happening in Quebec that are really quite fascinating in the non-traditional electric vehicle/electric truck space.

Mr. Brian Masse: Yes. I use a cord because I just don't want to store gas on my property. I know what happens, from being part of an environmental movement and the stuff I've been working on to get pesticides off lawns and so forth. If I end up filling up and spilling gas, oil and all kinds of different things, I do so much more damage. These things are really important.

I only have six minutes, so I'm going to switch questioning and go to Ms. Lilly. With regard to your testimony [*Technical difficulty—Editor*]. He did say, with this government at the time, in 2015, that they would bring in more transparency to the Investment Canada Act. I understand that we're going to have some barriers for some of those transactions that take place.

Could you give us a measurement of what's more transparent? I haven't seen it. I've been around for a little while and I'm not seeing a difference. I asked the minister quite frankly about this. He really didn't answer to my satisfaction. I really want to know if, in your view, there's more transparency than in the past. If there is not, what could we do?

I think it would be a lot more reassuring if we actually had a little bit more transparency or a third party review process for transparency. That would give more confidence than what just took place in this agreement we're looking at.

● (1400)

The Chair: Mr. Masse and Professor Lilly, I'm sorry. We have time for a 15-second answer.

Mr. Brian Masse: Mr. Chair, I'll let this sit. I did this last week. I'll have my two minutes later. I'll give it to Ms. Lilly to fully answer later on.

Thank you, Mr. Chair.

The Chair: That's probably wise. Thank you, Mr. Masse.

We now turn to Mr. Kram for five minutes.

Mr. Michael Kram (Regina—Wascana, CPC): Thank you very much, Mr. Chair. Thank you to all the witnesses for being here today.

I'm going to have to ask Professor Dahn from Dalhousie University to turn our committee room into a classroom for a little while. It's been a while since some of us, including myself, have taken a high school and university chemistry class.

I understand that lithium is an element on the periodic table. Can you expand a little bit on what the difference is between lithium carbonate and lithium hydroxide?

Dr. Jeff Dahn: Sure. Lithium carbonate is a chemical that's used to make some of the positive electromaterials for lithium-ion batteries. It's a combination of lithium, carbon and oxygen. It has some very nice properties in that it's quite stable in the air and relatively moisture-insensitive.

Lithium hydroxide is a combination of lithium, oxygen and hydrogen. It's usually sold in the hydrated form of lithium hydroxide monohydrate. It's also used in the production of usually positive electromaterials that have a high nickel content.

These two materials are the most common materials used in the synthesis of the positive electromaterials for the lithium-ion battery.

Mr. Michael Kram: If I wanted to manufacture lithium-ion batteries, could I use lithium carbonate or lithium hydroxide as an input for the process?

Dr. Jeff Dahn: If you were making, say, very high-nickel-content positive electromaterials, you would naturally pick lithium hydroxide. If you were making low-nickel-content materials, you would pick lithium carbonate. There are uses for both. You can convert one into the other if you have to. It's probably preferable not to do that.

Mr. Michael Kram: All right.

Which one would be preferable for the batteries? Is it the one with the high nickel content or the low nickel content?

Dr. Jeff Dahn: This again comes to the area of energy density. High-nickel materials will provide larger energy density cells, which translates to a larger driving range. Typically, those materials would give a shorter charge/discharge cycle life, hence a shorter total driving distance for your vehicle. Lower-nickel-content materials would have smaller energy density, which would mean a shorter driving range on a single charge, but a longer calendar lifetime, typically.

For example, Volkswagen uses a material that would be synthesized with lithium carbonate. Panasonic, which supplies Tesla, would use a material that's synthesized with lithium hydroxide.

Mr. Michael Kram: If you were to provide some advice to us as policy-makers—which is why we have you at the committee today, sir—should we be concerned about Canada's supply of both lithium carbonate and lithium hydroxide?

Dr. Jeff Dahn: I think the lithium producers are able to decide whether they are going to make a carbonate plant or a hydroxide plant. I don't think it's that difficult—and maybe Trevor can set me right here—to have both on site if you want: make one, make the other, either way. But the key is to get one or the other from lithium in the ground.

● (1405)

Mr. Michael Kram: I believe in response to one of the earlier questions, you said the industry is always improving and we're moving in the right direction. Can you speak a little bit about the cost of deriving lithium from lithium carbonate or lithium hydroxide? Is it more expensive to get it from one or the other?

Dr. Jeff Dahn: It's not significantly different.

Mr. Michael Kram: Okay.

How much time do I have left, Mr. Chair?

The Chair: You have one minute.

Mr. Michael Kram: Then I would like to move over to Mr. Walker, from Frontier Lithium.

Mr. Walker, you said you've been working in this industry a long time. Can you give us an idea of some of the regulations that a new mining operation would have to go through to go from the discovery of some new elements in the ground to actually extracting them and mining them?

Mr. Trevor Walker: Absolutely.

Before I dive into that, I will quickly agree with Mr. Dahn.

We are looking at a dual process to produce both lithium carbonate and lithium hydroxide. We do see a cost advantage to produce directly from what we're blessed with in Canada in hardrock assets, directly to the production of lithium hydroxide, over our competitors in South America, who have some cost advantage going directly from brines to retention ponds to then produce lithium carbonate. This is just to finish off on that.

