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Chair

Mr. Dan Ruimy

Standing Committee on Industry, Science and Technology

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● (1540)

[*English*]

The Chair (Mr. Dan Ruimy (Pitt Meadows—Maple Ridge, Lib.)): Good afternoon, everybody.

Welcome back to another lovely season we have here. This is meeting number 22, and it looks to be an interesting one, with the great witnesses we have here today. I apologize for being a bit late; the House got out a bit late today.

We have two witnesses, and then we are going to get into our questioning. In the last 15 minutes, we will do some committee business.

Without any further ado, we are going to go with Ms. Sullivan, dean of the faculty of engineering at the University of Waterloo. You have 10 minutes. Give us your best shot.

Dr. Pearl Sullivan (Dean, Faculty of Engineering, University of Waterloo): Thank you very much, Mr. Chair. Thank you, everyone, for the invitation to speak to you today.

Canada needs manufacturing as a strategic economic sector because, as an advanced country, we need to create and produce things. The ability to create new value is a key indicator of the technological progress of a country. More important, manufacturing has an enormous ripple effect on the other industries, especially transportation, finance, trade, and services, which employ large proportions of our society.

As we have also seen in the United States, Canada's manufacturing sector has dropped in the last 20 years from 25% of the nation's GDP to 10% today, mainly due to external forces, and most significantly because of globalization. We did not anticipate how quickly global competitors would be able to build up the infrastructure to compete on pricing and delivery. In the mix, business is facing growing challenges, including electricity pricing, pension programs, and environmental policies such as cap and trade.

Regardless of the source of challenges, it is no longer enough to develop new products; we need to also develop new markets.

The future lies in high-value production, embedding cutting-edge technology in our products. In an era of clean energy technologies, self-driving cars, and digital infrastructure, Canada can define its place in the global marketplace through quality, safety, and dependability. Above all, we need a continuum of resources and infrastructure to enable Canadians to design, make, and market new products. This will require a coordinated effort, a national effort across education, infrastructure, procurement, and trade policy. What can Canada's universities do to help?

First, education's impact is direct. We need to develop a real talent pipeline for high-level skills and creativity, so our students are equipped to impact the world from the day they graduate, or sooner.

At Waterloo, for example, all 12 of our engineering programs are co-op, so every student graduates with at least 20 months of hands-on work experience. In 2015, our students earned $120 million, working with 1,700 employers. Where our students work also indicates the dynamism of the sector. Every year about one-quarter of the 8,200 positions are in manufacturing, providing continual injection of new ideas and energy. Meanwhile, our students become experienced, job-ready engineers. Their employment rate post-graduation is over 95%.

Skills and education must reach further than just students and entry-level workers, however. The pace of technology innovation and adoption is ever accelerating. Existing workers and management in both SMEs and major industry need opportunities to explore new ideas and retool for new skills. We need an initiative that would allow industries into our education and research programs so that they can get hands-on experience of new technologies for themselves—a reverse co-op model, of a sort.

As Harvard business professor Michael Porter has stated, “innovation is the central issue in economic prosperity”, and the competitiveness of a country is directly tied to the ability of its industrial complex to “innovate and upgrade”.

To make this a reality, academia needs to engage more effectively with the manufacturing sector. Universities have already begun to do so. Half of Waterloo engineering research, for example, is funded via partnership programs. We have over 1,000 private sector partners, and we have translated hundreds of new technologies to industry.

While successful and important, however, these projects cannot transform private sector R and D by themselves. Many are funded for a limited duration, for work with a single partner toward a particular objective. Opportunities for networking and wider collaboration are restricted. On the other hand, funding for more ambitious programs can take years to assemble, making partners reluctant to invest and leading to missed opportunities.

In contrast, some of the most successful initiatives are much broader and more inclusive. We have a number of research centres, but I will use the automotive area as an example, since it is the most organized in the field of manufacturing.

● (1545)

The Waterloo Centre for Automotive Research, or WatCAR, has grown to become Canada's largest automotive academic enterprise. It acts as a magnet not just for car manufacturers like GM, Magna, Ford, Toyota, and Honda, but also for assemblers, parts suppliers, and regulators. With programs in connected and autonomous vehicles, lightweight materials, vehicle safety, green energy, and more, it allows all partners, big and small, to access a spectrum of expertise and know-how to help them adapt for tomorrow's automotive sector.

The upfront costs of development in producing a new product or manufacturing processes are large. Equipment can be highly specialized, and validation and certification expensive. This is a huge barrier for small business and it's why large corporations like BlackBerry, Bombardier, and Magna dominate R and D in Canada. Nevertheless, more than 95% of Canada's manufacturing firms are SMEs. They will need to adapt and innovate. We need to create innovation anchors, and also hubs like WatCAR, for world-class product development and validation where research infrastructure and expertise are open to all Canadian companies. These centres can be test beds for developing new platform technologies that are adapted for partners' needs. They welcome established technicians, engineers, regulators, and managers looking to explore and practice state-of-the-art technologies.

Innovation hubs should bring everyone to the table for networking, exchanging ideas, and seizing opportunities for integration and collaboration for large corporations that can invest strategically in Canada, SMEs that need to innovate and secure new customers, startups and entrepreneurs looking to scale up, regulators and the public sector seeking insight into tomorrow's industries and products, and researchers and students looking for new challenges with a real-world impact. Government can play a crucial role by seeding this kind of innovation.

We, as a country, cannot excel in everything, but some platform technologies will be vital for protecting Canadian companies and jobs in the global marketplace. Examples include advanced sensing and digital manufacturing, sustainable materials, flexible electronics, and the visualization and computational modelling of manufacturing processes. Autonomous vehicles and connected cars will revolutionize our established automotive and transportation sectors.

I'd like to quickly highlight two newcomers.

Mobile and autonomous robotics are expanding rapidly. McKinsey estimates the market will be worth $200 billion within 10 years. In Waterloo, mechatronics research has spawned some of the country's most promising new robotics companies. Clearpath Robotics and Aeryon Labs, for example, have created hundreds of jobs in just a few years of operation. Aeryon drones helped firefighters scout the recent forest fires in Alberta, and Clearpath is expanding into industrial markets with their autonomous warehouse robots. They are investing in research to build a new generation of products, and they're being joined by many start-up companies in an emerging robotics innovation cluster.

Additive manufacturing and 3D printing meanwhile are just approaching the mainstream. International companies like EOS, GE Aviation, Rio Tinto, and Rockwell are lining up to partner with Waterloo engineering on research and development. At least five other Canadian universities are developing this capability. In the years to come, hundreds, if not thousands, of SMEs will need to incorporate 3D printing into their workflow.

The innovation index of the World Intellectual Property Organization, or WIPO, shows Canada slipping from 11th place in 2013 to 16th place in 2015. Germany, and now the United States, is leading the way in merging information technologies on the Internet of things and manufacturing process technologies that drive the next generation manufacturing enterprises.

While there are pockets of strength within Canadian industry and academia, we need a big "I" consolidated national initiative. We need a strategy for developing, demonstrating, and deploying select platform technologies, so they can be accessible to SMEs and large Canadian companies for commercialization. This is a vision that the manufacturing sector has been seeking and one that universities like Waterloo are eager to embrace.

Thank you very much.

● (1550)

The Chair: Thank you very much. That was excellent and still under 10 minutes.

We're going to move to Leah Olson, president of the Agricultural Manufacturers of Canada. You have 10 minutes.

Ms. Leah Olson (President, Agricultural Manufacturers of Canada): Thank you.

