HOUSE OF COMMONS
CHAMBRE DES COMMUNES
CANADA

Standing Committee on Natural Resources

RNNR • NUMBER 052 • 1st SESSION • 42nd PARLIAMENT

EVIDENCE

Tuesday, April 11, 2017

Chair

Mr. James Maloney

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● (1610)

[*English*]

The Chair (Mr. James Maloney (Etobicoke—Lakeshore, Lib.)): We're going to get under way. Because we're starting a bit late, we have two witnesses scheduled for each hour. Three of them are here right now, and one of them will be joining us momentarily by video conference. I propose that we hear from all four witnesses at the outset and then use whatever time we have after that for questions for all the witnesses.

Mr. Barlow has asked for 30 seconds before we get under way, which I've agreed to.

Mr. John Barlow (Foothills, CPC): Thank you very much, Mr. Chair. I want to take this opportunity to table my motion. I'll read the motion, and then you can consider it, very deeply, as I'm sure you will, and we'll vote on it on another day, as we're in a rush.

My motion reads as follows:

> That the Committee invite the Minister of Natural Resources to appear before it to explain the government's rationale for changes made to the Canadian Exploration Expense for exploration drilling.

I'm officially tabling my motion.

Thank you, Mr. Chair.

The Chair: Thank you.

Gentlemen, thank you very much for joining us today. I apologize that we're getting off to a late start. We had some votes in the House. Just so you're forewarned, it's entirely possible the bells might start ringing during this meeting, and we may have to abruptly adjourn and go back for some further votes. Let's cross our fingers and hope that doesn't happen.

Some of you are familiar with the format. We'll give each of you up to 10 minutes to make your presentation, and then depending on how much time we have after that, we will open the floor to questions from members around the table.

I encourage you to use your headsets, because you'll be asked questions in both French and English, and of course, you're free to deliver your remarks or answer any questions in either official language as well.

Mr. Ferguson, why don't we start with you, since you know the procedure.

Mr. Alex Ferguson (Vice-President, Policy and Performance, Canadian Association of Petroleum Producers): Thank you very much.

Good afternoon, everyone, and thank you for the opportunity to appear in front of you today.

I have reviewed all the previous presentations and minutes from all the other sessions, believe it or not, and I can see you've had a fairly rich diversity of perspectives on this topic. I'm hoping to add to that rather than to counter or go over any of the previous points you have had.

As you know, I'm a representative of Canada's upstream oil and gas sector. I would like to remind you of the very complex and integrated nature of oil and natural gas in the Canadian economy. Certainly from a value chain perspective, we look at refineries, upgraders, petrochemical plants, LNG, methanol, fertilizer plants, etc., so there's a pretty integrated value chain perspective that the sector has in the economy.

Certainly from a supply chain perspective, there are service sector companies, equipment suppliers, research technology suppliers, and many other connections in that supply chain and across Canada.

Of course, I would like to remind everyone of the transportation perspective—pipelines, trucking, rail, and marine.

Most important from a people perspective, there are indigenous peoples, workforce, governments, public, ENGOs, etc.

All of these perspectives in their own way are investing in clean technology in Canada's resource sectors.

I'll start with a bit of context underlying all of my notes. I want to reflect for a moment on a few very significant dynamics in our operating environment that we're seeing today, certainly starting with the recent U.S. election and the shift in administrative direction we're starting to see. Second is increasing Canadianization, I call it, of our oil sands developers. We've seen that recently in the news. Third is a continued oil and natural gas sector focus on and investments in innovation and technology development and deployment, which I'll talk about in more detail. Fourth is continued influence of global geopolitical events on Canada's economic growth objectives, which are significant.

These context pieces present both challenges and opportunities for Canada's natural resource sectors.

Your oil and natural gas sector remains committed to investing in technologies and innovations that continue to make Canada competitive on both an environmental performance aspect—carbon, air, land, and water—and investment in trade competitiveness, which really is key to our ability to continue to operate successfully around the globe. Of course, I don't want to miss social performance.

The world needs more Canada. Global oil demand is forecast to continue to expand for some time even in a highly global carbon-constrained world. I would refer you to the IEA low-carbon forecast in the range of 75 billion barrels a day in 2035. Canada's opportunity remains strong to insert, at least on the oil side, three, four or five billion barrels a day into that market. It's a significant opportunity and continues to be something Canada should and will strive for.

Clean technology investments in the oil and natural gas sector will mean that Canada can and should competitively supply the world with our products.

I don't have a copy of this, but I will make it available later, properly translated. It's a bit of context from the clean tech investment research and development for our sector. Here are a couple of highlights. The total 2016 overall energy sector R and D spend is $2 billion. That's the overall energy sector, including renewables, electric, energy efficiency, nuclear, and fossil fuels. Fossil fuels in 2016 out of that $2 billion represented $1.45 billion. As a perspective, it's a pretty key role in the overall clean tech investment sector in the energy sector across Canada. Just to put a small point on it, in 2016 our Canada's Oil Sands Innovation Alliance expenditure was $219 million out of that $1.45 billion.

Again, I want to emphasize these are not public funds. These are company investments in these areas.

● (1615)

Before we move on, I want to highlight for you an example of a very specific clean tech innovation. For example, a most significant global differentiator for in situ oil sands operational performance, cost and carbon, on a per barrel basis is with respect to the steam generation required for in situ development. At this year's annual COSIA conference, where a few hundred innovations and technologies were highlighted, one of the examples that came out was called “direct contact steam generation”. I want to describe this for you, because it really amplifies the kind of direction the industry is going in.

For this particular technology, I'd like you to picture a rocket engine buried kilometres under the surface. Natural gas, air, and water are fed in very measured and very exact quantities to this buried rocket engine. Steam that's generated underground melts the bitumen from sand for recovery to the surface. The important thing is that GHGs, greenhouse gases, never leave the reservoir. Basically we're creating instant carbon capture and storage. Certainly the benefits from that include less surface footprint for water recycling and management on the surface, which is a key part as well. Potential or reduced emissions on in situ projects as compared with normal in situ development are in the range of 75% to 90%.

This would be a game-changer opportunity for oil sands development on the in situ side. Equally important, in terms of the potential to reduce costs versus conventional in situ operations, we're projecting anywhere from 25% to 35%. It's a very significant competitive opportunity as well as a carbon opportunity.

We continue to be a most significant investor in clean technology across our economy. That will not stop. We're broadly supportive of elements in this year's budget that focus on innovation investments, including the commitment to revise Canada's intellectual property framework. We see that as a key part moving forward.

Thank you very much.

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

Mr. Mueller, why don't we move over to you.

Mr. Thomas Mueller (President and Chief Executive Officer, Canada Green Building Council): Mr. Chair, thank you for the invitation to appear before the committee. I wanted to bring a perspective from the building sector, particularly the green building sector, in regard to the risk or opportunities for clean tech.