With regard to your question about what it takes to get into production, as I alluded to in the opening statement—

The Chair: Mr. Walker, I am so sorry it always falls on you, but the time is up. Hopefully, MPs address their first questions to you next time. Thank you.

I now have to turn to Mr. Fillmore for five minutes.

Mr. Andy Fillmore (Halifax, Lib.): Thanks, Chair.

I just want to extend a warm thanks and welcome to each of the witnesses today. Thank you for sharing your time and knowledge with us.

A special hello to Professor Dahn, from Dalhousie here in Halifax. Jeff, it's great to see you. I remember the day I visited your lab and you surgically unwrapped a battery showing me exactly how it works, and that stuck with me today. Thank you for that and thank you for being here today.

I want to come back to you with a question, Jeff, but first I want to address Ms. Lilly.

Ms. Lilly, it was not evident from your testimony that it has actually been several years since you were a Conservative staffer in the Prime Minister's Office of Stephen Harper. You made it sound much more recent than that. If I could ask you, do you have any knowledge of how many Investment Canada Act investigations were undertaken by Prime Minister Harper's government relative to the current government?

Dr. Meredith Lilly: I don't think that I commented on my time working in the Prime Minister's Office, but yes, it's a matter of factual record that I previously served in the Prime Minister's Office of Stephen Harper.

No, Mr. Fillmore, I can't comment. I do not know the answer to your question on the number of reviews undertaken by his government versus the current government.

Mr. Andy Fillmore: Thank you, Ms. Lilly.

It's four times as many by the current government than happened under the previous government, four times as many of these investigations. I want to be very clear that our government closely reviews every foreign transaction involving critical minerals. That very much included Neo Lithium. So when the Conservatives are saying that no security review took place, that's absolutely false. The Conservatives are, at best, playing with language. They're cherry-picking a specific technical step further down the review process. That step is only triggered after we look at a proposed investment in great detail and determine if there is or is not a national security threat.

Hon. Ed Fast (Abbotsford, CPC): I have a point of order, Mr. Chair.

Mr. Andy Fillmore: Our thorough review involves—

The Chair: One moment, Mr. Fillmore, there is a point of order.

Mr. Fast, go ahead.

Hon. Ed Fast: Mr. Chair, I believe it's within your power to focus the comments and the interventions of our members on the witnesses at hand. This is serious business. We heard this may be the greatest economic opportunity we've ever seen as a country. I don't believe this is the place for political harangues from my colleague Mr. Fillmore. If he wants to do that, he can do that outside of this committee. Right now we have serious witnesses at this table who should be asked serious questions.

I leave it to you, Mr. Chair. I trust you to act wisely, but remember relevance is important here. That's one of the things you need to call this committee to focus on: the relevance of the comments and the questions.

● (1410)

The Chair: Thank you, Mr. Fast.

I will leave it to members to use their time as they see fit. I do this with all parties.

Mr. Fillmore, you can resume, as long as it pertains to the study at hand. You have three minutes.

Mr. Andy Fillmore: Thank you, Mr. Chair.

I appreciate the intervention from Mr. Fast. I agree that this is a very serious matter, and I won't go any further on that line. This is very serious and it's a matter of science as well. Science is based on fact, and I wanted to make sure the record reflected the facts in this case.

With my remaining time, I'd like to come back to Professor Dahn, if I could.

I was enjoying the conversation with Mr. Kram about lithium carbonate versus lithium hydroxide. I was wondering about the energy density question. In your world, what do you think is the future of battery storage? Is it, in fact, the high-density batteries, or is it the lower-density batteries?

Dr. Jeff Dahn: My view is maybe a little bit orthogonal to that of many other scientists and researchers. My view is that the future is in the longest-lived batteries possible, so that you minimize the need for recycling. You install a battery in an energy storage facility and it lasts 40 or 50 years, not 10 years. If you install a battery in a vehicle, it can be used for vehicle-to-grid with a couple of charge cycles per day while the car is parked, and you still get 15 years out of the vehicle. At the end of that time, you can repurpose the battery for something else.

Those batteries may not be the highest energy density batteries that you could possibly make, but they'll still be able to drive a car 400 kilometres or so. I think this is the way things should go. We should be making batteries that are the most useful for society, not a battery that makes a sexy car go 600 kilometres.

That's my opinion.

Mr. Andy Fillmore: Okay.

For example, the wall packs we're going to be seeing more of, which will contribute to smart grid energy sharing, might be in this longer term.

Dr. Jeff Dahn: Yes. That's what you want.

Mr. Andy Fillmore: I wish I had a little bit more time for Mr. Gratton.

In terms of the gap between where we are in extraction of lithium in Canada and where we need to get to, do you have any thoughts or direction? I have about 40 seconds left.

Mr. Pierre Gratton: We have one lithium mine in Canada, so we have a long way to go. There are a lot of lithium deposits across the country. We need to attract the capital and start developing them.

Lithium is just one of the many materials that go into a battery. We're much stronger on some of the other elements that go into batteries. We also need to capitalize on that advantage.

Mr. Andy Fillmore: Thanks very much.

[*Translation*]

The Chair: Thank you Mr. Gratton and Mr. Fillmore.

I will now give the floor to Sébastien Lemire for two and a half minutes.

