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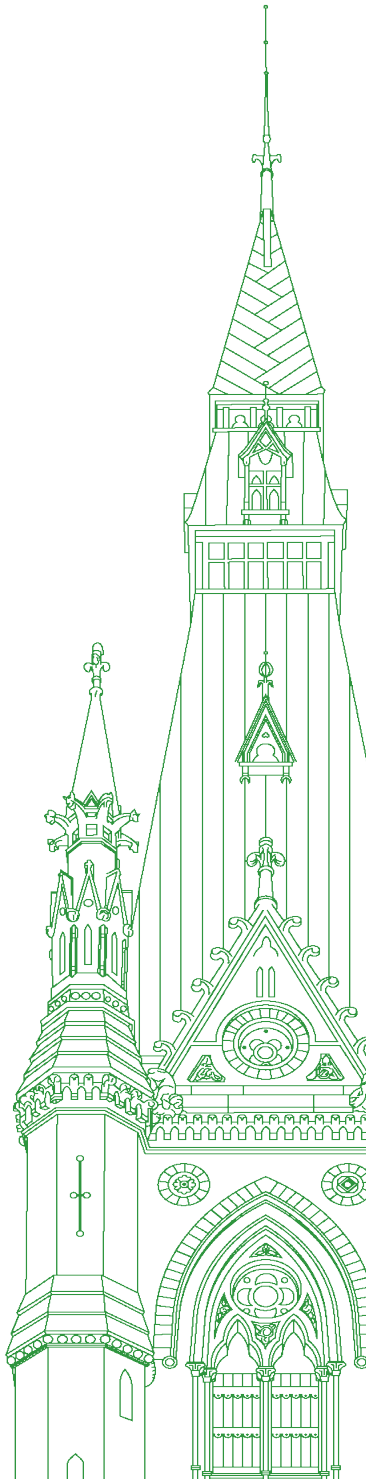

Chair: Mr. James Maloney

Standing Committee on Natural Resources

Monday, June 21, 2021

● (1110)

[*English*]

The Chair (Mr. James Maloney (Etobicoke—Lakeshore, Lib.)): I call the meeting to order.

Thank you, everybody, for joining us today for our 35th meeting, and what will be our last one of not only this study but also this session.

I want to repeat some of the remarks I made at the conclusion of the last meeting, and that is to thank everybody for their hard work, their commitment and their spirit of co-operation and enthusiasm not just for this study, but also for the committee. Again, I extend particular thanks to all of the people who make this meeting work twice every week—the translators, of course our wonderful clerk and our amazing analysts. Thank you all again.

Thank you to our witnesses today for joining us on our last meeting on the study of low-carbon and renewable fuels.

We're doing this virtually. I'm sure all of you have done this before. You have headsets. I ask you to be patient. Wait until the other person is finished speaking so that translators can pick up the communication back and forth. There's a translation button at the bottom of your screen, which you can use. You will be asked questions in both official languages. You're welcome and encouraged to use both.

I will give every witness group up to five minutes to deliver opening remarks, and then we'll open the floor to committee members to pose questions.

I may have to interrupt from time to time if people go over their time limit. I apologize in advance for that.

We have four groups of witnesses today. We have Advanced Biofuels Canada, Air Liquide Canada Inc., Dr. Ross McKitrick from the University of Guelph, and Renewable Industries Canada.

I will let you speak in that order. We will start with Advanced Biofuels Canada. I welcome Mr. Ian Thomson and Fred Ghatala.

I have overlooked the fact that Mr. Serré is not here today. He is being kindly replaced by Ms. Martinez Ferrada. Thank you for joining us today as well.

I'll turn it over to Advanced Biofuels. You have the floor for up to five minutes.

Mr. Ian Thomson (President, Advanced Biofuels Canada): Thank you, Mr. Chair.

My name is Ian Thomson, and I am the president of Advanced Biofuels Canada. I'm joined here by my colleague Fred Ghatala, the director of carbon and sustainability for our organization.

I wish to convey this morning two core ideas relative to the committee's study.

The first is that the advanced biofuels and renewable synthetic fuels made by our members have improved dramatically on all fronts in the past decade and are being deployed at commercial scale here and around the world, yet the revolutionary nature of these innovations is not widely known and old perceptions prevail.

My second message is that the clean fuel regulation, or CFR, currently under final review has immense potential, but needs several straightforward amendments to deliver on its promise.

Renewable fuel regulations of a decade ago had only a handful of solutions, but these regulations worked as intended. They kick-started widespread efforts to deploy a new generation of low-carbon, energy-dense fuels.

