HOUSE OF COMMONS
CHAMBRE DES COMMUNES
CANADA

Standing Committee on Natural Resources

RNNR • NUMBER 081 • 1st SESSION • 42nd PARLIAMENT

EVIDENCE

Tuesday, January 30, 2018

Chair

Mr. James Maloney

Standing Committee on Natural Resources

Tuesday, January 30, 2018

● (0850)

[*English*]

The Chair (Mr. James Maloney (Etobicoke—Lakeshore, Lib.)): Good morning, everybody. Thanks for joining us today. Welcome back. I hope everybody had a productive and perhaps relaxing time away from here. I know that some of you were travelling. I've seen some pictures and two people aren't here today, so whatever they did it obviously affected them the same way.

Today we are continuing our study that we were working on in the fall. We have two witnesses.

With us is Bruno Marcoccia, director of research and development in the pulp and paper division of Domtar.

Thank you for coming.

By video, from Alberta Innovates, we have with us Steve Price, the executive director of bio-industrial innovation group.

You will have up to 10 minutes to do a presentation. Following both presentations, I'll open the floor to questions from around the table.

Why don't we start with you, Mr. Marcoccia?

Dr. Bruno Marcoccia (Director of Research and Development, Pulp and Paper Division, Domtar Inc.): Thank you, Mr. Chair and members of the committee, for this opportunity to appear today on behalf of Domtar.

The folks of this committee might know that Domtar is a world-leading provider of fibre-based products including various paper grades, market pulp, and absorbent hygiene products. We have annual sales that exceed $5 billion and approximately 10,000 employees operating in over 50 countries around the world. Domtar is driven by commitments to convert sustainable wood fibre into useful products that people rely on every day. Our company's origins lie very deep in Canada reaching back to the 19th century. Domtar is an acronym for Dominion Tar Company. Today approximately 25% of Domtar's manufacturing facilities are based in Canada, primarily in British Columbia, Ontario, and Quebec. We employ over 2,500 people in these three provinces. Our pulp and paper division, which is the group that I represent, operates 13 pulp and paper mills across Canada and the United States. Four of these mills are in Canada, as I mentioned, in British Columbia, Ontario, and Quebec.

We have a strong interest in the low-carbon bioeconomy. We understand and agree that building an economy based upon our abundant and renewable forest and agricultural by-products is a very good thing for Canada and for Canadian workers in rural areas. The bioeconomy will lower the country's carbon footprint, provide sustainable products to the global marketplace, and offer leadership in global sustainability. Beyond that, of course, at a company level, we feel that the growth and enabling conditions of the bioeconomy support a positive future for Domtar and support our strong business imperative for renewal.

Allow me to explain.

With over 150 years of history, Domtar knows how to reinvent itself as the markets change, so, as digital technology gradually reduces the demand for communication papers, which is one of our core products, we have begun to redeploy our assets for other fibre-based markets. This process has been ongoing for at least 15 years. I have worked in this context for the last 10 from a technology development point of view, speaking for myself.

At the same time that all of this is happening, we also feel the constant pressure of competitive forces from other forest product jurisdictions, so we're working in a very competitive environment. I'm happy to say that Domtar has been successful in the 10 years that I have been a part of it and, of course, successful all the while.

Some of our products such as communication papers have been operating with long-term secular market declines of between 2% and 3%. This has been happening for, as I mentioned, 10 years here, but for probably 15 years, we have seen the market for uncoated freesheet, for example, which is printing and writing paper that we all use, decline by over 60% from its peak. These macroeconomic factors have resulted in significant industry-wide pulp and paper capacity removal and repurposing. At Domtar we have not been immune to this. We have closed numerous facilities both in Canada and in the United States and have been very busy repurposing other mills for the future.

In spite of these challenges, Domtar sees great opportunity for renewal through innovation. We are committed to developing and maintaining a world-leading role for ourselves in the new global bioeconomy. Our approach in this development is to focus on the creation of biorefineries co-located with our existing pulp and paper mills; in other words, to take advantage of the existing infrastructure and supply chain and leverage that. That supply chain is one of our core assets.

Like an oil refinery, the biorefinery refers to manufacturing systems capable of producing a portfolio of products in support of a variety of market needs that will change with time and that must, therefore, be flexible and adaptable. So, there are not just the fibre and paper products that we currently produce but also a wide array of bioproducts, namely, biomaterials, biofuels, biochemicals, all derived from the renewable sustainable source, Canadian forests.

Our journey is well under way. As I mentioned, I have been working on this specific activity for 10 years. It has been my primary focus.

Across our company, besides my group, Domtar is working on the development, with several missions, of value-added bioproducts, their application, and their markets. One of the challenges in what we do here is that we're simultaneously trying to ride a bike and build it. We're trying to create these markets as we start to produce the products.

Our program is organized along five major product platforms. I won't go into details, but these platforms are essentially all of the components of the wood biomass that we use as the basic feedstock of our supply chain. We believe that these products exhibit market and transformational promise for the future. Our basic approach can be summarized according to four key strategic elements.

First, we understand the critical role of innovation in creating this bioeconomy. At Domtar, the way we approach this is with an open innovation methodology. We actively develop collaborative partnerships that include end-users, technology suppliers, universities, research institutions, government agencies, start-up companies, and government sponsors—all critical parts in advancing our innovation platform.

Second, along with open innovation, we actively engage in the advancements of technology through the operation of pilot and demonstration plants. I'm very proud of the fact that Domtar has been a world leader in this regard as it relates to demonstration of new bioproducts in association with existing pulp and paper industries.

The third element of our approach is that we seek to position ourselves as the enabler of choice. By that we mean that since we are big believers in, and in fact dependent on, open innovation, we want to be very good at open innovation. We want to create an environment where people come to us first with their ideas. The way we do that is first and foremost by being quick to make decisions, and based upon our reputation, we're actually doing projects rather than studying them, and doing them quickly and efficiently. We don't say yes to every proposal that's presented to us, but we will give a very quick and responsive assessment of whether or not we're interested.

The fourth tenet is that we ensure sustainability of third party certification of our feedstock supply. As pulp and paper operations, we primarily utilize residual from other forest product operations, namely sawmills. Whether through our own forest management practices or those of our residual suppliers, we believe that the sustainability of our forests is a fundamental tenet of bio-economy success. For those of you who have the meeting notes, they are printed on Domtar FSC certified uncoated freesheet.

There are several examples that we could discuss. Rather than go into great detail, I'll just mention them. For the most part, these are successful examples of world-leading projects that Domtar has executed. We've had several very high-profile failures as well. Since I'm responsible for those, I try to avoid discussing them. The key point here is that when you're attempting transformative innovation, it is a high-risk proposition with a high degree of uncertainty. A positive way of saying it is that there's a relatively low success rate connected to it. You have to be willing to accept that in going into this.

The examples include, first of all, the NCC commercial demonstration plant at our Windsor, Quebec mill, the first of its kind in the world for the manufacture of nanocrystalline cellulose. This was a joint project and partnership with FPInnovations to form a joint venture called CelluForce, which I understand you'll be hearing from as well. Of course, the facility was built with very strong support from NRCan and from provincial sources.

A second Canadian example is the successful development and commercial deployment of a proprietary, strength-enhancing, specialty pulp fibre developed by Domtar working in collaboration with the University of British Columbia and a community college, CEGEP, in Quebec. The facility is called Innofibre, in Trois-Rivières. This unique and valuable material was first commercially deployed in our Windsor, Quebec mill. It has since been rolled out in our entire manufacturing system, and we're trying to license the technology externally now. This is a really high-impact success story that started in Canada and was demonstrated and deployed in Canada.

We're also working on three additional groundbreaking demonstration projects in our Canadian system, all of which are supported by NRCan and by NSERC in collaboration with three Canadian universities and two federal research laboratories.

● (0855)

These involve the valorization of lignin by compounding it with thermoplastics and making lignin thermoplastic products, the integration of a fast pyrolysis system and gasification technologies integrated with our existing pulp mills for the generation of biofuels and value-added bioproducts, and, finally, the potential use of underutilized woody biomass for the generation and conversion of fermentable sugars.