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

My question is for Mr. Benoit La Salle, whom I invited to attend this committee as a witness eight or nine months ago, to perform a whistleblower role by making it clear to us just how urgent it is to invest in strategic critical minerals.

Mr. La Salle, now that we are beginning to see some interest in this sector in Canada, how do you feel about the federal government's efforts, and its capacity to fund the mining industry for the development strategic critical minerals?

Mr. Benoit La Salle: It's nonexistent.

Mr. Sébastien Lemire: How's that?

Mr. Benoit La Salle: Precisely what I said. I'd like to draw your attention to the following. The race is real. As you saw last week, Serbia withdrew the Rio Tinto permit for one of the largest lithium mines in the world. It gave environmental reasons as a justification, but everyone knows that it is a dramatic strategic repositioning. Serbia has just done it and several other countries are in the process of doing so. When transactions were underway in Quebec, I told the politicians that Australia would never agree to sell a lithium mine to Canadian undertakings.

The federal government needs to introduce a policy to support all of these areas. Quebec's policy is fine. Quebec is willing to electrify and provide assistance, but it forgot the minerals aspect. We can't let minerals go and assume that we will be integrated into the market. I have been to China often and can tell you that all our graphite is currently being sold to the Chinese. They would be willing to purchase our graphite mine tomorrow. Why? Because the Chinese don't want to sell us anodes or cathodes. Nor do they want to sell us battery packs. They want to sell us electric vehicles for $18,000 or $20,000, as if they were Bic ballpoint pens. They have told us this clearly.

We sell our raw materials to the people who make anodes for Tesla and Volkswagen. What the Chinese want is to stop selling anodes and cathodes because that's not where they will be making their money. They want to sell cars. They have stated this clearly. They are trying to have us sign very long term contracts to gain control of raw materials, just as they did for uranium in Australia, where they completely shut down the uranium market and tried to buy up everything. Why would they do that? Because they know that one day this mineral will be critical, that they will have it and that we will not. What does that mean for Canada? That we will lose our automobile industry in Ontario and lose Lion Electric if it does not start producing anodes and cathodes. Don't be misled into thinking that Tesla makes batteries.

● (1415)

The Chair: Thank you very much, Mr. La Salle.

Unfortunately, that's all the time we have. I know it goes by quickly.

Mr. Masse, It's over to you now for two and a half minutes.

[*English*]

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

I would like to have Ms. Lilly answer my previous question, but before I do so, I want to give some context about the witness here. I'm a New Democrat, but also under the Harper administration my right to repair bill got done; banning of microbeads got done; the Gordie Howe bridge got done; my genocide recognition of Srebrenica was passed in the House of Commons, and it's now in the Canadian Museum for Human Rights; my international bridge and tunnel work got done; and invasive carp banning, actually for evisceration at the border, got done. That's just to name a few things. If you had anything to do with any of those things, I want to thank you for that.

I'd like to turn over the next couple of minutes for you to answer the question with regard to whether we're having more transparency or improvements in the Investment Canada Act over the last few years, because I'd like to see some improvements in that.

Thank you very much, Mr. Chair.

Dr. Meredith Lilly: I'd like to clarify that I'm here in a non-partisan capacity. I'm a published author in the area of national security reviews for critical minerals, so that is why I'm here today, as a professor of international trade, respected in my own right.

On the issue of transparency, I support transparency, of course. I think the government should be as transparent as it can be while safeguarding national security.

On the extent to which the national security process has become more open, I couldn't say in an objective way, because I simply haven't followed it systematically. I think what is really essential for government.... In order to maintain the ability to keep aspects of the national security review confidential—because there are times when I do think there are details that it is important remain confidential—I think that governments need to maintain trust and ensure that they're implementing their own due diligence and following their own guidelines.

I think one of the concerns in this particular case—I did review the testimony where you asked the minister those questions—is that some very basic details weren't being answered. I also think that the fact that this did not go to a full national security review—it was stopped at the initial screening stage—meant that some questions were raised about the extent to which the government's full due diligence was followed. When those questions arise, trust in institutions starts to erode. As trust erodes, that creates problems with public trust as well.

Mr. Brian Masse: Thank you.

Mr. Chair, I think that's all of my time.

The Chair: Yes, it is.

Thank you very much, Professor Lilly and MP Masse.

I now turn to Mr. Généreux.

[*Translation*]

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

Mr. Bernard Généreux (Montmagny—L'Islet—Kamouraska—Rivière-du-Loup, CPC): Thank you, Mr. Chair.

I would also like to thank the witnesses here with us.

Mr. La Salle, where do Tesla's batteries come from?

Mr. Benoit La Salle: They come from Panasonic, but it depends on the agreements. In Japan, they come from Panasonic and Panasonic in Japan buys the anode from the Chinese company.

● (1420)

Mr. Bernard Généreux: In your presentation earlier, you mentioned that selling lithium was totally unacceptable. Why?

Mr. Benoit La Salle: It's not making any waves today, and is not creating any problems because we don't manufacture batteries in Quebec or Canada.

There are 240 battery manufacturing plants being built at the moment, but there are none in Canada. I would suggest that you visit the Benchmark Mineral Intelligence site; it's a think tank on batteries and it explains why they are being built.

Earlier on, I believe it was Ms. Houde who said that demand was unbelievable and very strong. Every battery plant needs a graphite mine and just about one lithium mine. Benchmark has published some very nice charts on this.