Today these fuels can be 100% substitutes for, or blended with, fossil fuels, fully functional in existing engines and infrastructures, and some are indeed produced at existing petroleum refineries. Clean fuel feedstocks have expanded beyond sustainable crops to include household and industrial wastes and residues, and even CO2 captured from air or from industrial flue stacks. Clean liquid fuels complement an array of other low-carbon transportation energies now also being scaled up.

The results of these innovations are that advanced biofuels made today in Canada can be carbon competitive to, for instance, electric vehicles on a full life-cycle basis. A vehicle running on these fuels can be a zero-emission vehicle, reducing greenhouse gases from 80% to 120% below those of fossil.

We know that electricity and other low-carbon energies will have a rapidly growing role in transportation. The IEA's sobering report of last month starkly noted that, even under fully executed, ambitious, global net-zero pledges, by 2050 more than 80% of final energy demand in transportation can rely on the internal combustion engine. Marine, rail and aviation sectors may be reliant on those fuels even longer. In short, we can't wait until 2030 or 2050 without the rapid scale-up of these liquid fuels.

The new clean fuel regulations can play a key role in Canada's net-zero future, and we have two recommendations relative to its design.

Our first addresses an inescapable fact that 75% of vehicle greenhouse gas emissions is from crude oil in fuel combustion and the other 25% is from the energy that goes into extracting and refining fuels. In plain terms, the CFR will fail to get Canada on the path to net zero unless it addresses, proportionately, these combustion emissions. The only solutions capable of delivering zero combustion emissions are advanced biofuels, renewable electricity, low-carbon hydrogen, renewable natural gas, and bio-crude for refineries. Put another way, you can't capture and store a car's tailpipe exhaust.

Unfortunately, the CFR draft design offers many incentives for fuel suppliers to focus their actions on reducing upstream emissions that will never be able to take us more than 25% of the way to net zero. In addition, other provisions will award credits for activities that have nothing to do with liquid fuels or transportation. I would be happy to describe the straightforward solution to this misalignment, but it roughly follows the precedents set by other global clean fuel regulations.

Our second recommendation relates to CFR feedstock criteria and the new greenhouse gas measurement tool. Canada's providers of sustainable crops, agricultural and forestry residues and waste resources are concerned about market access requirements and seek clarity on carbon intensity scoring under the new LCA tool.

The practical solution is to align the life-cycle assessment model and feedstock criteria with established industry standards in the North American fuel trade and to adopt it with an orderly transition.

Clarity on how Canada's farmers, foresters and clean fuel producers can participate will support new investments. Our recent analysis indicates that a well-designed CFR can create over 20,000 new jobs and add $10 billion in new economic output.

Last, I'd like to add that several of the clean energy tax measures and funding programs in the strengthened climate plan in budget 2021 need refinement to create competitive conditions for private sector investments.

In closing, let me reflect again that Canada's advanced biofuels sector is helping drive Canada's economic recovery and underpin climate plans. Our task is clear: to decarbonize the internal combustion engine.

We appreciate your work on low-carbon fuels and the invitation to meet today. My colleague and I look forward to your questions.

[*Translation*]

My thanks to the members of the committee.

● (1115)

[*English*]

The Chair: Thanks, Mr. Thomson.

Next up we have, from Air Liquide Canada Inc., Mr. Bertrand Masselot, president and CEO.

Sir, you have the floor for five minutes.

[*Translation*]

Mr. Bertrand Masselot (President and Chief Executive Officer, Air Liquide Canada inc.): Mr. Chair, ladies and gentlemen of the committee, thank you for giving us the opportunity to present our vision of how Air Liquide Canada plans to contribute to the energy transition, particularly in the area of fuel mobility.

A few words about Air Liquide. The group is a little over one hundred years old, with a presence in 78 countries and with 65,000 employees. I feel that it is important for me to tell you that our business is to play with small, very simple molecules and to put them to work for our clients and our patients. We do so in a reliable and long-term way, with the objectives of improving the processes, of better, quicker and more efficient production, and of delivering the products with a carbon footprint that is as small as possible. All with the goal of improving our patients' quality of life.

Air Liquide has had a presence in Canada since 1911, from the east coast to the west coast. We have four pillars: the primary production of those molecules with existing pipeline systems; activities that are predominantly industrial, at a small to medium scale, or involving captive fleets, such as fork lifts that today are fuelled by hydrogen cells; and two very transactional activities, both extensive: in industry, particularly for welding, and in health care.