Perhaps most importantly, here's what we're doing in terms of looking forward. Domtar and my team—this is a bit of a plug on my part—are in the project development stage for a world-leading multi-component, integrated biorefinery park at our flagship Windsor mill. This project would involve numerous first-in-kind innovations leading to several new bioproducts. It would establish a unique, market-adaptive, and flexible biorefinery park. This park would consist of interchangeable, forward-adaptable unit operations that can be reconfigured and used for early commercial scale deployment of new bioproducts. This would be the next part of the innovation chain after pilot demonstration. It would be actual early-stage commercial deployment, which is the big weakness in the innovation chain right now. Our hope is that the biorefinery park would significantly enhance our reputation as an enabler of choice and give Domtar a global competitive advantage in attracting and capitalizing on transformative technology opportunities.

The last area I would like to speak to is the innovation system within Canada. As a forest products company, Domtar has had access to the Canadian innovation system. I'd like to very briefly comment that we enjoy working in Canada. We have 25% of our footprint in Canada, but over 75% of our R and D activities are in Canada. That's because of the existing infrastructure, public policy, and sponsorship programs. Domtar supports, has been supported by, and makes extensive use of both the provincial and federal programs for activities across the innovation spectrum. There are many examples. The ones I'd really like to point out are NRCan, NSERC programs; collaborations with federal laboratories such as NRC and Canmet; and of course the universities. The universities in Canada are generating excellent people of whom we have a desperate need and have started to employ in significant numbers compared to the recent past.

In closing, we at Domtar believe in the low-carbon bioeconomy, and we are actively pursuing the innovation and renewal necessary for Domtar to further its growth. We look forward to continuing to work with all you in this journey.

● (0900)

The Chair: Thank you very much.

Mr. Price, over to you.

Mr. Steve Price (Executive Director of Bioindustrial Innovation, Alberta Innovates): Thank you very much, Mr. Chair.

Thank you, committee members, for the opportunity to share my views and comments this morning with you. Those views reflect my experience as a former federal employee with the Canadian foreign service, and recently, as executive director of bioindustrial development with an organization called Alberta Innovates.

Alberta Innovates is a provincial corporation dedicated to research and innovation. We have an arm that engages in research activity, but for the most part the various components of the organization fund research activities.

Since 2007 when I joined the organization, I've been working with both the agriculture and the forest sectors to identify opportunities for economic development and economic sustainability through new product and process development.

In many ways, we've been fibre agnostic. I know that your focus is the forest industry, but in many parts of Canada the forest industry is not that far removed from the agricultural industry. There is opportunity to combine the fibre stocks, to address the needs of a growing bioindustrial sector in the country. I would encourage a more agnostic approach, an approach that recognizes the value of all fibre, from agriculture and forestry.

Biomass is biomass, to many end-users. I'd even go so far as to suggest that municipal solid waste represents a very significant opportunity that can also be combined in the mix with agricultural and forest fibre. Lord knows here in the province of Alberta we generate enough municipal solid waste. I suspect it is the same all across the country. What we need to do is create programs that cross the boundaries, that allow for integration and allow us to tap into the various sources of feedstock for bioindustrial development.

We probably therefore want to make further investment to address the bigger questions of systems and logistics for effectively dispersing or transporting that biomass to facilities looking to utilize it. We need to support research and development into new products from biomass and processes for biomass conversion.

As was indicated by the previous speaker, where they've made investments in areas of opportunity, we too in Alberta have invested in a number of areas of opportunity, including advance materials with the focus as well on cellulose nanocrystals, lignin and the multiplicity of products that are envisioned from lignin, biofuels, and an increasing opportunity to make a variety of energy products from municipal solid waste.

Recent announcements in the province of Alberta have identified significant financial resources for climate change-related activities, most recently the climate change innovation and technology framework. That funding focuses heavily on GHG reduction, as well as job creation, economic development, and community stability. GHG reduction is probably the most significant target when it comes to those new funds.

This is an oil and gas province. There's a lot of activity focused on the oil and gas sector. No doubt a good portion of the CCITF funding will flow to the oil and gas sector. The existence of the oil and gas sector in this province creates opportunities for the forest sector that perhaps don't exist elsewhere in the country. It's from that perspective that I gain hope that as we move into the future we'll see greater emphasis on the bio sector, on bio opportunities, and on the opportunity to mitigate greenhouse gas emissions through bio means.

● (0905)

This opportunity for us is to use biological materials that would replace petro-based. When it comes to adhesives, perhaps lignin is the replacement, bioplastics from lipids as well. CNC creates the opportunity to move into very different realms than what the forest sector has explored in the past. Medical and electronics are all related to those special properties of CNC.

In this province, traditional forest companies have right of first refusal to the fibre resource. They operate under forest management agreements. That pertains not only to the traditionally merchantable bole of the tree, but also to the residual biomass. Many of those companies have looked at ways of diversifying their revenue streams through biorefining activities, at alternative products for development, and at ways to sustain their viability.

I give credit to the federal government for the bio-pathways project a number of years ago, where people looked at the opportunity to bolt new technologies onto existing mills in the country in a plug-and-play way that would not be too destructive when it comes to the traditional product lines but add new product lines and therefore new revenue.

However from outside Alberta, many non-traditional forest companies have been attracted by the vast amount of biomass that they've been told exists here. It's rumour. It's conjecture. It's a perception. They come to Alberta and they want to know where this biomass is. What it's comprised of? How much of it is there? I'm sad to say that up until a few years ago we couldn't tell them. We knew it. You could go out into the cutovers and you could see residual slash. You could go to mill sites and see piles of sawdust and whatnot, but quantification was very difficult.

We started a project called BRIMS, bio-resource information management system. We developed that through a private sector geotech company. Last week, January 24, we publicly launched BRIMS. It's an online interactive system that will allow any entrepreneur interested in tapping into the biomass resources of this province to point to a site on the map and determine how much biomass is available. You can find it at brims.ca. Try it. It's very easy to use, but it's very powerful.

With that, we're able to address the questions as to where the biomass exists. How available is it? That allows the entrepreneur to forge a partnership with the traditional FMA holder. Many FMA holders are looking for the big answer; they're not looking for the smaller opportunities. A small to medium-sized entrepreneur wanting to capitalized on biomass availability for his production facility is well-advised to form a partnership with an existing FMA holder.

I talked earlier about the fact that this is an oil and gas province. That means there are significant opportunities for existing forest companies to move into the bio-industrial space in a slightly different way in support of the oil and gas sector. In some respects that could mean assisting with land management, assisting with reclamation activities, utilizing biochar produced from mill facilities as a soil amendment, for soil remediation.

● (0910)

In some instances, it even means taking mill waste water and piping that to oil exploration sites as opposed to utilizing surface or groundwater, so it's a revenue opportunity for the mill, but it's a cost saver for the oil and gas company, and they don't have to butt their heads against regulations around groundwater usage.

From my perspective, where do I see the federal government fitting in? Well, I think we have a pretty good array of activities related to bioindustrial development in the province of Alberta, but I'd dearly love to work with cohorts in other provincial jurisdictions. For the last several years I've been trying to work with BIC, Bioindustrial Innovation Centre, out of the London area. It's difficult to do, and my funding source is from the Province of Alberta. Their funding source is from the Province of Ontario, and you're not permitted to spend in the other's jurisdiction.

The federal government can solve that problem. You could serve to harmonize, bring people together in partnerships, and facilitate cross-boundary initiatives.

The Chair: I'm going to have to ask you to wrap up, Mr. Price.

Mr. Steve Price: Okay.

Harmonizing of programs is a very significant opportunity. I think that you can be leading the way on policy development. Yes, we've seen biofuel development in this country, but it's been slow, and I think there are some policy impediments to more rapid development.

There are many opportunities associated with the bioindustry in this country, but I think there is a need for a more concerted, collaborative effort across the country, and I see the federal government being the instrument to permit that.

The Chair: Thank you very much.

Mr. Harvey, you're up first.

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

I'm going to start with you, Mr. Price.

Just quickly, you touched on the BRIMS initiative that you worked on. I just wonder if you could elaborate a little bit on what the uptake from the leaseholders has been on the adoption of the idea of subletting some of that biomass material to entrepreneurs.