Mr. Bernard Généreux: Mr. La Salle, we were told that a plant in Argentina was not appropriate for Canada because the products in question were used in Asia, not in Canada.

But then Mr. Dahn said more or less the opposite, and that there were two different ways of processing lithium.

Mr. Benoit La Salle: Mr. Dahn is an internationally recognized specialist.

You have to be careful, because with lithium, it's called spodumene if it's hard rock, which is what we have in Canada. Spodumene is transformed into a *y*-form that can be processed into lithium carbonate or lithium hydroxide.

We in Quebec, at North American Lithium, a company I wanted to buy, have hard rock. We wanted to process it into carbonate because we had high-capacity batteries that were a little less expensive. Hydroxide is used for more specialized batteries.

In South America, the situation is different because lithium is not in rock form, but rather salts. It's chemistry. The reality is that in Quebec today, if we wanted to build a battery plant, we would have to find lithium, graphite, nickel and manganese.

Mr. Bernard Généreux: We have all of that in Canada.

What's to prevent us from establishing companies to make batteries in Canada?

Mr. Benoit La Salle: We do in fact have all of that already, but we are not a lithium producer yet. That will probably be the case in Ontario.

What I'm saying is that we can't sell the deposits.

Mr. Bernard Généreux: I understand, but I think that there's lithium in Abitibi. Am I wrong on that?

Mr. Benoit La Salle: Yes, but it belongs to the Australians. We sold it.

Mr. Bernard Généreux: They're going to sell it at home. They're not going to give it to us.

Mr. Benoit La Salle: Exactly.

It's the same as it was for masks. When we needed masks, we found out that countries around the world were keeping them for themselves.

When we need lithium, graphite and nickel, everybody in the world will be looking for them. The revolution we are experiencing at the moment in the field of electrification resembles what happened with gasoline in 1907 with the Rockefellers and Fords of the day. It's the same paradigm shift.

The point that I am trying to raise is that we need to keep our resources at home and for us, in an integrated manner. For example, the way Saudi Arabia was able to keep its oil in 1910.

Mr. Bernard Généreux: Thank you, Mr. La Salle.

Mr. Chair, do I have time to ask Mr. Gratton and Mr. Marshall a question?

The Chair: You have enough time, Mr. Généreux.

Mr. Bernard Généreux: Mr. Gratton and Mr. Marshall, are we in Canada running late? Is there still room for companies that would like to set up operations to meet future demand?

I am well aware that 2050 may seem a long way off, but I get the impression that we're lagging behind.

Is that the case?

Mr. Pierre Gratton: I wouldn't say that were lagging behind, but it's important to realize that it is a race. We have advantages that many countries do not in terms of battery production because we have all the minerals required and strong businesses, refineries and foundries. Other countries do not.

However, a strategy is needed and rapid action is required. I believe that Quebec is well ahead of all of Canada's other provinces and territories. Quebec has a strategy and is being very dynamic. I would suggest that the rest of Canada do the same.

I'm optimistic. I think that the federal government is going to take concrete action soon, but that remains to be seen. However, something needs to be done quickly.

● (1425)

Mr. Bernard Généreux: In passing, I would like to thank Ms. Lilly for her services to Canada.

The Chair: Thank you, Mr. Généreux and Mr. Gratton.

Mr. Erskine-Smith, you have the floor for five minutes.

[*English*]

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

I want to stick with the Mining Association of Canada.

I appreciate your sending very concrete and specific recommendations. I took from those recommendations that, in part, the federal government's role is to streamline the approval [*Technical difficulty—Editor*] an active participant in the course of consultation and ensuring that things proceed. I think you referenced the Impact Assessment Act. One piece around financing.... I understand the need for the federal government to facilitate approvals.

Given the increase in the value of these commodities, to what extent is financing required from the federal government? I know that in particular there's a call for doubling the exploration tax credit. To what extent is that still required?

Mr. Pierre Gratton: I appreciate that question. It was a platform commitment of your party.

For the reasons that the committee has discussed today, this is a race. Doubling the mineral exploration tax credit for critical minerals would put Canada way out in front of every other country in the world as a target for exploration into those minerals and metals that we need. It would give us a huge advantage.

The METC has been an advantage to Canada for—

Mr. Nathaniel Erskine-Smith: On that point, the market is going to do this, presumably, because of the profit motivation here, but—

Mr. Pierre Gratton: Yes, but where would it go—

Mr. Nathaniel Erskine-Smith: —this would expedite it in a real way. Is that the idea?

Mr. Pierre Gratton: It would make us more attractive than other places.

You're right. The commodity prices are going to stimulate more exploration into these materials worldwide, but where they go worldwide is an open question. The METC would make sure that Canada—which is always near the top—would remain at the top and would overtake countries like Australia, which competes with us for top spot.

Mr. Nathaniel Erskine-Smith: A number of witnesses have mentioned the operation in Quebec, but there really aren't many active operations across the country, despite the potential here. How many years are we looking at, to bring a mining operation online that would contribute to what we all want?

Mr. Pierre Gratton: Well, building a new mine takes time.