The green building sector here in Canada and globally is growing at a rapid pace year after year. At the end of 2014, the green building sector represented about $23 billion in GDP and about 300,000 full-time jobs working on constructing, designing, and operating green buildings across the country. Of course, one aspect of green building is low-carbon or high energy efficiency targets. I wanted to give my presentation today around one specific example. There really is an opportunity for innovation in clean tech and also an important role for renewable energy technology, which is really the movement towards low or zero carbon buildings in Canada.

The opportunities are there. According to a study that we did last year, research and development investment in the building sector is the lowest of any industrial sector in Canada. The building industry is still doing things in a way that is not very innovative. It requires research and development as one aspect and to de-risk new technologies and products moving forward. One of those areas is how we get buildings to a low-carbon or zero carbon position. While Canada is a leader in green building, Canada is not a leader on low-carbon or zero carbon buildings. Other countries such as Australia, the United States, European countries, are considerably well ahead of us and we're missing an opportunity for innovation in that area.

Carbon neutral buildings by 2050 is part of the pan-Canadian framework on clean growth and climate change. There are three aspects to it. First, energy efficiency is the most important mandate to reduce energy use and the use of carbon-intensive fuels in buildings. Second, we are the beneficiaries in Canada of a very clean electricity grid. About 80% of our electricity is clean. This is a real strategic advantage for Canada and the plans are to make the grid even cleaner. Finally, the real challenge is, under these circumstances, how we replace fossil fuels that are used for heating buildings and also how we reduce carbon-intensive electricity in the country.

In terms of our program, we should develop the best policy instruments to address climate change and encourage the adoption of clean tech, but we need to begin with the right frame and move beyond a tight focus on energy and look more at carbon. The policy language really matters because, even if we talk about carbon targets, we still talk about energy. What we should really start talking about is carbon. How do we design, construct, and operate buildings with carbon in mind? Actually, it changes the approach quite considerably. I want to focus the rest of my remarks on that, because when we focus on designing buildings based on their carbon footprint, we expand our focus from just energy efficiency to one that actually includes renewable energy. This is a real opportunity for Canada to invest and find a way to use renewable energy technologies, particularly for the building sector, in practical applications to reduce carbon emissions. It also encourages both on-site and off-site generation to get to low-carbon or zero carbon buildings and homes.

I have a couple of examples. When we think of carbon instead of energy, we actually drive innovation. We drive innovation in building design. We drive innovation in energy-efficient products, but we also look at what we call integrated renewables that are not just on a remote site, but are actually integrated into the building, which again, is an area of innovation. We look at power storage, which is very important not just for buildings, but for cars and other technologies, to make sure that we can have the energy available when we need it. There is the smart grid technology. There's a whole area of clean tech opportunities that really can help in the building sector and in other sectors as well.

● (1620)

There is an improved resiliency. When you have on-site renewables on a building site or within a community, they improve the ability to handle power fluctuations and outages.

Finally, it really is a very targeted approach, because you invest in energy efficiency and renewable energy in the regions where they are most needed.

It does make a lot of sense. Often you hear the concept of net zero energy. In Canada, we actually don't need to generate more energy. We have enough energy. What we need to do is to reduce the carbon footprint from the energy that we're using in transportation, in buildings, and so on. The net zero concept basically says that you need to generate the same amount of energy that you take from the grid and from other sources. But we have plenty of energy, so that should not be a main driving force towards a low-carbon economy.

In terms of our recommendations, I would like to focus on two, actually.

We need to consider the type and the location of the energy generation when designing renewable energy programs. The need for low-carbon renewable energy varies greatly across the country as a result of climate, the choice of electricity or fossil fuels for heating, and the carbon intensity of the grid.

Governments and regulators should look at buildings not in isolation but as part of a larger energy system. What does this mean?

Buildings can generate renewable energy on-site or it can be procured from off-site. Governments and regulators must encourage renewable energy generation on all scales, and not just one solution. It can be the roof of a building, or it can be a wind farm miles away.

The second part is that to reduce costs and increase uptake, renewable energy generation products should be designed to be integrated into buildings, such as building-integrated photovoltaics. This is an area that's been around for a number of years but really lacks the support to make.... The best way to put it is that you don't have unattractive solar panels on the roof; they become, actually, quite a beautiful design element. Construction of these buildings is actually cheaper if you integrate these than if you add them on to a building.

In terms of the questions you posed for this committee meeting, there are a number of institutions that could really help leverage this clean renewable energy technology. One would be the National Research Council. There are also Natural Resources Canada's office of energy efficiency and Canmet; SDTC; Infrastructure Canada; and of course, in terms of skills and capacity development, HRDC.

In terms of policy instruments, I think the best policy instrument you have at your disposal right now is the building code. The building code is a way to really move up the performance of buildings, maybe not to low or zero carbon, because everybody needs to have the ability to meet the code.

There's also room for voluntary action. There's room for research and development into these technologies, particularly how they apply to buildings and communities. Again, with voluntary action can come targeted investment, preferably from the private sector investing in buildings, which we already see happening, but also, on a larger scale, investment in buildings that have very low- or zero-carbon performance.

Thank you very much.

● (1625)

The Chair: Thank you, Mr. Mueller.

Mr. Spady, before I turn the floor over to you, we're joined now by Mr. Kresic, from Enbridge.

Mr. Kresic, just so you're aware, we changed not the format but the timing a little bit. Because we were running late, we started with all four witnesses. Mr. Ferguson started us off. I believe you caught part of Mr. Mueller's presentation. Mr. Spady is going to go next, and then we'll turn it over to you. You'll have up to 10 minutes for your presentation before we open it up to questions.

Mr. Walter Kresic (Vice-President, Pipeline Integrity, Enbridge Inc.): Thank you, Mr. Chair.

The Chair: Go ahead, please, Mr. Spady.

Mr. Cameron Spady (Director, Business Development, Cylo Technologies Inc.): Mr. Chair, and members of the committee, we are Cylo Technologies, just a small software company. We want to thank you for inviting us here this afternoon. Mr. Gerling, beside me, is our company's president and chief technology officer. I'm Cam Spady. My role is principal investor in a small company.

Cylo fits the scope of this study under the Natural Resources Canada definition of clean technology in the category of preventing any type of environmental damage, and more specifically as preventing environmental damage due to pipeline leaks and failure. We offer software and support services to oil and gas companies as well as petrochemical companies in Canada and the United States, and assist them in handling the volumes of data that they gather under the provisions and regulations of the applicable governing body, such as the National Energy Board and the various provincial regulators, and in turn enable their using that data to pinpoint pipeline defects and correctly target them for repair. What sets Cylo Technologies apart from systems currently in use with this same objective is an innovative solution, whereby we process all available data into a 3-D spatial model.

To explain why this is important to pipeline safety, I just want to talk a bit about the current industry methodology.