Mr. Steve Price: BRIMS was developed through a private sector company, a geomatics company. They work with both oil and gas and forest sector companies. They are the repository for much of the data associated with oil and gas and forestry operations in the province.

The data is housed in BRIMS and is accessible through BRIMS at the leisure and pleasure of the FMA holder, of the company. They have given blessing to public access. They obviously are looking for opportunities to see utilization of that biomass resource.

To what extent have they had open arms to embrace people wanting to come in and utilize it? It depends. If a new entrant in the marketplace comes in and looks at the biomass and says, “Well, it's waste. It has no value. You should be willing to give it to me for free”, the discussion ends pretty quickly. There has to be a recognition that, even though it's not currently being utilized in a production system, there is value, and the more people looking to utilize it, the more value it has.

Forest products companies have, for the most part, welcomed new entrepreneurs coming in and wanting to make use of residual materials.

● (0915)

Mr. T.J. Harvey: The reason I asked the question is that I'm from New Brunswick, and we have a significant amount of biomass residual as well, but the idea of that being repurposed and being used by smaller start-up companies as opposed to the leaseholders themselves is always a good idea. The idea of it has been accepted, but it's been difficult to see the actual adoption of that type of a system going anywhere. It is the same as a community-based forestry program, in general.

I just wanted to touch on that really quickly.

Do you have an additional comment?

Mr. Steve Price: I just want to make the observation that, in my understanding, in New Brunswick, one of the major operators owns a significant portion of the forest land base. Almost all of the companies operating in the province of Alberta operate on provincial crown land under that forest management agreement, so there are some leverages that could be utilized by the provincial government to entice or incent.

Mr. T.J. Harvey: I appreciate that.

Mr. Marcoccia, I was really interested in one of your comments at the beginning of your speech. It was around the company's focus on adopting and developing new technology at a significant cost to the company itself, recognizing that a lot of times not every idea is going to work out and there are significant risks there.

How do you measure that risk? You're talking about a significant redeployment of capital in an industry.... I'm from the east coast, and Atlantic Canada and New England are no strangers to pulp mill closures, especially in printed paper, which has seen a significant decline, as you mentioned. How do you measure that redevelopment of capital against what the outcome could be? Also, how can the federal government do a better job of ensuring not necessarily that the technology at a research stage can be done but that the industry is able to adopt it to bridge that gap?

Dr. Bruno Marcoccia: As a corporation, we are, like many organizations in our industry, inherently conservative. When we approach transformative innovation, we are competing for capital internally within the organization, in an extremely capital-type environment. We're a capital-intensive industry and the reins are held pretty tight on that capital.

It's not easy. We have to take baby steps. We move as quickly as we can, but what is of utmost importance is to fail-safe. This is why the integrated or co-located biorefinery approach gains a lot of traction: you have the wood supply coming through an existing facility. As Dr. Price mentioned, if you do a plug-and-play approach, you de-risk the entire venture, and de-risking is critically important.

In terms of the role the government agencies play, active participation in the process is really important. It isn't just the capital that's at play here; it is also the appetite for risk, and reassurance, if you will. I discussed this with a colleague just this morning. There's a very interesting psychology when it comes to launching a high-risk project; that is, if you have universities, research institutions, and government partners, the corporation is much more likely to approve the expenditure of capital and resources on that project, because there's a bit of an external validation that's critically important.

The capital is really important, but I think the collaboration is even more important because of the validity it gives to the enterprise. It's like a group of people holding hands as they jump off a cliff and hope for the best. There is a bit of that, because there is great uncertainty. I would say that is a key to making these projects actually happen: a lot of upfront evaluation by a very conservative group of people who want to hang on their capital and a collaborative multi-stakeholder approach.

● (0920)

Mr. T.J. Harvey: I know from past experience that a lot of pulp and paper companies look at the time from when the research is finished to full adoption of a new technology and try to have a return on investment on that upgrade of three to three and a half years, because of the steep curve that's going on within the industry. When you're adopting new technologies and you're forging ahead with these new ideas, what kind of time frame do you try to put on it as the cap? What is the fail-safe in terms of time? What's the maximum amount of time you try to commit to a project?

Dr. Bruno Marcoccia: As an organization, we will use different metrics for what we consider strategic projects. For example, one critical concern we have is redeployment of our hardwood wood basket assets, because hardwood preferentially goes into printing grade, and that is the grade that is under the most pressure, if you will.

In that regard, if we are looking at something that is a redeployment of a hardwood supply chain, and it's strategic and could be a repurpose that saves the asset and saves up part of the supply chain—which is a big ask and doesn't always happen—we would stretch out to a seven- to eight-year time frame.

Having said that, we are in competition for capital, “we” being innovation projects. We are in competition for capital and for the existing core business, which is generating cash and generating profits. The three- to five-year time frame for a rock-solid energy project, for example—something you could really take to the bank—is about the minimum that you would ask for.

It is a really tight competition, and the argument that has to be made in order to successfully launch an innovation project is that there is a strategic upside to this. You have to suspend your normal metrics.

Again, this is where I believe policy and government support and partnership and multi-stakeholder collaborations really help make the argument that there is a strategic upside here.

The Chair: Thank you.

Mr. Schmale.

Mr. Jamie Schmale (Haliburton—Kawartha Lakes—Brock, CPC): Thank you gentlemen, for being here and providing us with your testimony.

Dr. Marcoccia, I guess I'll start with you, since you were last speaking.

You were talking just a moment ago about active participation from the federal government. You mentioned a few items where the government can assist with high-risk projects and that type of thing. Can you go into a bit more detail of what exactly you could see as involvement?

Dr. Bruno Marcoccia: In terms of government and federal agencies, we'll launch a lot of our projects in our Canadian system, simply because there are existing programs and facilities and infrastructure that are easy to access. Without going into specific programs or policies, one institution that has been there for decades —my entire professional life—has been NSERC, which sponsors basic research at the university and even at the national lab and research institution level.

NSERC programs exist that make it very easy for us to tap into extremely talented young people and their professors, and leverage what I'll just call the research culture, because it's not just universities. That's something we try very hard to take maximum advantage of.

That's an example of a program that is hitting on a lot of cylinders, because one of the things we desperately need is talented young people. As an industry we were shrinking through the last 10 years. We did not take up new talent as quickly as we should have, so we ended up with a bit of a logistics nightmare, wherein we have a whole bunch of people retiring, we have an empty middle, and we're trying to fill the front end of the pipeline. That's why the federal support for basic engineering and postgraduate engineering and science, and the facilitation of industry being able to collaborate with those people in-between or during their studies, through internship programs, are fantastic.

Policy-specific programs that are very useful are programs such as NRCan's IFIT and the new clean growth program, as I understand them. We're trying to actively leverage those, and they specifically go after certain policy objectives. We've found over the years that the best way to leverage that is to see how we align with the policy objectives. For the most part, we do.

For example, we've utilized the IFIT program, which is an NRCan program. The IFIT program recognizes that the critical gap, at least in Canada, was not so much the research and development, which was excellent, but that next stage. How do you take this and go into a demonstration-deployment phase?

Where policy could help is by identifying where the gaps and weaknesses are and encouraging industry and corporations such as ours to collaborate and partner in taking risks in those directions.

● (0925)

Mr. Jamie Schmale: How much of the risk are you taking right now in terms of seeing those gaps? Obviously you as an industry wouldn't see these gaps coming, as you said, at retirement, and the holes that are being filled. What are you doing to proactively leverage private funds in order to help fix this problem?

Dr. Bruno Marcoccia: When you say “how much”, do you mean as a percentage?

Mr. Jamie Schmale: If you have that. It doesn't have to be exact.

Dr. Bruno Marcoccia: Let me put it this way. If there is no collaboration, it would have to be an extremely compelling project for us to go forward on a high-risk project with 100% of our own funding. We have done that when we can make the technical argument that it's worth it. The proprietary fibre I mentioned is an example of that. That was 100% internal because we knew that we were on to something special and we didn't want to share it with anyone, and we could afford to develop it.

In the other IFIT projects I've mentioned, we're typically in the 15% to 25% range of initial project costs. This is worth noting. The projects that have long-term appeal are strategically important in the promise. We will continue to fund long after the original supported project has been written off and completed. We are in the middle of that. Once we get the ball rolling and start to show positive results, we can carry it from there. It isn't so much the money as it is the willingness to get started and accept that.