Good afternoon, Mr. Chair and committee members. As you identified, I'm Leah Olson. I'm president of the Agricultural Manufacturers of Canada. Our board chair, Geof Gray, sends his regrets for not being able to attend.

I'd like to provide a few remarks before the floor is opened for questions.

I'm pleased to be here as you continue your study on manufacturing in Canada. It's an important one, and I want to share with you the critical role that agriculture equipment manufacturers play in today's economy.

The Agricultural Manufacturers of Canada is a national member-driven industry association with just under 300 members. Our mission is to foster and promote the growth and development of the industry in Canada.

Canadian-made agriculture equipment is among the highest quality in the world. Just over 50% of our manufacturing members are located in communities of fewer than 10,000 people. Some of our members are located on the family farm or in communities where the people they employ outnumber the community they're in.

For example, Westfield, founded in 1951 by Abraham Plett, a farmer turned manufacturer, is a leading producer of grain augers. Westfield, acquired by Ag Growth International in 2000, continues to have its manufacturing facility of approximately 175,000 square feet in Rosenort, Manitoba, a community of fewer than 600. Their products are exported to over 30 countries worldwide, and they employ approximately 250 people at their plant in Rosenort.

Seed Hawk, a manufacturer of seeders, was established in the early 1990s when Pat Beaujot, a professional agronomist with a passion for precision seed and fertilizer placement, wanted to avoid tilling his farmland but did not have the equipment on the farm to fit his needs. As such, he and two partners developed and began manufacturing equipment to enable them to employ no-till technology. Today, Seed Hawk is majority owned by a privately held Swedish company, Väderstad. Despite the ownership change, Seed Hawk continues to be located in Langbank, Saskatchewan, a hamlet with a population of fewer than 100, and they employ more than 200.

These are not isolated examples; rather, they are the norm within our industry. We provide unique employment in all realms associated with being a quality manufacturer: finance, marketing, IT, engineering, procurement, etc.

All across Canada, agriculture equipment manufacturers are making a positive economic impact, but they are not immune to global market downturns and job losses. While there have been some employment reductions, it is not consistent across our industry. In fact, with a global downturn, most of our members, small and medium-sized, have turned to increased R and D and made efforts to reduce their input costs rather than seek out government subsidies.

The key role the government can pursue for agriculture equipment manufacturers is to enable further innovation by providing tax rebates supporting R and D and the commercialization of our products in Canada and globally.

Machinery has been at the heart of Canadian agriculture for many years. It shaped agricultural practices and, in many respects, created the opportunity for rapid European settlement in the late 1800s. The agriculture equipment manufacturing industry has progressively developed as an entity separate from commercial or industrial manufacturing.

Central to this evolution was the need to develop agricultural machinery capable of meeting the challenges of our Canadian climate. This drive for innovation was critical to farmers who struggled with foreign equipment designed for smaller farms and less arid conditions. These same challenges have enabled Canadian agriculture equipment manufacturers to be global leaders in the development and production of high-quality, durable, and innovative machinery.

Innovation is crucial if we want to address global issues such as overpopulation, limited resources, and the need for food. The agriculture industry will need to produce more with less, and Canadian farmers are at the forefront of meeting this challenge. AMC's members continuously develop innovative technologies and manufacture products that enable us to be leaders throughout the world. This puts us in a good position to align with and inform the government's innovation agenda.

Our industry is unique, not only in that it's developed in Canada, but also because it impacts food sources globally. Our products help feed the world. Our environmental footprint is better today than 30 years ago because of the equipment that we have built and that we are using.

Our members lead the world on intellectual property of agriculture equipment. Innovation happens every day because our members are talking directly to farmers and responding to their needs by further refining and enhancing their products.

● (1555)

For us, innovation is not just a way of being or something that happens in an isolated facility. It is how we manufacture and manage our day-to-day operations. It is what drives us to develop some of the best agriculture equipment in the world.

Although our sector innovates regularly, there are some areas that could be improved, which I'd like to discuss with you.

First, I'd like to speak about the industrial research assistance program. The $50 million in additional support allocated to IRAP in the 2016 budget is an important investment in moving the innovation agenda forward, and we applaud this. It has helped our members tremendously.

For example, as one of our members highlighted: “We were given an IRAP grant last year that allowed us to do some testing with the Prairie Agricultural Machinery Institute (PAMI) on a new product destined for the European Union. That product testing identified a fatal flaw in one of our components and allowed us to stop installation and adjust our product development direction into something that worked.” They continued: “Without the IRAP funding, we would not have been able to afford the testing. The test was expensive and we had put [all of] our money and energy into the design and development of the prototypes. While the testing year wasn't pleasant due to the identified failure, the results could have been disastrous for us if the product had made it to the [European] market without this test and instead of costing us a few hundred thousand dollars to right the problem it could have easily cost us millions.”

Small and medium-sized enterprises benefit greatly from the IRAP program. Often, it is the difference between launching an innovation, leaving it on the research floor, or launching it without due testing. However, we'd like to see IRAP expanded to cover production and marketing costs of projects, which would help grow our industry even further and contribute to an innovative economy.

Another program that is beneficial to approximately 60% of agriculture equipment manufacturers is the scientific research and experimental development tax credit, SR and ED. However, administrative costs associated with it are increasingly burdensome, resulting in research and development becoming more challenging. The process to make a submission to the program needs to be streamlined if the objectives of the program remain to reward innovation.

Of our members who use the SR and ED program, many are frustrated with the submission process, indicating that it is confusing and often requires professional outside help to do the applications. Often, members will pay anywhere from $30,000 to $100,000 to get the application done. If you assume that 10 of our members hire external consultants for their submission, the combined amount is upwards of $1 million going into administration costs rather than innovation itself. Perhaps it is the cost of doing business, but these are dollars that we would rather see invested in R and D.

Innovation in our industry is incremental, and it's these small steps that allow for the leaps and bounds to occur. We encourage the government to not only streamline the process, but to also have auditors who understand the agriculture equipment industry.

Finally, I'd like to speak about market access.

Export Development Canada is a key player for many of our members, and we thank them for their support.

In 2015 agriculture equipment manufacturers exported 1.8 billion dollars' worth of products to 154 countries; the U.S. was 82% of this. This is why we're keen to see the trans-Pacific partnership agreement ratified, and we want to work with the government on communicating to the public the importance of stronger and more open trade relations.

Innovation minister the Honourable Navdeep Bains recently said in a speech, “As a country made up primarily of small businesses, I'd like to see more than 10% of them exporting, and to places other than the U.S.”

Mr. Chair, we agree. Australia and eastern Europe are key markets for Canadian agriculture equipment manufacturers. Our equipment performs very well there, but there are also great opportunities in South America and Asia. The government could do more to support our efforts at international farm shows and in working with us on challenges that have been overlooked, for example, visas and getting entry into a country more easily to market our industry's products. Continued investments, promoting international trade, and bringing international buyers to Canada are key to our continued growth.

In conclusion, Mr. Chair, Minister Bains has said that innovation is “the path to growth” and the path “to a stronger middle class and higher quality jobs for all Canadians.”

● (1600)

Mr. Chair and committee members, we could not agree more. AMC members help drive the Canadian economy, are global leaders in innovation, and are entrepreneurs who are feeding the world. That's why changes to IRAP and SR and ED, as well as opening up international markets, are integral to Canada's innovation future.

[*Translation*]

Thank you. I appreciate the time you have given us.