In-line inspection data, or ILI data, is the information gathered by pipeline inspection devices known as smart pigs. The information collected by these devices is high-value data capable of detecting very tiny flaws, but in doing so they generate burdensome reports. Pipeline operators then use these reports to evaluate the overall condition of the pipe and categorize, target, and locate specific flaws for repair. The data is processed in systems using a current industry standard known as the geographic information system, or GIS. Interestingly, the world's first true operational GIS was developed here in Ottawa by Dr. Roger Tomlinson, for the federal Department of Forestry and Rural Development, and was called the Canada geographic information system, or CGIS. The year of its development was 1960.

Geographic information systems evolved from this made-in-Canada innovation and are the bedrock upon which pipeline integrity programs currently run, but GIS is a system with a host of limitations. The two main limitations are the amount of data that can be processed using this technology and the spatial accuracy of trying to locate pipeline defects in a system that uses a two-dimensional implementation. To ease the burden, ILI data is filtered to be processed, and meaningful defects are missed entirely. The consequence of this is shown in just a few statistics compiled by the Canadian Energy Pipeline Association, or CEPA, for their most recent 2016 performance report for the period 2011 to 2015.

Unpreventable incidents, like external interference such as unauthorized excavation and geotechnical and natural disaster, account for only 18% of the total. The remaining preventable causes account for 82% of incidents. These include pipe cracking, metal loss, and materials, manufacturing or construction, and are all causes detected and reported by smart pigs, but are only of value if evaluated properly.

I propose that the technology Cylo has developed does just that. Reports now available publicly seem to indicate that the spill of 220,000 litres of oil into the North Saskatchewan River in July 2016 was a preventable incident based on the post-event analysis of data that the pipeline operator had in its possession before this significant leak occurred.

To quickly address some of the specific questions put forward in the clean technology focus document, I'll answer the question of whether the technology will perform as expected. The answer is yes. Cylo Technologies software has been available and in use commercially since 2011. In this time, none of our clients has had a reportable event.

Which institutions and instruments can the federal government leverage to de-risk clean technology adoption? We believe the National Energy Board, the NEB Act, and the recently enacted Pipeline Safety Act all currently have very effective provisions to ensure pipeline safety, but I believe the NEB is hobbled by practical limitations of current investigative tools, and is thus reactive rather than proactive when it comes to pipeline situations that lead to environmental damage.

Last, I invented this question a bit. Could new regulations improve pipeline safety? Our position as a solution provider enables us to be intimately familiar with the industry while not being biased by the public responsibility that falls on the pipeline operators. From that perspective, we believe that any further regulations that aren't designed to foster a deeper understanding of the data would be counterproductive. Mandating more data collection and more frequent pipeline inspections would further compound the current industry challenges, where the answer to stopping the flow of pipeline incidents is in more thorough use of existing data collected and reported under current regulations.

● (1630)

Furthermore, we suggest the possibility of the NEB being able to use and/or recommend specific technologies. As Cylo has demonstrated, some of these technologies are developed and owned privately and are thus currently prevented from being used as investigative tools.

Mr. Chair, in conclusion, I would like to say that Cylo Technologies understands and promotes the evidence that pipelines are the safest and most efficient way to transport all fluid commodities in Canada, and they do so with the lowest carbon footprint of all the various methods. We would also like to say that there is still room for improvement in the industry through the use of clean technologies, such as ours, which are the focus of this study.

Thank you so much for the opportunity to present to the committee.

The Chair: Thank you very much.

Mr. Kresic, it's over to you.

Mr. Walter Kresic: Thank you, Mr. Chair.

I am getting some feedback. I'm not sure if the technician can [*Technical difficulty—Editor*]. I might be the only one [*Technical difficulty—Editor*].

The Chair: Could you hold on for one second, because you're not coming through clearly at this end, either.

I am told we have a solution. If you go ahead, we should be able to hear you.

Mr. Walter Kresic: Thank you, Mr. Chair.

Good afternoon. My name is Walter Kresic. I'm the vice-president of pipeline integrity for Enbridge Pipelines. My focus is on the oil pipeline side of the business, which comprises approximately 27,000 kilometres of large-diameter pipeline and facilities spread across North America.

The act of maintaining pipeline systems as we do requires a great deal of technology and technology advancement. As well, I oversee the research and development and the innovation framework for Enbridge Pipelines. The role there is for us to drive the culture of innovation deep within all aspects of our organization. I'm going to use Enbridge today as an example of how a large organization stands ready to drive innovation within all aspects of our operations but also on the clean technology side.

I think some slides were distributed to the panel today. I'm on the second slide that shows the map of North America. The idea there is to show the massive footprint of the Enbridge organization and the scale and magnitude of this energy infrastructure business.

It's hard to put into perspective from looking at a one-page map, but I'll provide some simple statistics. This is the longest oil pipeline system in the world. It's a dominant shipper to the U.S. of production in Canada. It has the largest gas distribution business in Canada, bringing heating gas to people's homes. It's the second largest wind and solar producer in Canada, with a strong, growing presence in the United States and Europe. It's also a large player in gas gathering in the Gulf of Mexico at midstream. With the recent integration of Spectra Energy Corporation, now we also have one of the largest gas transmission and storage businesses in North America.

Of course, you can see that a lot of the infrastructure we have touches ocean to ocean to ocean from coast to coast to coast. We have frontier pipelines and many challenges that we've had to face in building this very complex infrastructure.

This type of scale and organization takes on a very influential role in Canadian society, and we deeply recognize the geopolitical and macroeconomic challenges that face us. To face those things, we have to obviously act sustainably and responsibly. It's vital to us as an organization that we appreciate all these complexities. We take a long-term view in how we bring utility to a society. Because of these challenges, the systems for innovation become part of our business structure. We look at objectives and plans in organizational structure with a view to innovation. That includes how we operate in areas of clean technology, which I'll get into detail about now.

Please go to the third slide. The slides aren't that critical, but nonetheless, they are there for some support.

There are two opportunities I would like to suggest within this initiative. Using Enbridge as an organizational example, this company Enbridge, as I mentioned earlier, leads in clean technology adoption, in the generation of wind power, solar power, geothermal, fuel cells, and so on. These are our new forms of energy generation, and we've taken a strong leadership role in Canada for advancing them, so we're obviously familiar with the adoption of clean technology. However, until renewables become built up, in taking the long view we also understand that it's important to recognize we're going to rely on the existing infrastructure while we transition.

In terms of the first opportunity I would like to present, and it was mentioned earlier as well, we believe the decarbonization of existing infrastructure holds a great deal of opportunity. First, we begin with keeping our infrastructure safe and keeping oil and gas within the pipe. This, of course, is a mission critical activity for us and one that helps drive our innovative culture.

There are also a lot of other opportunities. Vapour emissions from the massive storage tanks we have spread out across Canada and the United States.... The gas pipelines have many points where methane gas emissions occur. This is well known and well studied, and now a further advancing part of the infrastructure business to trap methane gas emissions. How we convert electricity from coal-fired to gas-fired....