In that respect, I would say that government support is really critical for starting these projects. Once these projects get rolling, if they have merit, we will mostly continue them on our own.

Mr. Jamie Schmale: In addition to the other things you mentioned, would you be accessing loans or grants through the federal government as well, or would it be just on the research development partner, and the universities and colleges?

Dr. Bruno Marcoccia: We do go after grants. As a corporation we've shied away from the loans simply because we have a pretty strong balance sheet and we haven't really had to. I've discussed this with our finance group at length. They asked if there was any particular reason that we don't want to take the loans. I said we had to be careful about finance covenants and things like that.

Definitely for an established corporation such as Domtar, which has a strong balance sheet, a grant is more attractive than a loan.

● (0930)

Mr. Jamie Schmale: Yes, as with anything.

Dr. Bruno Marcoccia: The complexity of the loan, the bookkeeping of it is—

Mr. Jamie Schmale: My concern here is the taxpayer. They're putting their money forward for this risk, so this is where my concern is.

In, say, mining or other sectors there's an exploration tax credit, that kind of thing. Is there such a thing in your industry as well?

Dr. Bruno Marcoccia: There's nothing specific to the industry, like a specific R and D—

Mr. Jamie Schmale: That would take care of some of the risk.

Dr. Bruno Marcoccia: Yes, that would actually be useful, from my perspective, in terms of getting my budget funded. There are R and D tax credits, which we take advantage of, but to my knowledge, there isn't any specific tax credit for forest-related research and development, deployment, and commercialization projects.

Mr. Jamie Schmale: That's interesting. That could be a different way of pursuing things.

Dr. Bruno Marcoccia: Yes.

Mr. Jamie Schmale: It could also give you maybe more flexibility such that you don't have to go into the government box where they say this is what they want to look at. You would probably have more freedom. That's interesting.

Thank you.

The Chair: Richard.

Mr. Richard Cannings (South Okanagan—West Kootenay, NDP): Thank you, both, for coming before us today.

I'm going to start with Mr. Marcoccia because I'm interested in how the forest industry is integrated within itself. I know we have sawmills that produce sawdust and chips. Selling that material to the local pulp mill is a valuable part of their balance sheet, and it's a valuable source of material for the pulp mill.

However, when I talk to those people in my region, I hear there's often push and pull about access to those resources, especially when they're talking about residuals left out in the bush. I'm from British Columbia and every fall I look up at the mountains and there are great plumes of smoke from the mountains because we're burning all that slash when it could be used for any number of these things that we've been talking about today. I realize it's probably mostly provincial jurisdiction in how those materials are divvied up.

I'm wondering if you could comment from Domtar's position. What proportion of the materials you use in your mills is from residuals and what proportion is from raw logs that you have harvested on licence areas? How important are those residuals to you, and how can an expansion of that base help?

Dr. Bruno Marcoccia: That's an excellent question. It is extremely site-specific and region-specific. Domtar is a corporation that operates in the interior of British Columbia. As I said, we're in Ontario and Quebec, but we also operate down in various regions of the United States, including the Appalachian Mountains in the southeast. The nature of the supply chain will be a function of regional conditions, and that's true for the whole industry. In our Kamloops, British Columbia, mill, we're 100% residual. We are full, and we do not own any of those sources of the residual chips. The chips are coming to us through sawmills. Kamloops used to be a warehouse at the time they were integrated with the sawmill, but that has since been “disintegrated”, if you will.

In that regard, a healthy lumber industry is absolutely critical to our supply chain and our input costs. If anything happens to reduce the activity on the sawmill side, our costs go up. We have some provisions for chip mills to chip whole round logs—usually juvenile thinnings—to sort of supplement sawmill chips, but those would come at a greater cost.

That's the first part of the answer. Then, if you look at other facilities like our Windsor, Quebec, mill, our Windsor, Quebec, mill is in a hardwood forest and there's very, very little milling of that for structural lumber. We have extremely large, internal whole-log chipping operations. To answer your question, we have anywhere from 0% to 100% residual chips coming into our facilities. Fifty-fifty is not unusual. If sawmill residual chips are available, generally, those are the preferred source of fibre because they will, generally, be at the lowest cost.

Does that answer your question?

● (0935)

Mr. Richard Cannings: Yes, thanks.

Mr. Price, I wonder if you could comment on that. You talked about provincial incentives for multiple use. Have you had any experience in Alberta with what can be done to kind of enhance that flow of products between the various levels?

Mr. Steve Price: I do. In fact, in the province of Alberta, regulation was put in place quite a number of years ago—probably 15 years ago—to require mills to move chips from a sawmill into a pulp mill and to move sawdust into an MDF plant. It was through regulation that the province governed wood transfer from mill to mill. That can lead to problems. The advent of mountain pine beetle in Alberta had an impact on those saw logs, with bluestain in the chips that were coming off the edges of the logs. That then created problems in the pulp mill, which created a whole new need for research to look at how best to deal with that situation.

Mr. Richard Cannings: I'll just follow up with an entirely different question to Mr. Price.

You mentioned being “fibre agnostic” and how it would be ideal to use fibre from agriculture or forestry or whatever, from municipal waste. When you're talking about agriculture, are you talking about agricultural waste or are you talking about agricultural fields or products that are dedicated to producing fibre? There are concerns out there that we hear. With regard to the production of ethanol, for instance, we're using food-producing areas of Canada to create a fuel rather than food, and people view food as a higher priority.

Mr. Steve Price: When I made the statement earlier, I was thinking specifically of waste materials left on an agricultural field, the straw or things like that. In this day and age, with controls being exercised on electrical generation in the province, companies are looking at the opportunity to co-fire biomass and coal. The biomass that's being considered is, in fact, agricultural residue as well as some municipal solid waste and mill waste, bark, and other segments coming out of the sawmills and pulp mills in the province. There's significant opportunity.

On the subject of food versus fuel, yes, you can look at off-grade canola oil as a feedstock to produce biofuels, and some companies are doing that. You can look at purpose-grown crops, triticale and camelina, to be moving into the bioindustrial sector as opposed to food. There are also animal wastes that can be the feedstock for bioindustrial product development, so there's quite a broad spectrum available.

Earlier, yes, I was specifically thinking of straw that was left on the field, but it's much broader than that.

Mr. Richard Cannings: Very quickly, could you comment, perhaps, on using biofuels, especially forest waste products, in helping remote communities get off diesel for their energy needs?

Mr. Steve Price: Yes, it's something that, when I was with the Canadian forest service, we looked at on a number of occasions. More recently, the province has been looking at the opportunity to utilize biomass as a heat source and for electrical generation in communities.

There hasn't been a lot of development in that respect. I think there's been more development in the province of B.C. when it comes to CHP and electrical generation in more remote communities. One problem we have in this province—

● (0940)

The Chair: Mr. Price, unfortunately, I'm going to have to stop you there.

Mr. Hébert, you're up next. Maybe you can pick up on that so we're not left in suspense. We have about five minutes left.

[*Translation*]

Mr. Richard Hébert (Lac-Saint-Jean, Lib.): Thank you, Mr. Chair.

I want to begin by acknowledging Mr. Marcoccia, who is sharing his time with our committee today to advance the quality of practices in the forestry by-products industry.

Your 2017 report on sustainable growth stated that 73% of lumber manufacturing by-products—such as bark and wood residue or ash from boilers—had been reused.

I would like to know whether it is possible to increase the proportion of reused products and, if so, to what extent.

[*English*]

Dr. Bruno Marcoccia: Yes, it is possible. I think what ultimately drives it from our point of view is the profitability of a by-product. Today the most profitable material we can make out of our supply chain is fibre, and fibre conversion into paper. As we move up the supply chain, we can create more value and have better margins.

That's not to say, for example, that we can't make value-added by-products from lignin that will generate more profit than fibre. We don't have the markets and the technology to do it today, but this is what we're investing into in terms of creating a pipeline of new products. We would love to be able to make more profitable products of the fibre, but in truthfulness, we think that the pulp fibre and the paper will be around for a long time. As well, I will say that there's great opportunity to extract more value from the co-products than what we have done historically, simply because in the past we would use almost all of the co-product potential as fuel without differentiating between different types of co-products and different types of fuel.