[*English*]

The Chair: Thank you very much.

We're going to go right into questioning.

We're starting off with Mr. Arya. You have seven minutes.

Mr. Chandra Arya (Nepean, Lib.): Ms. Olson, it's very nice meeting you again.

I recall that when you and a couple of your members came to meet me, we discussed various programs. As you said, we do have excellent programs for innovation and research and development, the SR and ED, IRAP, etc. If I recall, we did mention the problems in funding of commercialization, as you mentioned here, the production and marketing costs of new innovation products.

Could you quickly elaborate on that?

Ms. Leah Olson: Yes, thank you for your question.

In terms of the production costs, when our members are working with farmers, they will often go back to the shop and make some tweaks.

I took over as AMC's president in March 2015 and I went out to over 60% of our members, and some of them really are on the family farm. Each of those members who I visited has an R and D facility, so while we're small and medium-sized, the R and D is very targeted.

What ends up happening is there is so much of the energy that will go into the production, the prototyping, but as the one member who took advantage of IRAP and was able to do the proper testing identified, they're in a race against other manufacturers, and often we're leading the technology in what's happening. When you pour all of those dollars into the R and D and you're not taking the dollars into the actual production, that's where I think there is a bit of a gap.

● (1605)

Mr. Chandra Arya: Thank you.

Dr. Sullivan, of course Waterloo is a great university creating engineering graduates. I'm glad to know there are 2,000 engineering students working in manufacturing.

On the advanced manufacturing side, do you think we have enough talent in Canada for the advanced manufacturing companies? Do you think the universities are supplying enough trained graduates?

Dr. Pearl Sullivan: Before I prepared my presentation, I spoke with a number of CEOs who we have relationships with to ask their views, because I think it's important that we provide a view that also includes the business community.

I think what they're saying is that we do have undergraduate-level process engineers. We do need more graduate level, highly skilled people on that side because the manufacturing world is becoming very sophisticated, and to be competitive, the automation side is real.

We talk about Shenzhen all the time in China, which seems to be taking all the jobs and producing 90 million iPhones and so on. But in reality, if you look at what has happened in the last 10 years in Shenzhen, it is highly automated now. They're using less than one-third of the people they used a few years ago. In fact, there are 36,000 injection moulding machines right there in Shenzhen, and robotics are pretty much running the lines now.

I do think we need a different skill set. It's not so much whether we have enough. I think it's not so much the numbers anymore, it's the type of skill sets. We really have to be very targeted in our development of skill sets that would be able to develop new technologies, not just buying things off the shelves and running them. I think we do need that technology.

Mr. Chandra Arya: I'm glad that you mentioned we need different, targeted skill sets for the emerging manufacturing industries.

Of course we can't excel in everything, as you rightly said. You talked about advanced sensing and digital manufacturing, mobile autonomous robotics, and additive manufacturing. For these advanced manufacturing segments, do you think a cluster approach would be better?

Dr. Pearl Sullivan: I think we have to use the fact that there are some strengths in some areas in some places. For instance, if you asked me what we should do in Waterloo, we are extremely strong in ICT. Manufacturing is going to the technology side, so what we like to do is—and our plans are—to strengthen mobile robotics and strengthen the digital manufacturing side, which is additive manufacturing and 3D printing. That's where we are going to invest our efforts and our innovation agenda.

I do think every university and every NRC has specific agendas and strengths to work with.

Mr. Chandra Arya: I'm sure. You're thinking about one cluster's approach is appropriate. Are you seeing any clusters developing in any part of Canada in any of these advanced manufacturing segments?

Dr. Pearl Sullivan: I think in southern Ontario, the Mississauga area, Hamilton area, the Waterloo region, and so on, there are business clusters. I think the universities have their strengths. I think we do need to talk about clusters, again, based on targets and strengths. That's very important. For the sake of developing a cluster is not the answer, I think. We have to very clear about that.

Mr. Chandra Arya: You correctly mentioned that the huge barrier for small businesses investing in research and development is the capital cost involved, but at the same time 95% of Canadian manufacturing firms are SMEs. As I mentioned earlier, there's a good supply of funds towards innovation and research and development in general, though the particular competence of SR and ED sometimes makes it a big problem for SMEs to be enrolled in that.

Do you find enough funding is available for the commercialization?

Dr. Pearl Sullivan: I will answer you in two parts.

Funding is important. More importantly, we need translators. What do I mean by that? I do think that when SMEs have an idea and they want to either improve their product or introduce a new product line, they need some form of prototyping capability, because they have to test things out. Probably, over time...increase the market share to get acceptance, but the prototyping capability is very expensive in terms of capital.

● (1610)

Mr. Chandra Arya: Absolutely.

Dr. Pearl Sullivan: It's very sophisticated equipment.

I think what we need for every region in this country is to have a prototyping capability where there is expertise.

Mr. Chandra Arya: Accessible to all SMEs....

Dr. Pearl Sullivan: Absolutely. In my view, I think we can have a prototype facility right on the Waterloo campus. We can even help more companies, not just the start-ups that we have—

Mr. Chandra Arya: That is a problem currently.

Dr. Pearl Sullivan: Absolutely. This is a barrier; this is really the stopping point. How do we get companies to come in and have integration? Integration is very important, because you can't sell a product piecemeal. You have to integrate it so it can be sold and ready.

Mr. Chandra Arya: Thank you, Dr. Sullivan.

The Chair: Thank you very much.

We're going to move to Mr. Lobb. You have seven minutes.

Mr. Ben Lobb (Huron—Bruce, CPC): Thanks very much, Mr. Chair. It's a pleasure to be back here.

A surprising conclusion to the summer in one regard, certainly for this committee, was the resignation of the Stats Canada chief, who was at this committee not too many months ago.

I have a motion that I would read into the record at this time, and the committee can deal with it as they see fit when the time comes. The motion reads, “That the Committee on Industry, Science and Technology suspends its study of the manufacturing sector and commence a study on the independence of Stats Canada.”

The Chair: It's your notice of motion.

Mr. Ben Lobb: Yes, thank you.

The first question I have is for Leah. Thank you for coming today.

I have a large agricultural industry in my riding, many manufacturers large and small. A few of them are members in your organization. I wondered if you could again go over how companies like Lucknow...or Helm Welding, and other companies—Smyth Welding would be another example—are able to stay ahead of the curve. Obviously, they are specialized markets, but how are they able to be more nimble, more efficient than the large manufacturers like John Deere, Case IH, etc., and provide local, rural, high-quality, high-paying jobs? How have these people done it consistently for literally decades?

Ms. Leah Olson: In short, if you can make a piece of agriculture equipment that is able to last in Canada, it'll last anywhere in the world. Unlike the auto industry where we're perhaps playing catch-up with other industry leaders, in the ag equipment industry, we are the leaders. I'll just use a quote from one of our members, "As shortline manufacturers, we do what mainline manufacturers can't do; we find a niche and react quickly. Our real advantage is our speed to the solution. We're innovating at the same speed as the computer, telephone technology and media industries." That's by Paul Degelman, who is one of the owners of Degelman Industries. They do a lot of rollers and ties.

Our members know that as a short-line industry, we really do lead that innovation. They're always adapting to regional needs. In that way, with the speed at which farming is changing—the use of GPS, increasingly, the possibility of autonomous tractors, drones, etc.—it's forcing our members to stay ahead and to continue working with that. The sweet spot for our industry is that we save a farmer time and increase his yields. If we can do that, then we've hit that sweet spot. It's in that way that we're a little more nimble than the mainliners, such as John Deere, AGCO, Case IH, and CNH, and able to employ in small communities.