● (1635)

We're now converting the cars in our fleets and using them as examples for other industries. Within our huge infrastructure, we have many kinds of equipment that require power. We're looking at developing more efficient systems for using that power, and systems that reduce the greenhouse gas emission concerns. We take a very hands-on approach to working with our homeowners who buy the gas we distribute to them, and we strive to find ways to reduce their use of that fuel source.

All of these things are immediately measurable. The ability to measure these things and recognize them as successful can provide a means of growing interest across other industries and within our society. Moreover, this allows us to continue to grow the capability we can create within our country for that type of thought process. We think simple measurement and documenting our success in the decarbonization of existing infrastructure can create access to a lot of low-hanging fruit and increase the value of our efforts in this regard.

The second opportunity I'd like to highlight is related to the power of Canadian thought leadership and looking at that as a commodity. On the pipeline side at least, and I would say in other industries as well, Canadian engineers and scientists are highly regarded. Much as the Swiss are known for making precision watches and the Germans are known for making sports cars, Canadian engineers and scientists are regarded as top notch around the globe. Many upstart businesses have begun in Canada delivering thought results to companies around the globe. Our company is approached by many countries from the Far East, Europe, South America, and Africa. They come to visit us and talk about how we structure our approach to pipeline design, construction, operations, and regulations.

All these facets are highly regarded around the world. It's through Canadian ingenuity and our thought leaders that we arrive at this. There are many successful businesses that export thought leadership. We look at clean technology as sometimes being a widget. A very important part of technology is the peripheral components, which are also critical to making things successful. I'm talking about the analytics, the organizational structuring, and the strategic planning. Many of the human-based thought processes, which many companies have sprung from on the pipeline side, also serve as a model for clean technology development in many industries.

It all has to do with the power of people. Whether it's the training that Canadians have received, the experience they have, or the general Canadian attitude on the pipeline side, Canadians as technologists and scientists truly are leaders in this realm. We think this is a model that can serve in many industries in Canada.

Those are the two opportunities. I want to touch quickly on policy and instruments.

We take a long view on energy infrastructure development and management. For us, this means that the huge investments in our industries require us to access capital, and that is often the challenge.

There are three key points that I want to highlight regarding policy and instruments. First of all, our regulator, the National Energy Board, has a powerful and a very authoritative mandate to ensure that we focus on mission critical activities and remain responsible. They have two strengths that are generally regarded as interesting to outsiders, to observers, and to us. One is that they provide a one-window approach to managing our infrastructure. The second, and it's nuanced, is that they are built upon a goal-setting approach rather than a prescriptive approach.

We work our business in many jurisdictions, and we find that the goal-setting approach is, like the one-window approach, a far more efficient methodology than we see in some of the other jurisdictions we work in. It has many benefits that are intrinsic to innovation. For example, in a technical society, engineers and scientists tend to prefer working towards goals, as opposed to prescriptions. We can always achieve compliance. As a big company, we will always strive to achieve compliance. What we find, though, is that compliance-based regulations often provide too low a boundary.

● (1640)

We feel we can do much better, and by setting the goal, engineers and scientists then can use the best techniques possible, seek the best methods possible, and also drive in efficiency and effectiveness far better than compliance-based or prescriptive-based regulations. This is the strength that we see in our national regulator, the National Energy Board. It is also the strength that countries around the world have been studying.

The next item I want to talk about is societal common ground. As responsible companies and engineers, we feel that we're providing a positive contribution to society, but we all know that energy infrastructure is not viewed in the same light as it is by those of us who are in the inner circle. We appreciate that there's low trust in corporations and energy infrastructure. What the public doesn't understand is that it is organizations like Enbridge that have the best engineers and scientists in the world, and there are many organizations like us. We also work as hard as we can in the Canadian realm to be as responsible a corporation as we possibly can. We compete against the need for our being able to do a better job connecting with the societal calling. For us, we're moving down a journey. In terms of instruments, we could use assistance within that realm, whether it's from the federal government or some other agency, to help us with that translation.

One option we would view as possible is for the government to set performance targets. It's similar to goal setting that's done through our regulator, but through this initiative, setting performance targets would allow engineers and technologists to view them as their goal and would also allow a measurable system for us to track our progress. There are similar circumstances around the world. The United Kingdom health and safety executive has a system relating in that way. Also, if you look at other industries, which we tend to compare to more these days, the aviation industry has also gone through threshold moments and has also set performance targets. It has helped them progress into a very advanced industry.

Finally, the last point on industry coordination is that there are many great agencies within the energy infrastructure industry, the companies, the regulators, and researchers. Individually, they all do very well, and from time to time they connect, but once again, in comparison to other industries, such as the aviation industry, we don't coordinate as a team. That might be where the federal government could provide some assistance. On the aviation side, the federal government and governments around the world do work together with companies, industry agencies, and aviation companies, and they deal with things like technology transfer and adopting new technologies for bettering their industry.

As well on the coordination side, I just want to finish off by saying the reason a lot of the technologies don't succeed is that many of the upstart ideas don't appreciate that technology transfer is a long supply chain of activities. It's not just about the item or the thought; it's about all of the steps prior to it, the analytics, the organizational behaviour, and the many things that require merchandising in part of the technology transfer supply chain. It's something I wanted to raise that might be somewhat useful to furthering the cause.

I'm not sure if I've gone over my 10 minutes. I want to thank you for this opportunity.

● (1645)

The Chair: We gave you a little extra time because you cut out at the beginning, so it all evens out.

Mr. Walter Kresic: Thank you.

The Chair: Thank you, Mr. Kresic.

Mr. Lemieux, over to you.

[*Translation*]

Mr. Denis Lemieux (Chicoutimi—Le Fjord, Lib.): Thank you, Mr. Chair.

I want to thank today's four witnesses for their excellent presentations.

My first questions are for the representative of the Canadian Association of Petroleum Producers. I'm very interested in the emerging technology related to biofuels. I know that a number of Canadian companies are developing processes to produce renewable natural gas from forest biomass.

Mr. Ferguson, is your association interested in these new technologies that produce natural gas from forest biomass?

[*English*]

Mr. Alex Ferguson: Thank you for the question.

Yes, we are, but of course some of them are interactions or specific companies in our membership that are involved in some of those investments. From a broad association perspective, we're pretty preoccupied with many other things, so we haven't gone directly into the space of looking at policy options or promoting anything related to government or investments in that area directly other than through our individual members.

[*Translation*]

Mr. Denis Lemieux: In Canada or abroad, have you come across companies that have successfully mastered technologies to convert forest waste into renewable natural gas?

[*English*]

Mr. Alex Ferguson: I can say personally that I'm originally a forester by trade, so I know that sector quite well. I have had experience in a previous time in that part of the sector, and on biomass in particular.