I'll give a very specific example related to softwood. Turpentine comes out of softwood, and it's a great fuel. We would burn it if we could, but we would sell it for its fuel value if we could not burn it efficiently or safely. Well, in the last five to 10 years, the value of turpentine has gone from 25¢ a litre to over a $1.50 a litre. That's because it's being used in value-added products, including perfumes and soaps. That is quite remarkable, because if you've ever smelled turpentine coming out of a mill, it is the worst-smelling thing there is.

There is this opportunity to take these by-products that we're presently either not utilizing or more likely burning and extract the more valuable components. In some cases, the technology is mature; in other cases, it's in development. Our biggest weakness in this whole approach is in market development, in the marketing piece of it. We're not used to doing business in these spaces. They're different markets, and that's where we need to focus.

[*Translation*]

Mr. Richard Hébert: According to the 2014 report by the American Forest & Paper Association, the industry reuses about 50% of its products.

Can you tell me why you are able to reuse your by-products more than your competitors? Is that simply a matter of will or is it also a matter of technology?

If that performance is due to special processes and technologies, can you tell us how we could ensure the application of those practices across the industry?

[*English*]

Dr. Bruno Marcoccia: Again, it's an excellent question. I would say that it's a combination of both. It's execution, a willingness to go out there and take the risk to develop new products and new markets and new business sectors. That's a very big component. I'm proud to say that at Domtar we have differentiated ourselves in the last 10 to 15 years by being more willing to do that than most North American forest products companies.

On the technology aspect of it, there's a spectrum of technology readiness. One comment I would emphasize is that we believe in open innovation, which is another way of saying that we're looking externally for the technology. We like to get in early to support it to leverage our support, but the basic research is not going to be done at Domtar. We look to universities, research institutions, and small start-up companies and entrepreneurs that in many respects could be competitors with us for our wood supply. Our view is that the key to being able to be successful in that space is to learn to collaborate and to improve our skills when it comes to collaborating.

That's easier said than done. Dr. Price mentioned that when some small start-up entrepreneur companies come into the space, often there's a clash of attitudes and a lack of alignment and objectives, but it is sort of a necessary, messy process that we have to go through. We have to learn to work with different stakeholders under different terms, and the essence of this is collaboration, particularly given that we're looking at technologies we're not familiar with, at markets and products that we're not familiar with, and we have to learn quickly.

● (0945)

The Chair: We're going to have to stop there, unfortunately.

Gentlemen, thank you both. We never have enough time to do what we would like to do here. We're limited by time constraints. Both of you provided very valuable evidence. We always learn something new every time we have witnesses. For example, I always thought turpentine was just used for cleaning paint brushes. Who knew it was used for perfume? Anyway, on that note we will suspend for only two minutes because we have some committee business at the end. The next segment has to end a little bit early too.

Thank you.

● (0945)

(Pause)

● (0950)

The Chair: We're going to get started here again. For our second segment here, we have two groups.

We have Christopher Struthers. Thank you for coming, sir.

From Resolute Forest Products, we have Pascale Lagacé and Alain Bourdages. The process is that we'll give each group 10 minutes: Mr. Struthers will have 10 minutes, and the two of you will have 10 minutes in total to make your presentations. We are under some time constraints, so I will stop you right at 10 minutes if you've not concluded, and then we'll follow with some questions from around the table.

Mr. Struthers, we'll start with you.

Mr. Christopher Struthers (As an Individual): Good morning and thank you for the invitation.

My name is Chris Struthers. I run a small electrical power engineering consulting business in Penticton, British Columbia. My specialty is electric power. I'm not a forestry expert, but my work does take me to a wide range of clients in the resource industry, including pulp mills and biomass generators. I've worked on four different biomass power generation projects in the last few years and am now starting to work with some new clientele who have some very exciting innovative technologies that are showing a lot of promise for the forestry business. Particularly, these are sort of marriages of existing technologies that have been improved, and so the cross-pollination between different disciplines is starting to show up in some really interesting combinations.

The first one I'll talk about briefly is the marriage of traditional biomass combustion to power generation with large-scale grid battery technology. Thermal biomass power generation is not a particularly new thing. You burn wood to heat a boiler or some kind of fluid heat exchanger, and that can drive a turbine to make electricity. There's a thermal challenge with this, though, for some applications. It takes a long time for a thermal system to heat up or to cool down. It can't respond to load on demand very quickly. A good analogy is using wood to heat your house. If you've ever tried to fire up your wood stove on a minus 20 day to try to get your house heated up right away, you'll know it takes time. Conversely, it takes time to cool off again when you don't need that heat. The same challenge exists when you're trying to make electricity from biomass.

It makes it impractical to use biomass generation for, say, remote communities where the power load fluctuates during the day. Everybody gets up in the morning, fires up the toasters and the coffee makers, and you get a peak demand on the grid. You get another peak usually around suppertime, and then you get very little power consumption overnight. A traditional biomass generator has trouble with that.

Now we're seeing, with the rapid improvement in battery technology, that the marriage between biomass generation and batteries now makes for very interesting and worthwhile combinations specifically for remote communities that are not connected to the grid. Take, for example, a small remote community of, say, 500 people working on diesel power. Diesel engines are the generator of choice because you simply fuel them up, and the load can go up and down to match the demand very easily. Now, of course, you can take a biomass generator that is sized for the average load for the day, so it cannot provide all the power for the peak time, and it has to run fairly consistently over a 24-hour period. You couple that with a large-scale battery system and now you have a winning combination.

To give you an idea on the cost savings, diesel power is generated in a remote site for a cost somewhere between 25¢ and 35¢ per kilowatt hour. Biomass-plus-battery technology offers significant savings in the order of 15¢ to 20¢ per kilowatt hour. That includes the amortization of equipment, things like battery replacements, and the long-term costs. It's financially looking like a real winner, and of course the impact on greenhouse gas emissions is a very attractive improvement. Obviously, depending on the type of renewable feedstock you're using, you could essentially say it's almost carbon neutral. Certainly compared to diesel power it's a very attractive opposition.

One of the challenges in getting this technology in place is the inertia and the lack of willpower from power generation companies that have established ways of doing things, and finding the investment and capital to put it together.

The second technology I'm going to talk about briefly is the marriage of biomass gasification with another technology for gas to liquids, which is used to produce biodiesel, diesel fuel.

● (0955)

Just to give you a rough idea of what's doable, one cord load of typical pine firewood, if you like, can be converted into enough biodiesel fuel, roughly one barrel, to drive a mid-sized pickup truck from Ottawa to Toronto and back. One cord load goes into one barrel. It's quite a neat conversion.

There's a bit more to it than that. The process starts off with wood chips that get dried using waste heat from other parts of the process. We try to reuse as much of the off-product as we can, including waste heat. The waste heat is recycled and used to dry the wood chips. The wood chips are fed into what's called a pyrolysis chamber, where heat and pressure break it down into synthetic gas, also known as syngas, which is hydrogen and carbon monoxide. The waste product that comes out of the bottom is biochar, which is a clean charcoal source, which has a commercial use for soil enhancement. It's very good for replenishing soil, and it helps with moisture retention and things like that. Another very interesting property of biochar is that it essentially sequesters the carbon. In this process, some of the carbon in the wood will be sequestered if the biochar is put to use elsewhere.

The gas, of course, is the most interesting product coming out of it. It's converted to liquids using what's called the Fischer-Tropsch process. The hydrogen and the carbon monoxide basically get converted into longer hydrocarbon chains, such as diesel fuel. The technology is not new. It was invented in Germany in the thirties, and up to 25% of their vehicle fuel in the war effort came from this technology via gasified coal. So it's been around for a long time. There are some large commercial plants converting natural gas to diesel fuel in South Africa, Qatar, and Malaysia. These are huge, large-scale plants producing several hundred thousand barrels per day between them.