What our brief focuses on is that we really need to look at every stage of the value chain. We need to have more discoveries. There's been a dearth of base metal exploration in Canada for the last 15 to 20 years. There's been a dearth worldwide. It's not because Canada hasn't been attracting it. Until this battery explosion, they weren't attractive. People were looking for other materials. Now it's starting to pick up, but as a result of that lack of exploration, we don't know where those new mines are. We need to accelerate that. We need more public geoscience, and we need to track more exploration.

Then there's building the project itself, and the regulatory process is time-consuming. I think there's probably a role—

Mr. Nathaniel Erskine-Smith: Just in terms of the timeline.... If we're making recommendations to government around this overarching strategy, which you've indicated we need, the timeline presumably has a lot to bear upon the ultimate strategy.

Mr. Pierre Gratton: Yes, it definitely does. From discovery to construction, it can take as long as 10 years. It depends on where. It depends on what. It depends on the level of indigenous support for the project. There is a range of factors. Some can be permitted faster than that. It really depends. There's no specific answer to how long a project will take, but it does take—

Mr. Nathaniel Erskine-Smith: That's fair. It takes a long time, and we need to do everything we can to speed it up.

Mr. Pierre Gratton: That's right.

Mr. Nathaniel Erskine-Smith: This is a question for Mr. Dahn. I don't know if Ms. Houde is still with us.

We heard from a witness at a previous meeting about the need to have a resilient supply chain. Canada doesn't need to be the only player when it comes to mining. There are lots of different ways we can contribute throughout the supply chain. Where can Canada best contribute?

I don't know if you have a view in terms of an overarching strategy where Canada can best contribute in terms of the supply chain.

Dr. Jeff Dahn: You really should be talking to the mining guys about this, in my opinion.

I think we can really contribute a lot in lithium, graphite, nickel, iron, phosphorus, all these minerals. We have them. We just have to—

● (1430)

Mr. Nathaniel Erskine-Smith: Sarah, do you have a view, not just in relation to mineral exploration, but around the battery supply chain? There is a supply chain here for EVs that has a lot of different players. Where can Canada best contribute?

[*Translation*]

The Chair: You have 10 seconds to reply, Ms. Houde.

Ms. Sarah Houde: Exploration can take many years. It could take up to 10 years to actually get that moving. I think that right now is the time for us to order all equipment required for large-scale commercialization.

I still think that cell production is a field in which we can definitely play a role. These cells could also be put into into electric vehicles, making us capable of manufacturing all kinds of electric vehicles, not only in Ontario, but also those mentioned by Professor Dahn, and which are made in Quebec.

The Chair: Thanks very much Mr. Erskine-Smith and Ms. Houde.

[*English*]

I will now turn to Mr. Fast for five minutes.

Hon. Ed Fast: Thank you very much.

Thank you to all the witnesses for appearing here. Many of you are familiar to me. Welcome.

I want to begin by restating the statement that Ms. Houde made that this may be the greatest economic opportunity in our history, which really drives home the point that this study we're doing is really, really important.

Professor Dahn, thank you for describing the difference between lithium carbonate and lithium hydroxide and why they're used in two different battery applications. I drew from your comments that it's as much the performance characteristics of the battery as anything else that would drive a choice between one and the other. Am I correct?

Dr. Jeff Dahn: Basically, to synthesize the high-nickel materials at elevated temperature, you have to use the lithium hydroxide. For the lower-nickel-content materials, you can get away with lithium carbonate, which is a bit cheaper, so that's what you do.

Hon. Ed Fast: Okay, but is it wrong to suggest that lithium carbonate is irrelevant to the lithium-ion battery industry?

Dr. Jeff Dahn: Oh, yes, absolutely, lithium carbonate is not irrelevant.

Hon. Ed Fast: Well, I'm glad you've now debunked something that was stated here by Mr. Fillmore and others.

I do want to go to Dr. Lilly. It's nice to see you again.

Going back to the whole notion of national security, our critical minerals and rare earth elements are subject to national security risks. Is that correct?

Dr. Meredith Lilly: That's correct.

Hon. Ed Fast: If someone suggests that sourcing lithium from anywhere other than Canada would eliminate that risk, would you agree with that assessment?

Dr. Meredith Lilly: No, I don't think I would. Circumstances vary, but we source lithium from outside Canada all the time.

Hon. Ed Fast: Yes, and that goes now to another question, for Professor Dahn.

You mentioned there are two companies in Canada that manufacture lithium-ion batteries. They're not for the EV industry, but they are lithium-ion batteries. Is that correct?

Dr. Jeff Dahn: That's correct.

Hon. Ed Fast: Where do they source their lithium?

Dr. Jeff Dahn: I really don't know the answer to that, but I imagine Electrovaya would source from a North American supplier like Livent, most likely. E-One Moli's manufacturing facilities are in Taiwan at the moment. They're trying to re-establish manufacturing in Canada. The Taiwan plant is probably sourcing its lithium supply from China, I would imagine.

Hon. Ed Fast: If a lithium-ion battery plant were established for the EV industry today in Canada, could it source lithium from Canada today? That's for any of our witnesses.

Dr. Jeff Dahn: No.

Hon. Ed Fast: All right, so we have our answer to that. We have to source our lithium, at least in the short to medium term, from outside of the country.

Professor Lilly, why is it that we should be approving the sales of Canadian companies that are actually mining lithium elsewhere around the world when there is such a risk that this particular resource will be monopolized perhaps by one global power?