Mr. Ben Lobb: The other question I had for you is this. I think in your paper here you mention it. Is it 30 countries you export to?

Ms. Leah Olson: It's 154. The highest number that I have out of our membership is one member who exports to 40 countries.

Mr. Ben Lobb: What about trade missions? Do your members get invited to trade missions?

Ms. Leah Olson: They do, yes.

● (1615)

Mr. Ben Lobb: Do you get invited to trade shows as well, like international machinery trade shows?

Ms. Leah Olson: Yes. We attend a lot of the international farm shows on our own dime. When there are farm shows and there are big farmers attending, our members go and meet with them there. In Germany there's Agritechnica. I'm working with the government to ensure there's a good Canadian pavilion. Saskatchewan and Manitoba have done a great job of making sure there's a pavilion specific to the harvesting equipment, seeding equipment. I'm hoping that we can have an expanded spot there that manufacturers in other provinces would be able to take advantage of.

Mr. Ben Lobb: A recurring theme every year for me for many years now, to the surprise of many in this room maybe, is that many of the manufacturers in my riding are having a difficult time finding workers with some degree of skill, right up to engineers, etc. In the sweet spot there would be welders, machinists, electricians, and others. Is this what you're hearing among your members and what can we do to help them?

Ms. Leah Olson: There's definitely a lack of skilled labour, as you identified, such as welders and machinists. The differences are different by region. In Ontario, there's a good supply chain and the auto industry has some good training programs. The needs of agriculture equipment manufacturers are slightly different, so even if you get somebody who has gone to the University of Waterloo and comes into the agriculture industry and does manufacturing, there might be a bit of training that has to be done. In the west, the labour needs were exasperated significantly by the oil and gas industry. With the softening of the oil and gas industry, our members have been able to hire some very good skilled workers as a result.

In terms of what the government can do, I think it's to continue to invest in skills development, making sure that the university programs and college programs are aligned with what the private sector needs. Often you get students who will come out of university with great skill sets, but if they are not aligned with what the employers are looking for, they're going to have a tough time finding employment.

The Chair: That's perfect. Thank you very much.

Mr. Johns, for seven minutes.

Mr. Gord Johns (Courtenay—Alberni, NDP): Mr. Chair, it's an honour to be here on behalf of the member for Windsor West.

It's important to have you here, and thank you, Dr. Sullivan and Ms. Olson. I'm learning lots, and it's important for parliamentarians to hear first-hand from entrepreneurs and those who represent entrepreneurs. I have a couple of questions.

Ms. Olson, you talked about trade. We understand the importance of global trade and the need for trade. We've seen a huge demise in the number of jobs in the manufacturing sector and the challenges manufacturers are facing. What do you want to see in terms of trade deals moving forward? We've seen that we're competing with countries, some of them with low wages, low environmental standards, and even human rights issues. What are we going to need in future trade deals to be competitive?

I'll start with you, Dr. Sullivan, if that's okay, and go from there.

Dr. Pearl Sullivan: First of all, I'm not an expert on trade. I think I have to be cautious in how to proceed on this answer.

I've heard from people, and there are always people who support us, as well as people who are detractors in the area of trade. I do think that in the globalized world it's absolutely necessary. We do need to be part of the world supply chain. We absolutely have to because if we can't sell and we can't buy certain things, then we cannot progress. Let me give you an example.

When you're talking about trade, you're talking about large volumes, right? Let me begin by saying that we just heard, maybe two days ago, about a company called Thalmic Labs. It's a company that was started by students who graduated in 2012 from a mechatronics engineering program. They were 23 years old when they graduated, and two days ago, they received $150 million U.S., as series B funding, to expand the manufacturing of their wearables.

What does that mean? They spent a lot of time in China and Korea trying to find suppliers for their product when they were trying to get started. What they did, and we worked with them closely, was they ended up producing all the parts in Canada. The supply chain is in Canada. After all that work, and after one year looking for suppliers, the only piece they make outside Canada is the chip from Korea. That's the intellectual piece.

This is what my point is. We have to make the intellectual piece and not just the other pieces. The fact that we are competitive enough to be supplying to Thalmic Labs is wonderful, but we have to make the chip.

Thalmic Labs is going with 100 people right now. These are three young men, all 26 years old, and they're going to hire 100 people. They're going to double up in the next year, they said. They have to find 100 people in the next year.

The manufacturing is right in a little shop half the size of this room, and they're making parts. They're selling hundreds and hundreds of these wearables.

I do think that it has to go both ways.

● (1620)

Mr. Gord Johns: Yes. That's why I'm hoping we can hear also what we need in the future, because we've seen a demise in terms of jobs and manufacturing. What are we going to need in future trade deals to protect Canadian jobs and to increase jobs here at home? Maybe, Ms. Olson, if you want, you could continue.

Ms. Leah Olson: Yes. With one of the items you talked about in terms of the number of jobs going down, in the agriculture equipment industry we are bucking that trend. Our employment figures have gone up, and the latest that came out of Statistics Canada, which was from 2012, had our numbers at a high of 11,800.

Before coming here I also surveyed our members, and overall employment numbers are up in 2016 versus 2015 on average. For us, trade is required because we're the leaders in the production of agriculture equipment. If we're selling a seeder into Australia, the things we need to get that seeder there include good transportation in Canada. We need to be able to get over there and understand the laws and the regulations to ensure that our standards and our equipment are holding up to their standards, and then we can do business.

In terms of what is required moving forward for trade relationships, in 2014, we exported 2.1 billion dollars' worth of agriculture implements. For our industry, it would require the support within Canada to ensure that infrastructure is there to get our equipment out.

Mr. Gord Johns: You talked about some of the challenges around finding skilled workers. We've talked a lot about where we're going as a nation in terms of immigration. We have the temporary foreign worker program.

As New Democrats, we've been wanting a pathway to permanency. We're hearing from industry that the temporary foreign worker program isn't really what suits the needs of business. They want an immigration program that leads to permanency.

Is that what you're hearing from your members as well?

Ms. Leah Olson: Yes, absolutely. I can use the example of Honey Bee. They manufacture headers on combines, and we have other members that also do, such as MacDon in Winnipeg.

If anybody needs an ag equipment manufacturing 101 after this, I'd be pleased. I'm here until Saturday.

Frontier is a village of 100, and Frontier is where Honey Bee manufactures. They've brought in more than 100 temporary foreign workers, and all of them have gone on to become permanent residents. I'm from a very small town in Saskatchewan, so I can make fun of Frontier's size. Frontier has gone from being a very farmer-based village to now being a prospering town of more than 200, half of whom are Filipino, and that's because of the temporary foreign workers becoming permanent residents.

For our members, then, it's vital that there be a pathway to permanent residency.

The Chair: You have about 20 seconds.

Mr. Gord Johns: Many small manufacturers, 95% of them, are small business people. They're wanting to grow to scale.

What kind of financing is going to help them grow to scale that they need and that is not being provided?

Dr. Pearl Sullivan: I think it depends on industry. In IT, I think what the government is doing on the digital side is very good. On the actual manufacturing piece, capital investment is the part they need the most, and as I said, prototyping capability.

● (1625)

The Chair: Thank you.

We have a technical problem. We're going to suspend for about a minute or two.

● (1625)

(Pause)

● (1625)

The Chair: All right folks, we're back on track. Everybody is here.

Mr. Baylis, you have seven minutes.