What's different about the technology now, and why is it of interest to the forestry business? When you combine this technology with the gasification of biomass, obviously you get a biodiesel, which is an attractive product. One of the interesting things about one of my clients is that they have managed to downscale the technology. Instead of having to build these huge, massive billion dollar complexes, they can get away with as little as 300 barrels a day of output and still be economically viable. This makes it very interesting for distributing this sort of system to locations that are smaller centres, more remote centres, where they have an abundance of both biomass and natural gas, and, of course, don't have refining capacity. They import all their diesel fuel. I'm thinking of areas like Peace River region, for example, that import huge quantities of diesel fuel for all their industries. They have an abundance of natural gas and an abundance of forest products. These would be ideal locations for this kind of technology.

Regulatory-wise, there are a lot of advantages to biodiesel for greenhouse gas emissions. We're seeing the development of Canada's clean fuel standard. A lot of provinces already have incentives or regulations in place for blending the fuel. This biodiesel, when blended, really makes a superior fuel. It's very clean and has almost no particulates from the biodiesel component, so you don't get any smog from it, and when it's blended it makes the base fuel even cleaner. It obviously reduces the greenhouse gas intensity of the total fuel, which is a big target in the market. It helps upgrade a low-quality fuel, and one of the very useful properties is that it's temperature stable. Some of the biofuel additives at the moment have problems in winter conditions. They're not temperature stable, whereas the biodiesel from these processes is very useful for cold places.

The economics are now there. One of my clients is in the process of siting a biomass-to-diesel fuel plant in the south Okanagan. They're in the process of dealing with the landlord and the permits now. Some of the other spinoffs are going to be waste heat. Some of the waste heat will be piped to greenhouses, potentially.

● (1000)

The process also produces clean water, which can be used for irrigation. There's, of course, the biochar, which again is very good for intensive horticulture. It's very good for soil enhancement. So there are a lot of real advantages.

The Chair: Mr. Struthers, I'm going to have to ask you wrap up very quickly.

Mr. Christopher Struthers: Okay.

That's a summary of some of the technologies we've been working on. I'm happy to answer questions. Thank you.

The Chair: Thank you.

We'll move over to you, Ms. Lagacé.

Ms. Pascale Lagacé (Vice-President, Environment, Innovation and Energy, Resolute Forest Products): Thank you, Chair and members of the committee.

My name is Pascale Lagacé. I'm the vice-president of Environment, Innovation and Energy at Resolute Forest Products. I'm accompanied by Alain Bourdages, the vice-president of Innovation and Energy. We are very pleased to be here today to speak to you on behalf of Resolute as part of your study on the secondary supply chain products in the forest products sector in Canada.

[*Translation*]

Resolute Forest Products is a global leader in the forest products industry with a diverse range of products, including market pulp, tissue papers, wood products, newsprint and specialty papers, which are marketed in over 70 countries.

The company is also a major player in supporting and deploying innovations in the forest products sector in Canada.

[*English*]

Our business starts with the great privilege of sustainably harvesting large areas of Canadian forest, then focuses on extracting as much value from that precious resource so that nothing is lost. For the last century, the forest products supply chain remained largely unchanged. Logs from the forest would be brought to a sawmill, where they would be turned into construction lumber. Secondary products such as bark, chips, or sawdust would be dispatched to the highest value use and input into pulp, paper, board-making, or fuel to generate energy to support those same manufacturing activities.

[*Translation*]

But more than anyone else, we recognize that this supply chain is undergoing profound changes. Significant trends, especially in printed media, led several years ago to a shift in Resolute's business strategy and in a repositioning of its activities toward products most likely to offer features and attributes that will remain attractive to consumers over the next decades.

This thinking also led to the conclusion that changes in certain consumer habits and preferences could also create opportunities and be a chance not only to explore new alternatives based on the properties of forest fibre all along the supply chain, but also to develop new business models.

[*English*]

For example, as you may have seen last week, FPInnovations, one of the leading forest products research organizations in the world, and Resolute Forest Products were proud to announce they were joining forces through a strategic research alliance, investing in the transformation of Canada's forest sector through the implementation of a TMP-Bio pilot plant in our Thunder Bay mill in Ontario. This project will develop processes that utilize equipment and fibre traditionally used to manufacture newsprint and other paper grades and repurpose them to produce biochemicals from sustainably harvested non-food sources.

We are also creating partnerships with small and medium-sized companies that bring innovative solutions to the challenges we are facing. You may have heard of Serres Toundra, a joint venture between local entrepreneurs and Resolute, that have made the first Canadian deployment of a European greenhouse technology that is now in operation, occupying an area of nearly one million square feet next to our Saint-Félicien pulp mill. Using waste heat from the Resolute facility, Serres Toundra has the capacity to product approximately 45 million cucumbers per year.

Some would say this is already an excellent example of a successful secondary supply chain initiative, but we are not stopping here. We have also announced we will integrate a first of its kind enzyme-enabled carbon capture technology on our pulp mill site, which will capture and recycle carbon dioxide emitted by our pulp-making operations and inject it into the greenhouses to optimize crop growth. This technology was developed by CO_2 Solutions, a Quebec City-based technology company.

We are not waiting for others to bring novel technologies and market applications to us. In 2014, following the discovery by FPInnovations of its patented cellulose filaments technology, Resolute created a joint venture with market pulp rival Mercer International dedicated to research and development of cellulose filament applications outside the traditional forest products business. In short, we created a start-up company with one of our biggest competitors. This company is called Performance BioFilaments, and I understand its managing director will appear before this committee later this week.

Through these various initiatives we believe we gained some knowledge of the challenges of optimally using Canada's forest resources in the 21st century. First and foremost, forest fibre cannot be developed in a linear fashion, not unlike petroleum. To extract maximum economic value out of a harvested tree, the resource has to be refined multiple times through multiple processes and into multiple products.

● (1005)

In other words, because of economies of scale and the chemical complexity of forest fibre, we are deeply convinced that the primary supply chain has a role to play in the development of next-generation technologies and non-traditional products. Integration is the best way to extract the most value from each tree.

[*Translation*]

It is clear to us that the policies and programs of the Government of Canada that would be the most appropriate to support the development of the forest products industry need to focus on the following elements.

First is federal support for venture capital. As you probably know, the investments in forest industry transformation program that provides financial assistance for innovative projects through a rigorous selection process has historically been extremely popular with the industry.

This particular program has, each time, attracted novel projects for which the requests for financing largely exceeded the available funding envelopes. We have no doubt that the new clean growth program put in place by Natural Resources Canada will be as successful. This type of approach not only needs to be pursued by the Government of Canada, but also needs to be broader.

Second, Canada's research and development capacity in this industry must not only be maintained, but also aligned with the interests of both the traditional and non-traditional industries. Partnership funding programs for small, medium-sized and large businesses, as well as research institutes, should be enhanced, not only to support the traditional industry, but also to support all the players in the market.

Finally, all stakeholders involved in forest management and development in Canada need to recognize that it is crucial that public policies seek a healthy balance between preserving the biodiversity of Canada's forests, reducing Canada's environmental footprint, including greenhouse gases, and stimulating the social and economic development of many regions of the country. As an example, trees converted into wood products deliver significant environmental benefits because they continue to sequester carbon dioxide, the most common greenhouse gas. As such, the use of 1 cubic metre of construction lumber removes 0.9 tonne of CO_2 from the atmosphere.

For Resolute Forest Products, the development of forest-fibre based biotechnologies will only be able to thrive if the raw material that is the source of all these advancements is harvested globally in a sustainable way, which is currently the case, at a competitive price, no matter who is doing what in the value chain.

● (1010)

[*English*]

In closing, we would like to thank you for the opportunity to speak with you today. Alain and I would be happy to answer any questions you may have.

The Chair: Thanks very much.

Mr. Serré, you're going to start us off.

[*Translation*]

Mr. Marc Serré (Nickel Belt, Lib.): Thank you, Mr. Chair.

I want to thank the witnesses for their presentations and the work they are doing.

We heard witnesses Rick Jeffery and Eric Karsh say that Canada was a global leader in forest industry management. So I really want to thank Resolute Forest Products for its work.

The forest industry has contributed about $23 billion to the national GDP and directly funded some 211,000 jobs across the country.

I want to begin by thanking you very much for the investment you recently made, as announced in Thunder Bay. Your company invested $3.5 million in a $21-million project.