● (1435)

Dr. Meredith Lilly: Whether we should or shouldn't is something that I think deserves a lot of study. In the case of this particular mine in Argentina that was sold, as you intimated, part of the suggestion appeared to be that it was lithium carbonate rather than lithium hydroxide, and because this didn't have an immediate goal for Canadian companies, or at least those that officials talked to, it was deemed to be of less interest.

We should not be pre-emptively deciding the value or worth of these kinds of decisions, potentially 10 years down the road, today without full study. That is why we conduct full national security reviews. It gives time to fully consult and to fully understand the issues. If that had occurred, the decision might still have been for the transaction to proceed, but we will never know because it didn't follow that path.

The Chair: Thank you, Mr. Fast. That's your time.

Hon. Ed Fast: All right. Thank you.

The Chair: Now we go to Madame Lapointe for five minutes.

[*Translation*]

Ms. Viviane Lapointe (Sudbury, Lib.): Thank you, Mr. Chair.

Thanks to all the witnesses for being here with us today.

[*English*]

My first question is for Monsieur Gratton.

In your opening statement, you said that, to position ourselves for success, we need good government policies with equally good policy outcomes. Can you expand on what industry needs from policy-makers and government to help drive innovation and investments?

Mr. Pierre Gratton: Sure. Thank you for the question. It's nice to see you, Viviane.

I've touched on the METC and public geoscience already, so maybe I'll leave those two issues aside. I've also touched on the need to focus on accelerating the regulatory process. Let me, then, skip further downstream and talk about the fact that we don't produce the right kind of nickel. We produce a lot of nickel, but it's not the nickel that's used for batteries.

I think one part of the strategy is figuring out how we entice industry that is producing different types of nickel, for which they have customers and no compelling need to change their customer base, to switch and start producing nickel sulphide for the battery market. That's an interesting policy question, I think. There's room there for government to say, “Look, it's in Canada's interest that you start producing this type of product. Our auto sector needs it and our whole critical mineral strategy needs this gap filled, so how can we convince you, as a partner, to change gears?” I think that's really important. You come from Sudbury. In that area, you have two large nickel mines that produce nickel and sell nickel worldwide. How do we convince them to set up a nickel sulphide plant in Canada? I think that is a really good question. I'm hopeful we'll get some answers in the near future. That would be another example of the kinds of policy steps I think we need.

I would also make the point that, in our view, there is a tendency to fixate on the battery itself, whereas there is an awful lot of economic opportunity from the exploration all the way through to the battery-grade materials that go into a battery. My concern is that if we focus only on trying to attract a battery plant, that battery plant will be importing materials from around the world. We haven't solved the problem we're trying to fix, which is being overly reliant on China. We need to build from the bottom up and plug the gaps we currently have. If we do that, then the battery manufacturers will want to set up shop in Canada because they'll have what it takes. I think there's a preponderance of focus on that final battery plant as the be-all and end-all, but I don't think that's actually where the focus should be.

Ms. Viviane Lapointe: Thank you, Mr. Gratton.

Mr. Walker, it's great to see a fellow Sudburian here today.

I want to explore sustainability in the industry. In your estimation, is Canada well positioned to not only support domestic supply for the mineral requirements of carbon neutrality, but also support an increased global demand?

● (1440)

Mr. Trevor Walker: I would say we're positioned very well. With regard to previous comments and your question, our advice, especially to the Ontario government, has been simple: Let's begin somewhere with some action where we have some leverage. Let's work with what we have. We're blessed with great resources. We are blessed in Canada with auto OEM production, for example. How do we leverage those things?

We've seen investment downstream, but I agree with Mr. Gratton that we need more emphasis on some support and policy change to really leverage the front end of the supply chain to fill in those missing links. I agree that if we don't fill them in, we will be cutting cheques to downstream OEMs forever. When we get our act together on the front end of the supply chain, they will want to be here and to have access to the North American market. We believe we have the resources and the ability to scale, with some support.

In conclusion, we have to act. Government is always hesitant to pick horses. In this case, we have to be really sharp about which horses need to be bet on so we can make some truly meaningful progress in the short term.

Ms. Viviane Lapointe: Thank you.

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

[*Translation*]

Go ahead Mr. Lemire; you have six and a half minutes.

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

I would once again like to thank all the witnesses for their testimony. Their rigour and their work are remarkable. I would particularly like to thank Dr. Lilly for her contribution.

I'll continue with Mr. La Salle so that we can benefit from his expertise.

Mr. La Salle, do we have enough mining expertise in Canada for it to be fully integrated?

How then can we help the industry to become more integrated?

Mr. Benoit La Salle: First of all, Canada is recognized around the world for its state-of-the-art mining expertise. We work everywhere around the world. We are highly versatile. There are therefore no concerns from that standpoint. We have no difficulty operating mines ourselves.

We need to integrate so that we can work towards producing value-added products, whether hydroxide, carbonate or graphite, which is the raw material that goes into anode manufacturing. Indeed, graphite is only the starting point. It needs to be processed before it can be transformed to make the anode. Most of that is currently being done in China, even though we have the expertise needed to do it here. North American Lithium has just been sold to the Australians, even though a processing plant had just been installed right beside it and never put into operation. There is no doubt at all that we have the required expertise.