Mr. Frank Baylis (Pierrefonds—Dollard, Lib.): First of all, as a proud graduate of University of Waterloo, I have to say a very special welcome to our renowned dean of engineering, Ms. Pearl Sullivan. I'm very proud to have Dr. Sullivan with us. Welcome.

Welcome as well to Ms. Olson. I'm very happy to have you here, too.

Dr. Sullivan, you mentioned that Canada needs manufacturing, but we're in competition for manufacturers. Can you give us an example of where you see that competition occurring and what we should be doing to hold on to our manufacturers?

Dr. Pearl Sullivan: Thank you for that question.

Before I came here, I had a one-hour meeting with Leslie Klein, the CEO of C-COM Satellite Systems, which is right here in Ottawa. Mr. Klein has done research with us in the area of antenna systems for the last few years. Recently, together with the NSERC program, we got together for a very large, five-year collaborative program to take this forward together.

What is this project? Think about how the world is moving, the world of mobility. Right now, we are developing a mobile antenna. Here's what it means. The antenna you think of is a nice big dome with wires sticking out, and there you collect your information and you're able to watch TV or listen to radio. We have developed a printed circuit board that will act as an antenna. The next stage is how to make sure that it can be scaled up and implemented in homes and in cars. Our plan is to put it on top of the roof of a car, so that any car that leaves an area that has Wi-Fi or Internet broadband access in the city can go to a rural area and still have Wi-Fi and Internet access. It's a tremendous opportunity in terms of changing the landscape of mobility.

What's important here is this. C-COM designs antenna systems. They don't make antenna systems. They design them, but they're built in Canada, with 7,000 sold every year to 106 companies around the world. My question to him was, what happens next? He said that if Waterloo can pull this off, we will sell millions. I asked him how he was going to make them. He said that the only people who have come to talk to him so far are the Chinese. They have found him, and they have offered their hand to manufacture millions of these antennas.

I said to him,“Leslie, do not talk to the Chinese.” I have nothing against the Chinese, but “please don't”, I said. As for what he should do, I said, when we're ready, and we will be in two or three years, let's get the government and the other supply chains together and let's work in a room to figure out how to build the new market. It's going to be a new market in making antenna systems. We'll integrate it so they can be pulled off the shelf at Canadian Tire and stuck on the top of your car. That's what we should think about. We have to bring all the players together to make it here. The technology is here. It was developed here. Bell did that right here in Canada, and now we are licensing Wi-Fi and telecommunications. We have to make sure that we get to Mr. Klein first.

● (1630)

Mr. Frank Baylis: Thank you.

I have another question. We've had several meetings. Often, we hear at committee that the link between university research and industry is just not there. That's not the case with Waterloo. I think Waterloo is a world leader, in fact, and not just a leader in Canada. What could we be learning from Waterloo's example of making those connections between industry and universities?

Dr. Pearl Sullivan: One of the reasons we've managed to do this is our IP policy. We've had this for the last 60 years, which is the age of the university. When a professor has an idea and works with a company, he or she has the freedom to decide how to share the IP. It could be all professors. It could be all the companies. It could be joint. It could be a licensing arrangement. The institution has no say in how the IP is going to be used, which is very important, because the IP conversation can take months. If you're in manufacturing, timeliness is very important.

You see, you don't always need the technology. When the technology is developed, companies probably need it for five years. The professor can keep the IP and license it to the company for five years. We must have flexibility in IP policies. Keep it in Canada, but work on the licensing side. Having the institutions not holding the IP would be the first step, I would think.

Mr. Frank Baylis: Thank you.

Ms. Olson, I have a question for you. Oftentimes, we've been told by some of our members at this committee not to forget the rurals. What are the unique challenges that a rural manufacturer would have that we as the federal government could help overcome?

Ms. Leah Olson: Infrastructure. It would be the Wi-Fi. We have members all across Canada. One of the things I try to do, because we're a not-for-profit, is do calls via Skype. I cannot do calls with any of my members via Skype because they don't have any bandwidth. The Skype call will go in and out, and that's consistent in all of the provinces.

Mr. Frank Baylis: If we were to ask your members, they would reflect what you're saying, the same thing.

Ms. Leah Olson: The only reason I'm saying it is that's what my members are telling me, yes.

Mr. Frank Baylis: Okay. Is it across the country?

Ms. Leah Olson: It is. It's Ontario, Manitoba, Saskatchewan, Alberta. I have somebody in Swift Current, and I have tried to do Skype calls with them. They're actually in an industrial park in Swift Current, Saskatchewan, and we can't do a Skype call. The southwest corner of Ontario has magnificent agriculture equipment manufacturers, and they too struggle with that.

The main challenge is that when you're in a rural area, you typically have to pay more for your Internet, or you have to pay for the fibre to be brought im. In addition, you're usually on rural roads. If you have major equipment being manufactured, getting that equipment to the major hubs, be it in Toronto, Winnipeg, or Vancouver, the logistics can become a bit of a challenge.

What my members are saying to me, in terms of the challenges they want some help on, is that Wi-Fi and roads would be the main ones, although I know that roads don't fall within the federal government.

Thanks.

● (1635)

The Chair: Thank you very much.

We'll move to Ms. Gallant for five minutes.

Mrs. Cheryl Gallant (Renfrew—Nipissing—Pembroke, CPC): First of all, I would like to ask Dr. Sullivan about the Internet of things. With the Internet of things, there is an exponential increase in the possibility of cyber-hacking. In your opinion, is technology in terms of cybersecurity keeping up with the threat that will blossom with this Internet of things?

Dr. Pearl Sullivan: First, perhaps I could take a minute to assure Ms. Olson that we will have a rural antenna: give it two years. I think that's very important.

To address your very important question, when the IoT gets pervasive, and it will, you'll have different layers of security problems. You have the cloud layer. You have the computer side. You also have the sensor side and the actuator side. Every component in the entire network of the IoT will be vulnerable, I would say. You will need reliability and security at every level.

I do think a lot of research is being developed there. One of the places doing it is the Institute for Quantum Computing. They've been working on quantum-based solutions to cybersecurity. I'm not an expert in that area, so I won't say more than that. I do think that cybersecurity itself is an industry and will be an industry.

You know, it's interesting; I spoke with the vice-president of Cisco. He's a Canadian who is working in California. I asked him the same questions. Are we ready? Are we able to secure our systems? He said that the United States was the leader in securing IT systems, but he says that now China and Russia are coming on board and they are becoming quite competitive in that. I think Canada can be, and is moving in the direction of being a leader and becoming one of the strongest players in cybersecurity.

Mrs. Cheryl Gallant: Okay.

I'd like to hear more about Wi-Fi availability in rural areas. The government has announced millions of dollars for expanding access to the Internet, but it seems to be all in urban centres. They're getting more, faster, at a greater speed than people who are suffering with less than five bits per second. They're even on dial-up, as you know. With this Wi-Fi that will be available in two years to rural customers, will it be able to overcome the challenges with respect to the geology, the topography of the land, and the trees and other line-of-sight barriers?

Dr. Pearl Sullivan: It's an antenna that has a satellite base. The reason it's so expensive right now is that you need a fibre connection to get the physical antenna up. We want to have a mobile antenna so that it can be mounted onto a vehicle—no wires—and then it can go to rural Canada and you'll be connected. You'll search for the satellite. That's our hope.