I would like to know what your contribution to that investment is. I would also like to know something else about research and development and innovation, areas in which our government has gotten very involved. I know the people from Domtar said that staff from Natural Resources Canada and the Natural Sciences and Engineering Research Council of Canada, NSERC, were working closely with them in that area.

Could you share your recommendations on this matter? What could the federal government do to continue to improve and develop innovation and investments in research and development? Could this help you increase the number of Canadian jobs?

Mr. Alain Bourdages (Vice-President, Innovation and Energy, Resolute Forest Products): I will answer the first question.

In the case of TMP-Bio, our investment is $3.5 million, $2 million of which is in capital, strictly for equipment, and then another $500,000 a year for operating support. We are not only there to install equipment, but also to run it, test it and complete the project. The $21 million also includes a large research and development component, partly funded by the Government of Canada, through Natural Resources Canada, and the Government of Ontario.

As a member of FPInnovations, Resolute Forest Products is working on research and development and facilitating the integration in an industrial setting through its Thunder Bay plant. That is part of the learning inherent to project deployment.

We will also support FPInnovations, whose employees will be the ones running the plant. Of course, they are on site at our facilities. So we will collaborate by providing services, including by providing insight into future technological development and by pointing out what pitfalls in terms of marketing must be taken into account for this project.

So we are involved both financially, since we are investing $3.5 million, and operationally, since we are helping lead the research, which will be available for the entire industry through federation members.

Mr. Marc Serré: That's excellent. Thank you very much.

[*English*]

Mr. Struthers, you mentioned the work you do as an engineer. The Domtar witness indicated earlier what we've heard about from others in the resource sector, in mining and forestry: skills shortages. When we look at skills development for the workforce for the future, do you have any specific recommendations for the federal government to help the industry out? Do we look at STEM, at women in technology and science, and at increasing and supporting the private sector businesses with regard to the current skills shortages and for jobs in the future?

Mr. Christopher Struthers: In my business, I'm finding that the availability of skilled engineering, engineers, and technologists is actually quite good right now. It helps that I live in a very attractive location in the South Okanagan, so it's not too hard to attract folks.

There is definitely more of a challenge in the remote areas and the areas further north, which is where a lot of the resources reside. We were speaking earlier about power generation in remote communities. One of the challenges in order to do this sort of thing is to have local people trained to operate and maintain these facilities. Training programs that do outreach and encourage learning and STEM, especially for remote communities and/or first nations communities definitely would be advantageous, so that when these technologies get applied to remote areas it's easier for them to find the skilled labour, technologists, and service people locally instead of having to import them.

Mr. Marc Serré: I have two minutes left. That's good.

● (1015)

[*Translation*]

Forest products account for 7% of Canadian exports. What could we do to help the forest industry increase the exporting of its products to Japan, Europe or China? Do you have any recommendations for the federal government?

In addition, you are working closely with first nations. You are employing first nations members. Do you have any recommendations that would help establish a connection with first nations when it comes to resources and training, in order to enhance and build relationships? Do you have an example of good things you have already accomplished?

Ms. Pascale Lagacé: I will begin by answering your question about first nations.

In each community, we have close relationships with first nations on site. It is true that training programs can help provide a workforce in remote regions, where things are more difficult. However, those individuals are well-established and well-positioned to want to stay in the regions and contribute. What is needed is support for starting a business for those individuals who can work with us in our forestry operations.

As for exports, perhaps my colleague would like to answer the question.

Mr. Alain Bourdages: Given Resolute Forest Products' location, exporting to Asia is a bit more difficult for us compared to some of the competition in western Canada. Our export markets are mostly related to pulp and paper, which are more global materials. Supply chains are fairly well established.

I presume that your question has more to do with softwood lumber. That is a more particular issue, given the current circumstances with the U.S. government. For the time being, it is a matter of all levels of government continuing to support the industry to help it overcome those difficulties. That is not specifically within our field of expertise, but I think the assistance we are currently receiving is especially appreciated and effective. I'm not talking about only financial support, but also political support, which is very useful.

Ms. Pascale Lagacé: I would like to add something about the development of new products, such as biochemical products. It is clear that projects such as TMP-Bio help develop new markets and establish connections with related and different industries with which we usually have less contact. We may be talking about the production of certain kinds of sugars or specialty chemical products, among other things. The creation of connections can facilitate the exporting and development of those new products.

Mr. Marc Serré: Thank you.

[*English*]

The Chair: Mr. Falk.

Mr. Ted Falk (Provencher, CPC): Thank you, Mr. Chair, and thanks to all of our witnesses for their presentations, which were very interesting and thought-provoking.

Mr. Struthers, I would like to begin with you and ask you a few questions. You talked a bit about some of the biofuel products you create. Are they cost competitive?

Mr. Christopher Struthers: If you were to fill up your vehicle with 100% biofuel, no. As a one-to-one comparison, they are more expensive than the fuels on the market now. Where they get their value is as a fuel blend.

As I said, the biofuel that's created is a lot cleaner and it's a much higher-grade fuel. Adding it to an existing fuel stock not only improves the grade of the fuel, it makes it more temperature stable, lowers the particulate emission, and obviously lowers the greenhouse gas intensity of the fuel. With more interest in blending fuels with renewable parts—we've already seen this for a number of years in Europe, and a number of provinces already have rules in place for it—and with the clean fuel standard that's coming from the federal government this year, we expect there will be more and more attraction for doing this, especially with carbon taxes and greenhouse gas credits and things like that.

As a one-to-one fuel replacement, it is more expensive, but as a blend it is very attractive and very economical.

Mr. Ted Falk: One of the other things you mentioned is that plants that produce this kind of fuel aren't billion-dollar plants, but they're more affordable plants. Do these more affordable plants have the ability to meet the commercial demand that could be there?

Mr. Christopher Struthers: Yes, absolutely.

One of my clients is in construction now. It's natural gas to liquid, so it doesn't have the bio component, but the client is building a plant just outside of Calgary for 300 barrels a day, turning natural gas into this high-grade, synthetic diesel. They've raised all the financing. It's well under construction, and the numbers look very good. The goal now is to marry this technology with the gasifier technology for wood products and essentially make biodiesel. That's the next step for this particular group.

● (1020)

Mr. Ted Falk: What barriers do you foresee to this kind of technology?

Mr. Christopher Struthers: One is in getting steady feedstocks for the biomass. There are plenty of them around. You've heard from some of the earlier witnesses that there are quite some challenges in getting the different forestry suppliers and the different groups and provincial agencies and whatnot all on-board and on the same page to guarantee a steady supply of cost-effective feedstock. We certainly know the resource is there, but I understand there is a bit of a challenge sometimes in getting a long-term, steady feed.

Otherwise, the economics for this sort of technology are looking quite good.

Mr. Ted Falk: Thank you very much.

Ms. Lagacé, you talked a little bit about the $21-million investment in Thunder Bay, for which you're coming up with $3.5 million, so between the provincial and federal governments there is a $16-million investment, roughly. What kind of return on investment can those governments expect?

Ms. Pascale Lagacé: This is a pilot plant, so it's being built to help develop markets and products so that we can identify which ones are most profitable. For R and D, I guess there is no return. The return comes from development of those full-scale plants later on.

That's why we are deeply involved in making sure that as the research.... A big portion of the research that's done for the R and D is for the pilot plant and optimizing the process so that when you build a full-scale plant you can build it at a cost-competitive price. But there is also a big portion that uses what comes out of that process and further refines or modifies it in order to develop higher-end products where you can make a bigger profit. The intent is that there is a return in jobs, mostly, and also transformation of the industry so that facilities that use.... This technology uses the same type of technology that's used to make newsprint. We know that demand for newsprint is going down, so the intent is to use the assets that are there to manufacture higher-grade products, which will allow these plants to continue operating and save jobs in the area, but also make profitable economic benefits from the area.

Mr. Ted Falk: What kinds of products do you envision coming out of this research?

Ms. Pascale Lagacé: The two base products are lignin and sugar, but the idea is to further refine the sugars into specialized chemicals and to use lignin for a wide range of products, which could be glues for panels or polymers. There is a really large range of biochemicals that can be developed from these products. At this plant there is already another lignin plant that uses lignin for the craft process rather than the mechanical pulping process. Then the idea is to identify the best uses for each of the types of lignin so that this area becomes a centre of excellence for development of by-products from lignin production.