That's where the Canadian government could provide support, particularly in the form of financing loans. Internationally, the French have a development agency and provide lots of support. The Chinese have a lot of support mechanisms. So do the Americans. We have Export Development Canada, the EDC, which is often overcautious. If the government were to support secondary processing, the expertise would definitely be there, from the mine to primary and secondary processing. We could then allow battery manufacturers to come and set up shop here, and then automobile manufacturers could decide whether or not they wanted to build plants. However, the first step is required, because that's what will determine the eventual direction taken.

Europeans are on a war footing at the moment, particularly in Germany, in a quest for raw materials to process at home in Europe for use in vehicle manufacturing. We need to do what the Europeans are doing.

Mr. Sébastien Lemire: I get it. So we need to change how we do things.

Thank you.

The Chair: Thank you Mr. La Salle and Mr. Lemire.

Mr. Masse has the floor now for two and a half minutes.

[*English*]

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

I've long believed that we need a national auto strategy like many other countries have.

Mr. La Salle, I would like to go back to the original part of your testimony on the increase of prices with regard to not only lithium but also other components. Can you detail that a little bit more? When did you really see a surge take place? I know this is speculative, but do you anticipate that there will be sustainability with that in the years to come? That's going to be really important, I think, for the investment. Could you perhaps shed a little more light on that, please?

● (1445)

[*Translation*]

Mr. Benoit La Salle: Mr. Masse, I'm going to answer the question in French, given that I began my comments in French.

You're absolutely right. There was a pause at the beginning of the COVID-19 pandemic, and prices collapsed, particularly for graphite and lithium. There was definitely a slowdown in the auto industry in terms of energy storage, a sector that is almost as important as the auto industry itself. About eight months ago, it looked like the industry was picking up again and the price of cobalt began to rise gradually, along with the price of copper.

Eight months ago, we thought this was bound to happen for lithium too. All the lithium projects were moribund. Nemaska Lithium et North American Lithium went bankrupt. Montblanc International decided to stop production because the price was too low. We made an offer, feeling that the price would make impressive gains. Eight months ago, the price of hydroxide increased by 500% and the price of carbonate by 700%. That's going to continue.

Benchmark Mineral Intelligence understands that it's a question of supply and demand. There's a huge gap for graphite, lithium, nickel and copper. You don't hear talk about copper, but if everything needs to be connected, copper cable will be needed. Demand for copper is staggering.

Prices are going to continue to rise. We, the entrepreneurs and project developers, do not need funding to conduct research and exploration, because we have the means. We're going to operate the mine on our own and then do the processing in partnership with the government to make finished products.

At the moment, there are no financial problems in the mining sector. We simply need the freedom to make sure our projects are discovered by us, developed by us and sold by us.

BHP, An Australian company, has just opened an office in Toronto with a view to buying projects in Canada.

The Chair: Thank you, Mr. La Salle.

I'm sorry, but there is no more speaking time.

[*English*]

We'll go back to Mrs. Gray for five minutes.

Mrs. Tracy Gray: Thank you, Mr. Chair.

I have a couple of questions for Mr. Dahn, and then I might turn it over to my colleague, Mr. Généreux, depending on the time.

Mr. Dahn, you've previously been quoted stating how Canada is pulling above our weight when it comes to research and development on lithium-ion batteries. We can all agree that this is a good thing, but it's also important to protect our intellectual property. Based on your experience in this field, where do improvements need to be made to ensure Canadian IP in critical minerals is protected and expanded?

Dr. Jeff Dahn: I'm not an expert on IP and critical minerals. In terms of critical materials that are derived from the mineral, that's more up my alley.

Mrs. Tracy Gray: Fair enough.

Do you have any thoughts on creating a patent box, such as they have in Quebec, which reduces corporate tax rates on patent royalties? Do you have any thoughts on that?

Dr. Jeff Dahn: No.

Mrs. Tracy Gray: Okay.

Maybe I'll ask the same questions of Dr. Lilly, then. Perhaps she might be able to answer those two questions.

Dr. Meredith Lilly: Thanks for the question.

I'm not an expert on IP beyond issues in international trade, where a number of countries are currently working on the improvement of intellectual property. We have this reflected in most of our trade agreements. In the new NAFTA, as well as TPP, we have fairly advanced IP protections.

Beyond that, I don't think I can answer your question.

Mrs. Tracy Gray: Thank you very much.

I will turn it over to my colleague, Mr. Généreux.

[*Translation*]

Mr. Bernard Généreux: Thank you, Ms. Gray.

Mr. La Salle, I understand that the relationship between supply and demand is important, but apart from that, why did the price of lithium increase by 700% in eight months?

Is it solely a matter of supply and demand?

● (1450)

Mr. Benoit La Salle: It's the law of supply and demand. I'm repeating myself, but the Benchmark site reports that the company is building 240 plants at the moment, when it doesn't have the raw materials.

Volkswagen announced a few months ago that it would have to buy 100% of the graphite produced outside China in 2024 for its battery plants. As they don't have the raw materials, they will have to turn to us and others.

There has been a slowdown with respect to lithium during the COVID-19 pandemic. People felt that the raw materials were not available. Tesla and Volkswagen very clearly stated that they would need different batteries for different categories of cars.