Mrs. Cheryl Gallant: Ms. Olson, you mentioned how IRAP is helping some of your clients, but manufacturers of agricultural equipment in my riding have told me that the application process is very odious. In fact, in the proposal, they even have to account for the pencils they are going to use, and by the time they go through this exercise and then perhaps are rejected, and they have been rejected, there's been a lot of effort that they could have been putting into their businesses. Are the people you work with hiring consultants to do the application process? As they try to access this funding, how are they overcoming the wall the bureaucracy puts up?

● (1640)

The Chair: You have about 30 seconds.

Ms. Leah Olson: IRAP actually has an easier application process; it's SR and ED that we have the challenges with. On that one, we are indeed paying anywhere from $30,000 to $100,000 in professional fees, and that doesn't guarantee that the application will be approved. So simplifying and streamlining the application processes is much appreciated.

Mrs. Cheryl Gallant: Thank you.

The Chair: Thank you.

Mr. Sheehan, you have five minutes.

Mr. Terry Sheehan (Sault Ste. Marie, Lib.): I really enjoyed that presentation. It was great.

My question is for both of you. I've recently been appointed to the committee here, and I was just reading through a lot of the materials. In addition to that, this week the national chamber of commerce passed a resolution calling for a sector-specific strategy for steel, and for the nation to work together on this in particular to develop a sort of strategy. They do that from time to time, not just for steel. They will do that for other specific sectors, such as aerospace, auto, etc. Others are perhaps of the mind that there should be more of a broad-based national strategy for industry and manufacturing, because there are some commonalities throughout all of them.

Could both of you give me your opinions on the strengths and weaknesses of both of those directions for strategies?

Dr. Pearl Sullivan: Go ahead.

Ms. Leah Olson: In terms of a national strategy for manufacturing, when we look at what Canada is good at, we're excellent at farming. As a result of the harsh conditions, we're leading the world in terms of the manufacturing of agricultural equipment. We need a manufacturing strategy, and I think we need to get together and take a look at where the synergies are so that not everybody is saying three things at three different times, but we can say something once together and that voice will be pretty loud. I'd be happy to do that. Our members in particular are small to medium-sized and some of them are micro; they have fewer than 15 employees. From that perspective, they are very targeted and very nimble in terms of what they will or will not get involved with. If we were to do a national strategy on agricultural equipment manufacturing, I would likely be setting up committees in each of the provinces, working with our membership that way, and asking them to feed up suggestions of what they think is required in order for them to maintain and enhance that competitive advantage.

Dr. Pearl Sullivan: I don't know whether the answer is one or the other. I do think, however, that like everything in the sector, manufacturing is going to be driven a lot by technology evolution. I think the future products are going to need some form of embedded technology, sensors or things that will be deployed through the IT sector. Even the car today is no longer a car; it is a computer on wheels. I do think that rather than just talking about the sectors, it is more important for us to develop platform technologies. Platform technologies will support multiple sectors, and they can evolve over time as they are developed and upgraded. All the sectors can benefit from them.

Mr. Terry Sheehan: Thank you.

My question is for both of you, but I'll start with Pearl.

I didn't go to the University of Waterloo as long...but I did do my EDAC certification in economic development through the university. Through the process of that course, they talked about how the university works very closely with the incubator, with industry. For instance, I noted that Toyota has given $1 million or so to the university.

Talk about your experiences collaborating together and how you did that. It was a successful story. In places like Sault Ste. Marie, we've recently undertaken to get an incubator to try to link Algoma University to all the scientists and whatnot, and to the industries.

Would you like to comment and maybe share some of—

● (1645)

The Chair: You took away most of your time. They have about 30 seconds to answer that question.

Dr. Pearl Sullivan: I'll be quick, but a lot of that comes from the fact that we have a co-op program. We have nearly 5,000 employers. In engineering law, it's 1,700 employers. The relationships we have with them have been long lasting, long-standing. We have worked with GM for 25 years.

It takes a lot of time, and they keep coming back to us for multiple parts of the R and D, as well as co-op.

Mr. Terry Sheehan: Thank you.

The Chair: Mr. Nuttall, it's nice to see you again.

Mr. Alexander Nuttall (Barrie—Springwater—Oro-Medonte, CPC): It's nice to see you too, Mr. Chair. It's been a long time.

The Chair: It has.

You have five minutes.

Mr. Alexander Nuttall: Thank you, Mr. Chair. Through you, I have a few questions. I could perhaps start with Ms. Sullivan.

In terms of the technology you're talking about where you might be able to expand into rural areas, one of the things I've heard from our operators in the agricultural industry, our farmers, is that the technology on their equipment is getting to the point where they can, in some places, do the work without being there. In other places they can't because they don't have the capacity in terms of access to wireless Internet.

We asked this question before, but you said you're two years away....

Has the company you were talking about gone to the federal government yet to ask for funding to talk about this subject? We're going to be doing a study, I think, at some point on rural broadband. If you came to us, it sounds like you would save us a lot of time.

Dr. Pearl Sullivan: I think the better person to ask is either Leslie Klein himself, who is an engineer, the idea guy, but the technology development was provided by Professor Ali Safavi-Naeini, who is an electrical engineer in Waterloo.

The depth of the technology has been developed over five years. I'm not an electrical engineer. However, one of the things that was extremely amazing, when I saw what they did in the lab in Waterloo, is that Ali Safavi-Naeini is not a materials engineer and he was able to work with other professors in the area of materials to develop this IC system. What I would like to do is to get a 3D printing professor, Professor Ehsan Toyserkani , who I believe is the top guy in Canada, very well renowned, and ask him to print the circuit board so it would make millions.

Mr. Alexander Nuttall: I had the opportunity to meet with a 3D printing company today.

I would ask both of you this question. What is preventing more widespread hiring? I heard from you, Leah, that you're seeing increases in the number of employed people in the agricultural manufacturing sector, but we're not seeing that reflected in the results on manufacturers. For instance, we're down about 40,000 jobs this year. The decade before, we were down over 300,000 jobs. I don't necessarily understand it right now because of the lower dollar.

The manufacturers are telling us that the lower dollar is there; they're busier than they've ever been, but they're not hiring. Is it taxation? Is it instability due to not knowing what those taxation issues are? Is it instability related to the general feeling in the economy?

● (1650)

Dr. Pearl Sullivan: Leah, please go ahead.

Ms. Leah Olson: Okay.

In terms of the numbers for agricultural equipment manufacturers and our employment figures, we're a small slice within manufacturing. In some of the larger aspects of manufacturing, those employment numbers, 1%, say, in the auto industry hits those numbers much more than would 1% in our industry. That disconnect there, I think, is because we are such a niche market, and a good and happy niche market.

In terms of the dollar and the impact on our guys, it's almost as if the border doesn't exist. As for the inputs into Canadian-made ag equipment, there's still a certain section that will be coming across that border. There's a variety of things that will go back and forth across the border, so the lower dollar doesn't have the big impacts that it used to, if you will, because the input costs are so diverse.

Mr. Alexander Nuttall: It's a lot, potentially.

Ms. Leah Olson: It really depends on how much. Last year, Ontario ag equipment manufacturers exported more than any other province in Canada. They exported over $748 million of product, and much of that went to the U.S. They saw a $100-million jump to the U.S., whereas in Saskatchewan and in Manitoba those exports to the U.S. actually went down. It was the type of ag equipment being produced that influenced it. The dollar is absolutely a factor, but it's one of other factors that influence those exports, and again influence the employment figures.

Mr. Alexander Nuttall: Thank you.

The Chair: And that's about it. Thank you.

We're going to Mr. Jowhari.