I wouldn't say that we've done a lot of interactions in that space. Most of our members focus on other sides of the renewables in terms of what our interaction is with the shift towards more renewables for electricity generation and how we fit natural gas into that story. We're pretty preoccupied with that.

Of course, many of our operators, because of the remoteness of many of our sites, rely on solar-type installations for many of the facilities. I think that's generally our space in there.

● (1650)

[*Translation*]

Mr. Denis Lemieux: As a result of our current forestry situation, and knowing that Canada has the third-largest forest area in the world and that our forests store significant quantities of carbon dioxide of fossil origin, our government announced a $21.9-billion investment plan in the recent budget to support green infrastructure. The goal is to encourage the use of renewable sources of energy to help with the commercial development of technologies to convert forest biomass into renewable natural gas, for example.

Mr. Ferguson, do you believe this association between the forestry industry and the gas industry would be desirable to re-energize our forestry industry by establishing a market for renewable natural gas created using forest waste?

[*English*]

Mr. Alex Ferguson: Absolutely, and we already have a lot of alliances and a lot of efforts that we share with the forest sector broadly speaking, in many areas of developing and using the forest land base. That's just the normal extension of a lot of the work that's already in place and of those relationships that are in place between the oil and gas sector and the forest sector.

We're putting together right now the final stages of our proposal to the federal system around our innovation cluster, and I think you'll see that there are a lot of links and alliances with other sectors buried in our structure. We are live to that and working towards that.

[*Translation*]

Mr. Denis Lemieux: I'm excited about the possibility that one day we'll be able to export, for example, liquefied renewable natural gas. This would greatly improve the social acceptability of oil and gas projects in Canada.

In closing, I quickly want to hear how our four witnesses think the new carbon pricing will affect the development and implementation of new made-in-Canada technologies?

We could start with Mr. Ferguson.

[*English*]

Mr. Alex Ferguson: Certainly for our sector, first of all, for most of where we operate, we've been operating under some form of carbon pricing mechanism already, but also, there's a lot of drive that our sector has had. You can look at Canada's Oil Sands Innovation Alliance. It was not driven by a carbon pricing mechanism. Those millions and millions of dollars of investment in projects were driven by the need for looking for energy efficiency gains as part of that.

Certainly in Alberta, as we move forward with a new kind of modified structure around carbon pricing, there's no question, I think, that it will be our intent. Our drive for that is to look at how that increases the focus on technology and innovation investments. It will be a driver.

Mr. Thomas Mueller: From our perspective, from the building sector, once the carbon price is at $50, it might have an impact, not necessarily on individual homeowners, but more on owners of a portfolio of buildings.

There's one example I can give you from British Columbia, which has had a carbon tax for a number of years that is now at $30. As an individual homeowner, when you heat with gas, it's a fairly small amount that you have to pay in carbon tax, but the University of British Columbia, for example, was paying about $2 million a year, so they were really taking strides to reduce that carbon tax, particularly in terms of transportation. Also, they invested in buildings to reduce the carbon tax it had to pay, by investing in more efficient and lower-carbon buildings.

I think it's really a matter of price. I think it will have an impact on portfolio owners, but not on individual building owners, because the carbon price will not be high enough. It would have to be at maybe $100 plus, where people stop looking at the energy cost and shift the cost strictly on the price of carbon.

[*Translation*]

Mr. Denis Lemieux: Mr. Spady, do you want to respond?

[*English*]

Mr. Cameron Spady: I'm not sure we have much to offer on the subject of the price of carbon. Basically, we stand by our assertion that the pipelines are the best way. Our business is legacy pipelines. Old pipelines are our bread and butter. It's silo technology. Pipelines being the most efficient way to move product is where we stand.

● (1655)

[*Translation*]

Mr. Denis Lemieux: Mr. Kresic?

[*English*]

Mr. Walter Kresic: As a very large company that has an impact on communities, we recognize the engagement required with communities. We of course support the climate goals and we support the new carbon pricing policies that were adopted. Our position is that carbon pricing mechanisms can drive economically efficient environmental solutions by providing incentives for businesses to invest in conservation and technology that reduces greenhouse gas emissions. We see this as a way for organizations to drive efficiency.

The Chair: Thank you.

Ms. Stubbs.

Mrs. Shannon Stubbs (Lakeland, CPC): Thanks, Mr. Chair.

I thank all of our witnesses for being here. My only regret is that we won't have more time to have exchanges with you in questions and comments. I appreciate all of your presentations.

The thing I enjoyed most about the discussion today is the very clear presentations that outline the ways in which Canadian conventional oil and gas, oil sands, and pipeline developers are also major investors in clean tech and in the development of alternative and renewable energies. It is often not expressed enough by Canadians, and certainly by politicians, that Canadian companies are world leaders and that Canadian oil, gas, and pipeline developers are major investors in innovation and technology for alternative and renewable energies. These things are not mutually exclusive. They are, in fact, a continuum of the same culture of innovation, of ingenuity, of private sector investment that is driven by a goal to do the right thing, to increase energy efficiency and reduce costs. That has happened mostly quite apart from punitive government tools or in some cases in the absence of government incentives. I appreciate your pointing out the $2-billion investment in the natural resources sector overall, the vast majority of which is coming from oil sands and oil and gas companies.

In terms of Enbridge, thank you for pointing out that it is the second largest investor in wind and solar technologies in Canada. I note Enbridge has invested in 17 wind farms, four solar energy operations, five waste heat recovery facilities, a geothermal project, and a hydroelectric facility. I think that's something all Canadians can be proud of and should know about, and that elected representatives in Canada should say often and unapologetically right across the country and on the world stage.

To that end, Alex and Walter, I'd invite you to expand on specific examples you'd like to highlight in terms of the advancements in clean tech and innovation and technology development in Canada's oil and gas sector.

Mr. Walter Kresic: Sure. There are a number of examples.

Of course we run a large R and D portfolio, and we work very closely with universities, small operators, and large operators from within Canada and around the world.

We have a recent example of one where we've teamed up with a company that provides some equipment for our storage tankage. Our storage tankage can result in vapours coming off and quite a bit of release from oil vapours. We've developed a technology with this company that helps us measure the contents of the tank and the position of some of the equipment. This particular equipment is going to be used across many other organizations in Canada. We think it will flourish broadly.

For those of you not too familiar with the kinds of infrastructure I'm talking about, some of these tanks are about 300 feet in diameter. They're massive vessels that hold hundreds of thousands of barrels of oil. We have hundreds of these sorts of tanks across Canada and the United States. If you measure the total volume of emissions, it's quite impressive. If we can bring the volume down by even a marginal amount, then the value from that becomes huge.