The Air Liquide group's path is clear: we want to reach carbon neutrality by 2050. Those are not empty words but they are not easy to put into effect because we are a structure and a growing entity at the same time. The entity puts great stock on its historical assets: separating air into component gases, producing molecules and enhancing energy. We also put a lot of stock on our clients as we improve their processes, which involves working and innovating together. Finally, we really wish to be involved in creating these new ecosystems. Our group has a strong ambition to use the hydrogen society as a means to growth. The object is to add value, but within a society with a low carbon footprint, including for mobility.

The hydrogen molecule is small, simple, efficient, and generally easy to store and to use. As a fuel, it can help to decarbonize our society, especially in transportation, including heavy transportation.

Those are lofty words, but our current vision in the Air Liquide group is to invest eight billion euros in the hydrogen value chain, in the coming decade and all around the world. Basically, that means an objective to invest three gigawatts of electrolysis, and, I repeat, all around the world. I also stress the importance of working on basins and greatly expanding the needs. For us, this is an extremely important point that we can come back to.

The Air Liquide group sets itself apart because we are investors at the same time as we work on the technology at all stages of the hydrogen value chain. They include primary production, transportation by pipeline or in liquid or compressed form, and delivery at the points of use via fuel refilling stations that we design and manufacture ourselves. In addition, we really see scaling-up as our calling.

We will come back to the importance of increasing the size of all these facilities because our objective for them is relatively simple. Whether it is to decarbonize the industry or to improve transportation, it seems critical to us to increase the size of our facilities. We can then significantly reduce the cost of our investment in those facilities and in the value chain in its entirety. Even more, we have to make sure, either immediately, or with the help of a number of industrial, private and public partners and clients, that we can move towards a low-carbon world where the price of hydrogen for the end user is as low as possible, which is what this is all about. It would allow us to properly position ourselves among the other technologies, including fossil fuels.

● (1120)

In that context, we are convinced that we can reduce the price of hydrogen by 60% in the coming decade. One of the great stages that we have achieved, as you have probably already heard, is at our Bécancour site, where we have produced 20 megawatts, or a little more than eight tonnes, of totally renewable hydrogen. That product, which started to flow at the end of last year, is today fuelling industrial and transportation needs in Canada and the northeastern United States.

[*English*]

The Chair: Thank you very much.

Next we have Dr. Ross McKitrick, professor of economics at the University of Guelph.

Dr. Ross R. McKitrick (Professor of Economics, University of Guelph, As an Individual): Thank you, Mr. Chairman, and committee members.

I appreciate the chance to speak to you today.

I hold a Ph.D. in economics from the University of British Columbia, where I specialized in natural resource and environmental economics. At the University of Guelph, for 25 years I have taught courses in environmental economics and policy, econometrics and microeconomic analysis.

Canada is a world leader in finding ways to protect the environment while maintaining growth, economic opportunities and living standards. I hope that the information learned through your hearings will assist your committee as you aim to continue doing so.

While most of my research is aimed at peer-reviewed academic publications, I have also written extensively in the public domain, including think tank reports and media op-eds. Anyone familiar with my writings will know that I have certain biases, which I can summarize very simply.

I believe that policies should be critically analyzed to ensure the benefits exceed the costs. Not every environmental goal is sufficiently valuable to be worth the cost of achieving it. When a goal has been chosen, it is incumbent on policy-makers to try to achieve it at the lowest possible cost. The disaster regarding Ontario's electricity restructuring is a cautionary tale of what happens to an economy when this lesson is ignored.

I have done research for the Macdonald-Laurier Institute on the costs and benefits of Canadian biofuels policy. I'm referring to work I did with my colleague, Doug Auld, in 2014. I have also done research for LFX Associates on the costs of the proposed clean fuel standard, published last year, and for the Fraser Institute, published earlier this year as part of a study on the costs of the proposed carbon tax in Canada.

The biofuels report that I co-authored with my colleague, Professor Doug Auld, at the University of Guelph, showed that over the 2008 to 2012 interval, Canadians paid about three dollars in costs for every dollar in environmental benefits attained through biofuels. In arriving at this conclusion, we made assumptions as favourable as possible to the biofuels case. However, the expert literature has shown that switching to corn ethanol does not necessarily lower greenhouse gas emissions on a life-cycle basis compared to using gasoline. The rapid expansion of the biofuels sector after 2006 was driven by government support programs, not by the underlying economics.