Mr. Majid Jowhari (Richmond Hill, Lib.): Welcome, Dr. Sullivan and Ms. Olson.

I'm going to pick up where my colleague left off, on exports and on trade.

You indicated in your speech, Ms. Olson, that in 2015 agricultural equipment manufacturers exported about $1.8 billion. In the same period, we actually imported about $4.6 billion. That's a negative trade balance of about $2.7 billion. To what do you attribute that negative trade balance?

Ms. Leah Olson: On ag equipment, I would have to look at whether we're making an apples-to-apples comparison because if you take the manufacturing of all agriculture equipment, it's slightly different, but if you look at agriculture equipment implements, it's the short-line guys. That might be one of the factors. I can't really comment on that without knowing where—

Mr. Majid Jowhari: Can you comment on the imports? Are we in a surplus then? Are you suggesting that we are in a surplus when it comes to the Canadian agriculture manufacturing on imports?

Ms. Leah Olson: I'll get back to you. I'm not sure. The numbers that I've seen have suggested that we're net exporters of ag equipment, but I'm not sure in terms of—

Mr. Majid Jowhari: I would appreciate it, because I did check before—

Ms. Leah Olson: Yes.

Mr. Majid Jowhari: Let me jump to the second question.

On the SR and ED program, you encouraged the government not only to streamline the process, which hopefully will reduce the costs, but also to work on the understanding of the auditors about the industry. We've heard that a number of times before.

Could you expand on that, please?

Ms. Leah Olson: Yes, I'm happy to expand on that.

Within the agriculture equipment industry, there are a variety of manufacturers. One of them was asked to produce a larger tractor from a seeder. A seeder is a piece of equipment that looks like a spider. It precisely puts the seed in, followed by the fertilizer. This is using GPS. It's an amazing piece of technology. The seeders are getting bigger, so the seeder manufacturers asked a variety of tractor manufacturers if they could build bigger tractors, because once the machinery hit hills, the tractors were sticking and not able to continue pulling. From that perspective, applications have been made.

What I know of this situation is that the SR and ED auditors didn't understand the importance of a 400-horsepower tractor. They said it wasn't new, wasn't innovative.

I am a farmer. I have run a combine and I've used our GPS systems, and they are great. They ensure that we seed as we think and that we don't duplicate by going over it. The 400-horsepower tractor is what enables us to get to that next piece of equipment. Without something that can pull the seeder, you can't use the seeder. That was a bit of a disconnect, because as I understand it, all the auditor has said is that it's simply a larger tractor. That one larger piece of equipment enables so much more throughout modern farming.

Again, I will offer to take you out to farms, to take you to ag equipment manufacturing facilities, because there are some really important, seemingly small steps that enable the leaps and bounds, which is how we can feed the world.

● (1655)

Mr. Majid Jowhari: Is it fair to say that the auditors' understanding of innovation might not be properly...they don't understand it as well when it comes to modification?

Ms. Leah Olson: Yes.

From a life sciences perspective—big pharma, medical leaps and bounds, new discoveries—it's science. On agriculture, there's a lot of science that's happening, and on the ag equipment manufacturing side, there are a lot of things happening. As I said earlier, our R and D is not done in an isolated facility; it's done with the farmer.

Mr. Majid Jowhari: Okay.

How much time do I have, sir?

The Chair: You have five seconds.

Mr. Majid Jowhari: Thank you.

The Chair: That's right, you have enough time to say thank you.

Mr. Masse, welcome back. You have two minutes.

Mr. Brian Masse (Windsor West, NDP): Thank you, Mr. Chair. It's good to be back.

The first thing, real quick to our researchers, is that it would be interesting to see if you could get a summary of some of the previous telecommunication investments that governments have made over the last number of years. There have been several programs. I think that getting a capture of those things and their results would be good for the committee. There have been several programs, and seeing if there's been any analysis of what those programs resulted in.... Ending this broadband blackout has been a fixation for over a decade now, so it would be nice to see what works and what doesn't.

Ms. Olson, I think you raise a very interesting point with regard to Rx and D, for example, and big pharma. They could change the colour and shape or sugar in a pill, or lessen it, and that's considered innovation.

What type of innovation are you referring to that takes place that maybe sometimes will get overlooked?

Ms. Leah Olson: Again, I'm going to go to one of our members, who I think said it so eloquently. He said, “We're not putting a man on the moon, but we're helping to put breakfast on the table.” That, for me, is what gets me up in the morning. It's how you produce food that is going to make a difference in people's lives.

Last year when I took over as AMC's president, I toured around southern Saskatchewan, southern Manitoba, and southern Ontario. It was only in the fall that somebody said it was the driest fall they've ever had.

When I was a farm girl in the 1980s, I would watch the sand, the seed, the dog, the thistles all blow away because our land was being lost to desertification. The difference between 1980s farming and today's farming is no till. In that way, how we farm is a huge difference in how we are able to increase the yields and not have world food shortages. It's the tillage machinery, the seeding equipment. Those are the types of things that I think are key in our industry.

Mr. Brian Masse: Yes, and what's interesting, to that point, the reason I referenced what you had mentioned with Rx and D and some of the drug elements is that they get exclusive patent extension beyond years by just changing the shape and colour of a pill as innovation. There's a rewarded process there.

I'm on limited time so I have to move to Mrs. Sullivan

● (1700)

The Chair: You're actually on expired time.

Mr. Brian Masse: Okay. Well, I didn't go to Waterloo. I went to Laurier, and you used to make fun of us, so I still have the scars.

Voices: Oh, oh!

The Chair: Well, you'll get a chance to make it up. Here's where we stand. We can do one more round of four minutes each. So you get four, four—only four.

We're going to go to Mr. Longfield. You have four minutes. Make it count.

Mr. Lloyd Longfield (Guelph, Lib.): Thank you both for being here. I said in our intermission that by having you in the same room for more than this, together you could solve a lot of problems in Canadian manufacturing. One of the things we do is we bring people together. That's what we do as a committee and as a government.

I was at the Outdoor Farm Show, and thanks, Leah, for getting that lined up. Geof Gray took me around. I saw the manufacturing. There are a couple of things about rural manufacturing that we haven't included in our study. There's the economic development piece of manufacturing in the rural areas. These companies are often the best employers. They're stopping people from leaving their communities and going to the big city. They're keeping families together. They're using Canadian steel. I asked every manufacturer, “Where do you get your steel?” It's all from Canada, which is great for the Soo and other steel-producing areas. They're using Canadian everything in what they're doing.

But I've said, you're already doing great. I've said that manufacturing is not dead in rural Canada. In fact, it's so alive, and nobody knows about it. Part of our study is to get that out, if you can help us.

I'm taking too much of my time, but I wanted to get to the paperwork. One of the things that everybody said at the farm show was that they have these small companies, but they don't have people to do the SR and ED applications. They don't have people to do the export documents. All of the paper that the government puts in their way is a real trouble. Particularly on SR and ED, everybody said, “That doesn't work. We've given up on it. We're too small. They ignore us. We spend money on it and we don't have successful applications. SR and ED does not work for small business.” Everybody said that.

Could you say something for our report?

Ms. Leah Olson: Yes, you talked with our members so you know very well that they have challenges with the paperwork.