We have many instances like that where we've worked with companies. Our pump systems.... In Saskatchewan when we had a very busy expansion program, we were known as being the number one and the number two users of the most power in Saskatchewan over a period of time. Number one was from the usage of our pumps to power our pipeline system across Saskatchewan. Number two was for the development of pipe steel through EVRAZ. They have a huge plant in Regina. We purchase most of our pipeline steel from EVRAZ.

We look at those initiatives very closely. We look at things like more efficient pump systems and the motors on those pumps. The reduction of electricity required on systems like that have a large effect.

We work with companies like EVRAZ to recycle steel, to find ways to reduce the amount of raw materials that are required.

We could go on and on. We look at the full supply chain of our actions. hat's the effort that's ongoing for us.

● (1700)

Mrs. Shannon Stubbs: Alex, would you like to expand?

Mr. Alex Ferguson: Sure. I'll just add a few points.

I'm sure everyone is aware of the COSIA story, but there are a few points that I want to emphasize. I want to remind everyone yet again about the effort we've put through the XPRIZE at COSIA, looking for commercial installations for getting some value out of a carbon stream. Those things are live. It's the largest XPRIZE ever set up globally since the beginning of the XPRIZE.

In 2016, just to give you a highlight, 119 projects were completed through the COSIA umbrella on innovation outputs to the tune of $219 million, which I mentioned before. Currently, 76 additional projects were initiated in 2016.

I just want to give you the impression that there's a massive amount of energy that goes into setting up the innovation. I certainly don't want to miss the opportunity, though, to talk about our non-oil sands side of the sector. Again, I mentioned that this is just the upstream, what we call the Petroleum Technology Alliance of Canada, all the members participate in that. Those are the investments that go into non-oil sands operations, whether it's methane reduction technologies or any kind of operational requirements on that side of the business.

I want to point out that the number one oil and gas company investing in research and development in 2015, which is the only number I have, ranked in the top 100, fifth in Canada. Canadian Natural Resources Limited in 2015 spent $527 million on research and development in all its operations. There's a company that's balanced between oil sands and non-oil sands in 2015.

That's a picture of some of the things that are going on there.

I want to point out as well the linkages I talked about. Sitting here and meeting Thomas for the first time, it reminded me that years ago when I worked in British Columbia as the provincial regulator for oil and gas, I was with the first crown corporation in British Columbia to build two LEED platinum buildings under the auspices of his organization. So there are connections all the way through the system.

Mrs. Shannon Stubbs: How much time do I have, Chair?

The Chair: About 10 seconds.

Mrs. Shannon Stubbs: I'll just thank all of you for being here today.

The Chair: Mr. Cannings.

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

Thank you for being here today.

I'm going to start with Mr. Mueller.

You have a page in your presentation about building as a solution to climate change, what we could do that would bring Canada's GHG emissions down by 44%, meeting our 2030 targets.

I wonder if you could comment on the practicality of doing this by 2030. Do you think that's achievable—I assume you do—or is this a longer-term type of project?

● (1705)

Mr. Thomas Mueller: That's a very good question.

When we established those targets, we were modelling what it would take to reduce carbon emissions from the building sector by 2030. That was our target. I'm not talking about homes, but larger buildings over 25,000 square feet. We looked at approaches and technologies, particularly in the existing building sector, that would take us to that goal. With the net-zero carbon buildings I talked about earlier, that's a kind of an additional reduction that's possible.

What we found is that there are really four strategies. One is to recommission buildings, which is operational. The second one is deeper retrofits. When a building is being retrofitted, you have a deeper retrofit of a building. Then, it's the renewable energy used. Then there's fuel switching, when you go from a fossil fuel to put, let's say, a whole building on hydroelectricity, which is very clean in Canada, in British Columbia, Quebec, and so on.

We modelled that, and it would take 100,000 buildings that are over 25,000 square feet—that's the size of the buildings—and you would have to do recommission work to 80% in deep retrofit to build 60% of those buildings over the next 14 to 15 years. It's possible, but it requires investment. This is already happening, but it requires investment. Without the retrofit of existing buildings, we are not going to achieve our carbon reductions.

If you look at the carbon curves, where we're currently going and where we need to go in a very short period of time, there is quite a significant gap. Without saying that this is invoking a sense of high urgency, I think it is a case where we need to take very targeted action to reduce carbon emissions, not just from buildings, but from the transportation sector, from the production of energy, from the industrial sector.

However, without the existing buildings and paying attention to that, there's not an opportunity to reach that target. It's a sizeable amount of carbon that's emitted from current buildings. That doesn't even include our 12 million or 13 million homes that we have in Canada on top of that.

Mr. Richard Cannings: So this is a real—

Mr. Thomas Mueller: This is a real scenario that we continue to refine now, because there are also the job opportunities as well. These are great jobs, great demand for services, and so on. There's a business case for it too. You actually do save money. There is a good return on investment.

Mr. Richard Cannings: In terms of new construction, you have some other figures there.

I was at the Council of Forest Industries meeting in Vancouver last week. One of the big themes was building large buildings out of wood, all-wood buildings. The architect Michael Green gave the keynote address.

I want to get your take on how a move toward building large buildings, buildings over 25,000 square feet, out of wood, where you are literally incorporating the carbon into the building, would help to enhance these scenarios and help to perhaps speed up some of the targets.

Mr. Thomas Mueller: It certainly would. I would say in terms of reducing carbons, we shouldn't just rely on one strategy or two strategies. We need to use the whole arsenal of approaches and opportunities that we have. What we focused on was mainly operational energy, or carbon. When you look at buildings, over 35% of carbon emissions in Canada come from building operations such as lighting, cooling, and heating. That's 35% even without clean electricity. If you take the materials that we use to build our buildings, it's another 10% to 15%, depending on the estimate, so overall, it's about 50%.

Building taller buildings with wood is certainly something that's an opportunity to reduce the embodied carbon in a building. It makes a lot of sense. Even the cement industry is starting now to look at the lower carbon solutions available. Other barriers to wood buildings are the perception of people being in 18-storey or 20-storey wood buildings, concerns about fire ratings and those types of things. There is an opportunity for buildings maybe six to 10 storeys. You don't have to go 18 or 20 storeys, but it would require investment in the technology of these massive timber buildings. There is a significant amount of engineering involved and significant skills and precision to get these buildings built.

A final thought is that material selection is very important, but the operational carbon to operate the building over its lifetime would many times outstrip any materials that you use. So, given the time frame and the urgency you have, that would be my first focus.

● (1710)

Mr. Richard Cannings: Okay, but it's one area in which I understand Canada is ahead of the game in the world, in the design and construction of these buildings.

Mr. Thomas Mueller: It's a great opportunity for Canada because we are a forest nation. It's a great opportunity. There are a couple of European countries that are really innovating. Austria is one of them, and Switzerland in the alpine region, but that's a great opportunity for Canada, absolutely.

The Chair: You have 30 seconds.

Mr. Richard Cannings: Quickly, Mr. Ferguson, where are we in getting those money costs and the greenhouse gas costs of the oil sands down to being competitive with regular, normal oil production? You talked about the in situ things in terms of the overall cost of Canadian oil.