As Professor Dahn was saying, there were variations—more nickel, less nickel, more graphite, more lithium—and then there was a big surge in demand. It was also felt that the South American projects were taking a very long time to develop because they mine brines, in a complex process that generates pollution.

Demand for electric vehicles also surged. As demonstrated by data around the world, demand is getting much stronger.

Mr. Bernard Généreux: Thank you.

Ms. Houde, on this topic, at a previous meeting of the committee—last year, I believe, Mr. Lemire could confirm this for us, and it may have been Mr. La Salle who mentioned it—it was pointed out that 21 permits had to be obtained before opening a mine in Quebec.

Will the requirement for numerous technical documents, like building permits, environmental permits and authorizations from governments, slow down future mining operations that could otherwise put us in the forefront in these sectors in Quebec, and Canada more generally?

Ms. Sarah Houde: I don't think so. That's not something that will slow us down. Our mining standards in Canada are even an asset because that's what will set our batteries apart from others, such as Chinese batteries. We won't be competing with the Chinese on price, but on the fact that our batteries are greener, more environmentally responsible. Although Canada's environmental standards in the mining sector are as strict as they come, I don't think this will be harmful to us. Quite the contrary. It will be something that makes our batteries distinctive.

Mr. Bernard Généreux: Do I have any speaking time left, Mr. Chair?

The Chair: Unfortunately, Mr. Généreux, you have only 18 seconds remaining.

Mr. Bernard Généreux: Then I'd better stop now, or you might have to interrupt someone else.

The Chair: Right.

Mr. Bernard Généreux: Thanks very much to all the witnesses once again for their testimony, which has been very interesting. We also have to do a second round of additional questions with all the witnesses we've heard today.

The Chair: It was indeed very interesting.

We have a final round of questions remaining.

Over to Mr. Gaheer now for five minutes.

[*English*]

Mr. Iqwinder Gaheer (Mississauga—Malton, Lib.): Thank you, Mr. Chair, and thank you to the panellists for making time for us.

The panellists have really drilled the point that Canada can be that international supply of ethical minerals. My first question is in that vein.

Mr. Walker, this question was asked earlier as well, but I'll give you more time to expand on it: What engagements and partnerships with indigenous communities have you undertaken in northern Ontario? You mentioned exploration agreements. What do these agreements look like, and how do they ensure that the rights of indigenous peoples are protected?

Mr. Trevor Walker: On the first part, with regard to exploration agreements, they're very encompassing, with everything from respect for existing treaty rights that occur for various communities to assisting in building capacity with the communities as the progression of exploration towards development takes place. This also includes the creation of business opportunities and collaboration with regard to any matters surrounding investments, and working together with government with regard to infrastructure pieces that are so desperately required around critical mineral assets in the north.

It's a process. Through that process, it's about building meaningful partnership, trusting, and really understanding the constraints that may exist for particular communities so that, as you go through that process, you're in a situation to really understand potential impacts if a mine can take place.

That's really what takes place on building. It's about people and relationships, and that's at the heart of all business and building opportunities for the indigenous communities.

● (1455)

Mr. Iqwinder Gaheer: That's great. Thank you.

You mentioned long permitting processes as well, that it takes a very long time to get a permit. Do you think permit times can be reduced, and if so, where? Could they be reduced without lowering our standards for mining ethical minerals?

Mr. Trevor Walker: That's a very loaded question. I'll do my best.

As you know, and as we've seen around the world, especially here in Canada, there's a huge turnover with regard to labour and capacity. We're seeing the boomers retire. We're losing a lot of experience.

One of our observations is that in order to move quickly, we could perhaps start looking at collaboration with the provinces—in our case here, with Ontario—to put together SWAT teams or those few experts who truly understand the window of opportunity in a particular new commodity such as lithium, in order to focus on assets that can be really meaningful toward building out the value chain. Through that process, what's important, really—tying back into the indigenous question—is, again, building up the understanding, especially in the north, of what exploration through to the mining development means and building the capacity for maximizing indigenous participation. That really is the place where we see governments at various levels playing huge roles in really helping to facilitate.

As one last point, what we would really like to see is the possibility for resource revenue sharing for indigenous communities in their respective traditional areas, to really create alignment with the players: from communities to government to proponents such as ourselves. Align the players accordingly, moving forward swiftly, as a requirement of what we're all discussing here today. It's going to be so much easier. That's a great way to maximize participation.

There's one last thing with regard to indigenous communities from an income tax perspective, which is just a thought I had while someone else was talking here. When community members work on reserves—for example, here in Ontario—there's really no income tax. Once they step outside of the reserve—and let's face it, the assets don't sit within reservations in their respective treaty areas—they're outside of that. In order to encourage, perhaps government could look at a reduction in income tax for those indigenous members to work in their traditional lands and incentivize further participation in order to build out a strong ESG and a great brand for Canada in participation in building the supply chain.

Thank you.

Mr. Iqwinder Gaheer: Thank you, Mr. Chair.

How much time do I have?

The Chair: You're over by 30 seconds.

Mr. Iqwinder Gaheer: Okay, thank you.

We always need more time.

The Chair: I know.

This concludes our last round of questioning. On behalf of the committee, I want to thank all of our witnesses today. This has been a really productive meeting that will help us as we continue to go forward with this study. Thank you for your time. It's much appreciated.

Stay safe, everyone.

This meeting is adjourned.