When you're an agriculture equipment manufacturer and you're in a small town, you're often the owner, the CEO, legal counsel, HR, and sometimes even reception. You're wearing a multitude of hats. On SR and ED, I applaud the government for having the program in place, and our members do take advantage of SR and ED, and IRAP. They do appreciate the dollars that are coming, but their decision on whether or not to apply is based on very simple time management. Can they do it? Do they have the capacity to do it? For those who are spending $30,000 to $100,000 per submission, they've obviously made the decision based on what they see as the net benefit, that they will have a good return on it.

I'd be happy to pull together our members to provide feedback and input on how we could help you on SR and ED.

Mr. Lloyd Longfield: Please, if you could get that to the clerk, that would be awesome.

Ms. Leah Olson: Mr. Chair, I'd be happy to do that.

Mr. Lloyd Longfield: Thanks, Leah.

With a minute left, I'm really interested in Dr. Sullivan's comment about the reverse co-op. Waterloo has been a leader in co-op, and I've actually worked with them for over 30 years, so it was great to renew acquaintances and see the machines and know what I used to crawl on before politics. One of the things I found, talking to these people, is they don't have engineers. In fact, they are also the engineer. They have patents, and they're not using universities or colleges. There is collaboration between the University of Waterloo and Conestoga and the Centre for Smart Manufacturing.

Is there anything in the wind on how we could maybe help to augment the engineering capabilities of these fantastic companies through some type of a collaborative effort between colleges and universities?

Dr. Pearl Sullivan: That's something we definitely would love to explore and look at, because we have a really strong capability in advanced manufacturing. The thing is, the professors' time is always the issue. What we do need is the ground to collaborate.

I'm being given the sign to stop talking, so I will, but we can follow up.

Mr. Lloyd Longfield: Thank you very much, both of you.

The Chair: I certainly enjoy hearing you talk. Thank you.

Ms. Gallant, you have four minutes.

● (1705)

Mrs. Cheryl Gallant: Again we'll go back to the Internet of things. What type of power do these devices run off? Do they run off gas power? How are they fuelled?

Dr. Pearl Sullivan: Batteries.

Mrs. Cheryl Gallant: Okay, so it's electricity.

Dr. Pearl Sullivan: As well as AC and direct plug-in, depending on the device.

Mrs. Cheryl Gallant: So we're talking about electricity. I want to just mention that the real challenge in improving manufacturing in Ontario is the pricing of electricity. In fact, when we compare it to Manitoba with three-phase electricity, the cost is comparable to what it is for residential. In fact, residential rates are higher in Ontario, so residents are actually paying more than commercial rates. Even with all the efforts that are being put forth, when it comes down to the input costs, we're at a disadvantage here in this part of Canada. We used to be the economic engine of Canada until these electricity prices drove us into the ground. In fact, yesterday the premier was at the plowing match and they even booed her because of it.

Okay, so take it away, Ben.

Mr. Ben Lobb: Pearl, thank you for coming. A great friend of mine took engineering at Waterloo and has done really well. My observation in discussions with him is that it's the co-op program, work experiences with the co-op program. I know other universities do that as well, but maybe not as well as you guys do in the engineering department. Maybe you could explain a little more about how we can spread the good word about co-op and engineering.

Dr. Pearl Sullivan: I think since Waterloo started the co-op 60 years ago, there are at least 30 co-op models across Canada, and they're all different. The Waterloo co-op program is unique in the sense that it is quite difficult. It's very challenging. The students in engineering, 100% of the students, must complete at least five work terms. Each work term is four months, so five times four is 20 months. Most of them complete six work terms, so they have two years of work experience before they graduate.

I do think sometimes that Waterloo makes co-op look very easy. We have to be cautious; it's more complex than just co-op. We bring in very strong students. This year we had 12,000 applicants for 1,500 seats in engineering. We had to turn away more than 2,500 students with 90% grade point average and up. It is a tremendously difficult program to get into, so we are putting in the strongest students who apply.

We also have a tremendous relationship with industry. Our co-op office is a central office manned by 150 people. Their job is to prepare the students for interviews and to make sure the jobs are truly related to the area, the discipline that they're studying. For instance, the co-op officer will go to the field to make sure that the student is not just photocopying or pouring coffee, that they really are part of the employment system. In other words, when a student in engineering goes to a company, they are treated as an employee, and the expectations are the same.

For instance, for Toyota manufacturing in Cambridge, Ontario, the former chairman was Ray Tanguay. Ray is amazing. He would spend time with each student. That's how involved they are, all the way to the top of management. They say, “Tell me what you did the last four months in exactly five minutes and one page. If your story cannot fit on the page, I don't want to hear about it.” This is amazing. Part of the education is not just about the programming. Our program is very good. It's very rigorous, but part of the education is industry teaching our students how to be a better engineer. That's the relationship. It's a commitment by the university and also industry. Our 1,700 employers seek coming back and they're extremely committed to teaching our students about their business. The business sense is fused into the student through the experience. I think that's very important.

The Chair: Thank you.

We are now going to move to Mr. Masse, for the last four minutes.

● (1710)

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

To my friend from Waterloo, yes, it was interesting all the tricks the engineering students there would play on us, that's for sure, but there is no doubt about the quality of the program.

I want to raise a concern though in terms of general education, getting the education and paying for it later on. I was coaching at a hockey rink the other day and a parent came up to me. He is now training a person from overseas to take his job. Where I come from automotive obviously is very important, but so is tool and die mould making. It is the best in the world. For a while a lot of our stuff was being outsourced to China and other places, South Korea even, and then we actually got the work contracted back to us to fix what they had done wrong and then shipped it back.

The interesting aspect of what this gentleman was saying to me was the fact that he was an engineer who is actually training somebody from India to take his job because when this contract is done, he'll return to India and he will be out of a job. What do you say about the future, or what can we do now at least to protect some of those things?

What I get worried about is the student debt level versus that of the window of earnings being lopsided now and that being an occupational education that won't meet the market past of what you pay for it.

Are there plans for Waterloo and other places to deal with this just yet? I was surprised to some degree by India, although I've seen this for other countries as well, but I'm not surprised overall because it seems to be the next wave.

Dr. Pearl Sullivan: First of all, I would like to declare that I have never made fun of Sir Wilfrid Laurier University. I have tremendous respect for their great business program and their arts program. They are a wonderful partner for the Waterloo region.

On your question, I do have a lot of dealings with industry CEOs and managers and this is not something I've heard of that is pervasive in the field. In fact, I do not know of any company—maybe they didn't tell me about it—that actually trained someone so that they can lose their job. I do know, however, that we need to bring the strongest minds from all over the world to immigrate here and stay here to develop our economy. I do think that is an agenda we should consider too. For instance, Europe right now would be a good place for recruiting the top people in technology, especially England, the United Kingdom. We should open our country's doors to the top, brightest minds.

I would be concerned with what I just heard. As I said, this is not something that I've heard is common. I do not think that among the companies I have worked with—I know quite a number of CEOs in manufacturing in this country—there is even a general notion—

Mr. Brian Masse: It was the first for engineering and for India that I had heard, so I don't know. There is more than just one happening at the firm he is at, but it will be interesting to see what—

Dr. Pearl Sullivan: Unless it's on the IT side—

Mr. Brian Masse: No, it's strictly about engineering of goods.

It's good to hear that could be the first of it.

Thank you, Mr. Chair.

The Chair: Thank you, Mr. Masse.

With that I would like to thank our two guests, Ms. Sullivan and Ms. Olson. You played the game great. You were super. Thank you very much for coming in.

We're going to take a quick two-minute break. We can all say goodbye and then we'll come back for the last 15 minutes and tie it off.

Thank you.

[*Proceedings continue in camera*]