Mr. Alex Ferguson: Certainly on the carbon side, it is a continuing challenge, but when you look at the institutions that are investing, there is certainly a pathway there.

I would say the other side of that coin is around our ability to develop our resources and to attract the investment we need in the country to really breathe life into both sides of that equation. On the significant challenges and uncertainties, as I mentioned, some of those geopolitical and south of us kind of issues right now are weighing heavily on our ability to perform on the investment attraction piece. There are challenges.

The Chair: Thank you very much.

Mr. Tan.

Mr. Geng Tan (Don Valley North, Lib.): Thank you, Chair.

Mr. Ferguson, I'm very interested in knowing more details about your carbon capture and storage technology. When you say “storage”, what is the capacity of this technology? In other words, what percentage of all carbon dioxide produced by industries such as oil sands or oil and gas can you realistically collect, transport, and store?

Mr. Alex Ferguson: I would say the industry is pretty spread out in the province of Alberta, but in Saskatchewan and British Columbia, a lot of the challenges we have, certainly, as you point out, are the ability to collect and transport, given the way the industry is laid out. We have some insulations that have been used pretty successfully, proving out some of the technologies.

There is still a challenge on cost. A big issue there, I understand, is around scale, and scale not only from the collection side but also in ensuring we have the right size of reservoirs to get to that scale as well.

In some parts of our country, like British Columbia, which I know reasonably well, there is a bit of a challenge in terms of the size of some of the reservoirs that are competent enough to withstand the pressures under storage. All of those provide challenges for Canada on carbon capture and storage.

The quick answer is there is a lot of work to be done on all those aspects.

Mr. Geng Tan: Okay.

I've been trying to compare your technology with another technology that's used in the nuclear industry, the deep geological repository technology. In the nuclear industry, the nuclear waste is stored deeply inside stable rock. In contrast, you are talking about storing the CO2 gas in the oil fields or wells.

What's the risk of leakage of CO2 from your oil fields?

Mr. Alex Ferguson: I think that's my point around finding the right competent reservoirs. Most of the regulatory jurisdictions we have in Canada have specific rules set out for long-term monitoring of the competency of reservoirs to make sure there isn't leakage somewhere. There's also a lot of effort, as we heard a few times today, on the upfront planning side as well, making sure that we have reservoirs that are competent before we start pumping.

I don't think there's anything different from what you described in the nuclear sector, where there's a lot of concern around making sure, if we're storing something underground, it's there safely for the long term.

● (1715)

Mr. Geng Tan: Okay.

Again looking at CO2, what is the quality of your CO2 in storage? Is the quality high or low? If it's high, how do you make sure you can keep it from being diluted? If the quality is low, how will you find an economical use for the CO2 in the future?

Mr. Alex Ferguson: That's a good question. I did want to comment right up front that long-term storage of CO2 is one of the tools available. We also have a good, healthy opportunity, and we do this significantly, to use CO2 to drive more oil production out of a certain oil place. I think both provide, or one provides certainly, an opportunity to get more value out of CO2 that's pumped underground. It's not insignificant in terms of a value opportunity for Canada and the industry.

I would have to come back to you with more specific answers around how we manage the quality of CO2 in terms of the storage parameters and the use parameters. I can certainly dig around and make sure that's available.

Mr. Geng Tan: Thank you.

The Chair: You have three more minutes.

Mr. Geng Tan: Three minutes? Wow. That's a long time. I may not have prepared enough questions, or I may have to share a question.... No. I have one more quick question.

Mr. Mueller, you believe that the construction of new no-emission or green buildings is a key solution to climate change. Richard had a question about this as well. You mentioned here, and in your notes as well, that you believe that buildings currently generate up to 35% of all greenhouse gas. If you check the notes provided by Mr. Ferguson, from their pie you can see that the biggest emissions contributor is transportation, which only produces about one quarter of the total emissions in Canada.

How do you match these two numbers?

Mr. Thomas Mueller: It's just a matter of accounting. Typically, even if you look at the pie chart from Environment Canada, they have divided the pie from a more regulatory perspective, the point sources they can regulate in terms of air pollution and those types of things. We take it more from the perspective of the end use. When we heat a building or light a building, we look at the electricity that's being used to light that building. Does it come from a clean source or does it come from a dirty grid, meaning that coal is being used to generate electricity?

We talk about the same pie, but it's just a different distribution. We look at the sources, at where the energy is coming from. When you do that, you realize that when you combine those different smaller slices, it actually becomes about 30% to 35% of all emissions in Canada.

Mr. Geng Tan: I have two more questions, but I'll give my time to my colleague.

The Chair: Actually, that is your time.

Mr. Viersen, you have five minutes.

Mr. Arnold Viersen (Peace River—Westlock, CPC): Thank you, Mr. Chair.

Thank you to our guests for being here today. I'm pleased to have representatives from Enbridge here.

One of the things we have to remember when talking about energy innovation is that all of this comes back to our quality of life in the western world, particularly places that have cheap, reliable energy. I know that our infant mortality rates are some of the lowest in the world and our life expectancy is among the highest in the world, and that comes from the fact that we have clean water, warm houses to live in, and the most amazing health care, which is all predicated on the cheap energy we have. The conversation we are having today is driving the quality of life that we have in Canada. I just wanted to make that point.

My first question is for Alex.

Budget 2017 proposes that expenditures relating to drilling or completing a discovery well, the key words being “discovery well”, are going to be classified as a development expense instead of an exploration expense. Can you explain to us what that means and how it is going to impact oil and gas exploration in Canada?

● (1720)

Mr. Alex Ferguson: It's an accounting procedure, a tax procedure, if you're familiar with that. Conceptually, if you are at the front end of the risk spectrum, finding new things, new plays, you take on quite a bit more significant risk in terms of finding something or not finding something. If you go around the world, generally speaking, in the absence of a lot of historical data, it is high risk. You can have a lot of failure, but in order to continue to—

Mr. Arnold Viersen: Is failure a dry hole? You drill a hole and you get nothing.

Mr. Alex Ferguson: Yes, exactly.

In order to continue the drive to get people to invest in that high-risk area, the government has set up.... It's very similar in a lot of other jurisdictions. The model is pretty clear. In order to incent or drive that kind of behaviour, you want to provide the ability for those who run into that situation, who have a dry hole or are in that high-risk area, to write that off more quickly in terms of a depreciation schedule.

Mr. Arnold Viersen: So the former drove investment.

Mr. Alex Ferguson: Right. Well, be careful about what drives investment. It isn't just tax. It's many other considerations that companies would have. But that certainly provided a safer landing spot to more quickly drive investment into that part of our business. It is a necessary part of our business as we go forward, so we were somewhat disappointed in the budget language around that. I will say, though, that we have been in talks around redefining some of that tax model. Generally speaking, the CRA rules around that were invented long before the current technologies that we've been using for the last several years, so it's really an instrument that's out of place as well.