Mr. Ted Falk: Thank you.

What kinds of barriers do you see going forward in your industry?

Ms. Pascale Lagacé: In those types of products I would say one of the key barriers is access to capital, and there is also the development of new markets.

Mr. Ted Falk: You are a publicly traded company.

Ms. Pascale Lagacé: Yes.

Mr. Ted Falk: You just ask for money and it comes, doesn't it?

Voices: Oh, oh!

Ms. Pascale Lagacé: We wish.

Mr. Ted Falk: Your stock has done very well in the last year.

Ms. Pascale Lagacé: The stockholders are making lots of money.

Mr. Ted Falk: Your company must be doing well.

Thank you.

The Chair: Mr. Cannings.

Mr. Richard Cannings: Thank you, all, for coming here today.

I'm going to start with Mr. Struthers.

I want to talk first about the energy-producing ideas you talked about. I was just at a natural resource forum in Prince George where a number of groups talked about the use of wood residuals or wood chips to create energy-generation plants in remote areas to get them off diesel. One was in Fort Ware and another one was a remote community in north central B.C. that was being paid by BC Hydro to gather up all the logs that drifted up onto the beach of Lake Williston, a big reservoir, and burn them. They were paid to burn them on the beach. There was an engineering company working with them to develop this.

I'm just wondering what you see as the overall potential for these kinds of projects. We heard from Mr. Price previously. I don't know if you heard his testimony about the BRIMS project where you now have a database in Alberta, for instance, that shows you where biomass residuals are and how much are there. Do you have any idea of the future for this, to get these remote communities off diesel?

● (1025)

Mr. Christopher Struthers: The future is looking very good. The technology, I believe, is now there. As I said, I've looked at the numbers closely on what it would cost to generate power on a smaller scale. The key thing here is scalability and small communities need this to be done in smaller power plants. I believe the technology is there now, and now it's just a matter of adoption.

One of the challenges is the existing infrastructure. A lot of money has been invested in the existing diesel plants and things like that. It depends on the power supplier. In British Columbia, as you know, most of these communities are supplied by BC Hydro. It takes a bit more for a bigger firm to take a risk on a new technology, even though what we see is really the marriage of a couple of now very well-proven technologies. There's a bit of trouble with adoption and understanding and also on the regulatory side with what constitutes a utility, how to get this investment done, and how to make it work.

Technology-wise, I believe it's here now. It's ready to be used. Now it's a matter of getting the roadblocks out of the way to make it happen.

Mr. Richard Cannings: Just to follow up on that and to follow up on Mr. Serré's question about training, especially in these remote communities you have suggested that is an issue. I want to know what more specifics are. When I talked to people from Fort Ware they said the biggest problem they had was that all the equipment came from Germany and all the instructions were in German, so suddenly all these local people had to either learn German or get someone to translate the instructions.

There are two parts to that. One is specifically what kind of training do you find lacking in these remote communities that we could help with, or government could help with? Second, in this situation where most of the technology we're talking about with these new technologies around the forest industry, or much of it, is coming from Europe, I just wonder how we could build technologies here in Canada and what the government could do to help that.

Mr. Christopher Struthers: You're quite right. A lot of the bio-generation technologies are coming from Europe. The battery technologies certainly are a little more domestic, which is very promising. Training-wise, the sorts of people who are needed to operate and maintain these plants are electricians, power engineers, and people with steam and combustion experience. It will take some long-term investment in training, making sure that folks all the way from high school are getting exposed to the technology fields. It's not something in which you could just train people overnight; they have to be groomed for it for some years.

The investment in education needs to start early. There are certainly a lot of good programs out there, but of course, in remote communities, it's a struggle for folks to travel somewhere for long periods of time to go to school. The payoff, eventually, is if those folks can return to their communities with the training in hand, it's not only that they are employed in their own community, but also that the community does not have to rely on expensive outsourced or imported labour from one of the bigger centres. Getting folks to move to smaller communities to maintain this sort of equipment is always a challenge.

Certainly the investment and making sure that there's outreach starting at the high school level, making sure that kids are encouraged to go into trades and technologies, is very important.

● (1030)

Mr. Richard Cannings: I'll turn to Resolute and follow up on that. You said that IFIT and programs like the clean growth program were useful, but you said you wanted these to be broader. Could you expand on that? Where do you think we could help with building technologies like those we were just talking about?

Mr. Alain Bourdages: I would say that other than making construction lumber, wood buildings, or tall wood buildings, this is an excellent technology to develop. It's not necessarily where we are. In terms of the programs, our main concern is the availability under the envelopes that are awarded in the budgeting process. I don't know the exact numbers—you might know them more than I do—but I understand that, for example in the latest IFIT round, the proposals that were received were tenfold more than the available budget. That's our main concern. We think not only our projects, but most certainly those of others as well, are probably worthy of receiving funds. The IFIT process, the way we see it, is very rigorous. There are expert panels. I think it is a risky business to invest in start-up technologies and first deployments. The government is getting its money's worth to the extent it has the right process to evaluate those projects. It's a matter of expanding the envelopes, primarily.

Mr. Richard Cannings: Instead of adding new programs, giving out more money within those programs.

Mr. Alain Bourdages: Yes, and where we seem to be headed with the current IFIT program, and many programs that have asked for certain amounts to de-risk their projects, is that because of the multitude of projects and the need to try to help many, the awards per project will be smaller than what the projects will require. Certain projects are good, but lack funding. Because of that necessity, they end up not being done. All these things are difficult to manage, but that's a suggestion that would be worth looking at.

Mr. Richard Cannings: Thank you.

The Chair: Mr. Tan, you have about three or four minutes.

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

I'm very impressed by your $21-million TMP-Bio pilot project. I guess it's thermomechanical pulp. This project was supported by the federal and provincial governments. Will the resources from this pilot project be shared with others in the industry in the future, and further create opportunities for innovation, not just in universities? That's one part.

The second part is that your project is very exceptional. I found out most of the funding is from the government, but quite often in the industry, this kind of pilot project is done by one company to initiate that project, and is supported by the industrial consortium, with or without support from government. In general, from your experience, how critical is the support from government in making your project a reality? In other words, if there's no endorsement or support from government, how can you sell your idea to attract more investment to make this project a reality?

Mr. Alain Bourdages: We have limited capital, as your previous witness said, so our objective is really to build a portfolio of innovative projects because, by nature, some innovative projects fail and some succeed. Our view is that we need to try many things. If we were to fund entirely the projects that we get into—and we would fund some—we would try fewer than we are now. I think the help from government helps us do that, to try many things from the laboratory to commercialization. That's the strategy we're adopting, and that's why we think government funding is so important. It allows us to try many technologies so that for the ones that work, we have not failed to try because of lack of funding.

Specifically on your question on TMP-Bio, the technology will benefit the entire industry. We've decided to participate in the funding of the commercialization or the piloting, so to speak, because to us there's a particular interest in trying to reuse thermomechanical pulping assets, which is what we use to make newsprint. Particularly for us, strategically, if this technology is successful and can be commercialized, then we have a lot to gain because we'll be making products that we could potentially sell at large volumes. A lot of our existing facilities that produce traditional paper grades use thermomechanical pulping technology; therefore, the replication potential for us, if successful, is extremely interesting. That's why we've participated, but the result of the research and development is going to be shared within the industry.

Perhaps you're not as familiar with FPInnovations, and maybe that's where your question comes from. FPInnovations is a membership-based organization. The R and D portion of the $21 million is essentially funded and conducted by FPInnovations, and all members will have access to it.

● (1035)

Mr. Geng Tan: It's not purely from government, FPInnovations.

Mr. Alain Bourdages: No. It will be disseminated within industry.

The Chair: I think we're going to have to stop there.

Unfortunately, we've run out of time this morning, but we're very grateful to the three of you for making the effort to be here today. Your contribution is very much appreciated. Thanks very much.

We're going to suspend for one minute, and then we'll go in camera to talk committee business.

[*Proceedings continue in camera*]