Mr. Arnold Viersen: Thank you.

Our guests here from Cylo and Enbridge can probably both answer this. Both of you are working on cutting-edge technologies. I have two questions.

Are our regulations and protections for intellectual property strong enough in Canada? Do you see any improvements on that?

The other question is about standards, particularly in the data world. I'm an automotive mechanic. I come from an automotive background. We have OBD, on-board diagnostics. It's standardized data, so anybody can plug in. It doesn't matter what the vehicle is, we can all plug into it and see what's going on. Are there any data standards? Do you think that there need to be data standards?

Mr. Cameron Spady: Could Darren answer that question? He's a total technology specialist.

Mr. Arnold Viersen: Yes.

Mr. Darren Gerling (President and Chief Technology Officer, Cylo Technologies Inc.): In terms of data standards, that's something the industry is working on. In the pipeline space, there is a data standard called PODS. I think they do a good job. There is always room for improvement on the cutting edge.

The other thing I would say is about the support for intellectual property development. I think Canada has a pretty good system, actually. SR and ED is something that our companies utilize. The more the better, though. I would say it's sufficient, but it can always be improved upon.

Mr. Arnold Viersen: I have just a few seconds left. Does Enbridge have any comments on those two points?

Mr. Walter Kresic: Yes. I would quickly say I don't really see intellectual property as a big hurdle. There are mechanisms in place for business.

The data standards, though, is a really interesting question. The world of information management is blossoming for potential growth. I don't think we've even touched on what's possible there. We talk about artificial intelligence in our company as if it's old news now, things like cloud computing, data structure and sharing. The possibilities for advancing technology and science are enormous when we start to pool together our resources globally with the intel that's out there. I think that's where the baby steps are at right now. If we can break down some of those barriers in sharing globally, we can really accomplish some big things.

● (1725)

Mr. Arnold Viersen: Are you saying some data standards would be welcomed?

Mr. Walter Kresic: I think data standards would be welcomed, but beyond data standards, it's the concepts of how data is used.

Mr. Arnold Viersen: Do I have any more time?

The Chair: You have about 20 seconds.

Mr. Arnold Viersen: Thank you all for being here.

The Chair: Mr. Harvey.

Mr. T.J. Harvey (Tobique—Mactaquac, Lib.): Thank you, Mr. Chair.

I'm going to start off with Alex for a quick question.

At the beginning of your remarks, you referenced the Canadianization of our oil sands developers. Would you like to comment on your thoughts surrounding that, positive and negative, what you see as the opportunities, what you see as the concerns?

Mr. Alex Ferguson: I think it should be taken as a significant boost in confidence in Canada's ability to develop those resources. I would think that would be first and foremost.

In terms of the departure of some of the companies, they will tell you before I could that their reasons for leaving are many and varied. It's not about lack of confidence. Their own particular company drives them to those decisions. Having those significant operators, such as Canadian Natural Resources and Cenovus Energy doubling down on the opportunities in Canada is, I think, a good sign for us.

Mr. T.J. Harvey: Do you think that Canadian companies are seeking that investment more than companies from other jurisdictions because of their comfort level in the space, because they're from here, or are they looking at it as an opportunity that there are companies looking to divest of those assets because of a lack of comfort in the space? Is it more related to their specific portfolios and where they feel their visions are as a company?

Mr. Alex Ferguson: I think it's very company specific. Certainly, the people I know who work in those companies that are reducing their exposure in Canada are all really passionate, hard-working Canadians, so it's really a corporate perspective that's driving it.

Mr. T.J. Harvey: I'm always a big fan of talking about how we need to encourage and foster new and better ideas and continued growth within any given sector. The in situ oil sands projects are a prime example of the type of innovation that we need to see come from that sector.

What can the government do to foster more growth? What can government do to build upon what's already being done?

Mr. Alex Ferguson: I made a reference in my talk to some of the geopolitical changes in our bigger environment. The reality is that some of those issues, whether it's the Middle East conflicts or India's drive in terms of what its trying to do with its economy, those are huge, effective pieces that set the Canadian direction much more than a lot of what we can do in our own country. It is a global market that we're feeding into. It doesn't mean we shouldn't be doing the right thing and paying attention to the right things. I think we're getting to the reality that there's no one secret item that can be done. There are going to be many small, complex, and difficult things that we need to do, whether it's looking at tax opportunities, looking at regulatory opportunities, looking at what we can do to make sure we have the right incentives for infrastructure, looking at the technology, the stuff that Enbridge talks about, and our technology suppliers, all of those things need to somehow be worked on. Nothing is easy.

Mr. T.J. Harvey: There's just one quick question for you, Mr. Mueller.

We've referenced the large buildings, large wooden structures, specifically over 25,000 square feet. There's been a lot of talk about the height of those structures and the potential of increasing of the height of those structures. What are your thoughts on trying to find that balance between structural integrity and seizing the opportunities that might be there to utilize wood for that purpose, but also taking into account not only safety in terms of fire protection for the people who are eventually going to live in those buildings, but also first responders who have to go into those buildings in the event that there's an issue with them? How do you balance that?

● (1730)

Mr. Thomas Mueller: Again, it's a really good question.

I'm not an expert in wood buildings, but I've been around enough of them and seen enough of them to have an opinion on them. I think that in terms of fire ratings, these mass timber buildings actually rate quite well. They rate as well as steel and concrete buildings. It gives enough time for people to leave the building, because the wood is this mass timber. This is not stick frame. Mass timber will actually char on the outside, which prevents the fire from rapidly burning the timber. That's one of the considerations. It does give enough time to get out of the building, as compared to concrete buildings. That's my understanding.

I think there's a significant market for buildings that are eight, nine, or 10 storeys that can be built with those systems. That's where the opportunity is. They don't need to be 18 storeys. I think you have to fight public perception, first of all, but also in terms of codes and so on, I think there might be some issues there. There's plenty of market. I've seen many of these structures that are eight, nine, or 10 storeys high. They can be built very rapidly, and prefabricated. You can pour the elevator shaft and you can put in one storey per day. Sometimes you can build them very quickly. You still use concrete in the floors to provide some stability, and so on. These are not simply wood buildings; there's a combination, but wood is the predominant material.

I would say that's where the market is. We have a lot of demand and need in Canada to build these mass timber buildings of eight to 10 storeys, particularly in urban infill, because it goes very quickly if we choose specific technologies.

Mr. T.J. Harvey: Thank you.

The Chair: Thank you. That's all the time we have, unfortunately.

I'd like to thank all the witnesses for coming today and taking the time to answer our questions. Your evidence will be very helpful to our study, so thanks again, and thanks for accommodating our time.

Mr. Walter Kresic: Thank you.

The Chair: The meeting is adjourned.