My research for the Fraser Institute showed that the costs of blending ethanol go up in a convex fashion, meaning the costs go up non-linearly as the carbon intensity target gets lower. Since ethanol has less energy per litre than gasoline, consumers have to fill up the tank more often to go the same distance. Based on elasticity estimates in the economics literature and parameter values from other published sources—and there I relied chiefly on the Canadian Energy Research Institute in Calgary—I estimate that a 5% cut in carbon intensity below the current baseline will increase the cost of gasoline on a per kilometre basis by about 17%, while a 10% cut will increase it by 48% and a 20% cut will increase it by 156%.

My work for LFX Associates involved macroeconomic modelling of the proposed clean fuel standard. We modelled a policy package that would achieve a 30 megatonne greenhouse gas emission reduction. We estimated that even using a relatively high social cost of carbon metric, in other words, assigning benefits at the high end of the range, the policy would cost the Canadian economy six dollars for every dollar in environmental benefits, with net costs averaging $440 per employed person per year.

We also estimated it would cause a permanent loss of 30,000 jobs nationally, even after taking account of expanded employment in the biofuels sector, and it would put $22 billion in capital at risk of exiting the domestic economy. We also noted that in the context of population and income growth, the total emission reductions would be offset by a 7% increase in the size of the labour force. This means the actual emission reductions as of 2030 would be far smaller than 30 megatonnes, and would likely be zero or less.

● (1125)

I also note that a larger problem with climate policy generally is that emission reductions in Canada often lead to carbon leakage in which the emitting activity does not disappear. It simply moves to China or India or other competitive countries, taking the jobs with it.

The common catchphrase about the costs of climate inaction leads to a muddled argument.

The Chair: I'll have to ask you to wrap up, Dr. McKitrick.

Dr. Ross R. McKitrick: This is my last sentence.

The relevant comparison is between global carbon emissions with the policy and without, and if they are about the same, the costs we incur are largely for naught.

Thank you.

The Chair: Perfect. I appreciate that. I jumped the gun too soon there.

We will now move to Renewable Industries Canada. We have Malcolm West, a board member. He is executive vice-president and chief financial officer at Greenfield Global. Scott Lewis is also a board member. He is the executive vice-president of commercial operations and strategy at World Energy.

I don't know who is doing the presentation, but you have the floor.

Mr. West, you look like you're trying to present. Maybe your sound is not on. Can you hear us? We can't hear you.

Mr. Scott Lewis (Board Member, Renewable Industries Canada; Executive Vice-President Commercial Operations and Strategy at World Energy): Malcolm, “unmute” is at the bottom left.

The Chair: Are you able to step in, Mr. Lewis?

Mr. Scott Lewis: I think I can. Yes.

The Chair: All right. I'll give you the floor.

Mr. Scott Lewis: Excuse me if I read Malcolm's presentation on his behalf just to get it going.

On behalf of Renewable Industries Canada, Malcolm West wishes to thank the chair and distinguished committee members for the invitation to present as part of your study on renewable fuels. In addition to Malcolm's role at RICanada, he is the executive vice-president and CFO of Greenfield Global, Canada's largest ethanol producer.

RICanada members produce more litres of renewable fuel right here in Canada than any other organization. As Canada moves towards implementing its own net zero by 2050 objectives, one sector is often top of mind. The transportation industry is too massive to slow down, but too impactful on the environment to ignore.

Members of Renewable Industries Canada, such as Greenfield Global, have found a way to thread the needle through innovative, modern biofuels. We continue to develop increasingly efficient biofuels that meet or exceed net-zero emissions on a life-cycle basis. Over the past 35 years, our technology has substantially reduced transportation's carbon footprint.

A key focus of this committee's study should be the need to implement affordable, market-ready technologies to achieve climate objectives. The value proposition offered by biofuels is incontrovertible. Ethanol is typically cheaper than gasoline, acts as an octane enhancer promoting vehicle performance, burns more efficiently and can be used with existing infrastructure. Existing technologies, including the use of biogas to replace natural gas in ethanol production, carbon capture and sequestration, and enhanced farming practices can make ethanol a net-zero fuel or even net beneficial for the environment.

All cars on the road as of 2001 can use ethanol blends of at least 15%, with others comparable with levels in the 25% to 85% range. These flex-fuel vehicles cost roughly the same as regular fossil fuel-burning cars and represent the most affordable way for consumers to reduce emissions from their commute.

Policy that favours modern biofuels also stimulates new R and D. For example, Greenfield Global has recently invested in a joint venture that uses anaerobic digestion of solid municipal waste to create biogas for its ethanol plant in Varennes, Quebec. Next steps include producing green hydrogen to meet increased renewable fuel demand.

So far I've spoken to you, on Malcolm's behalf, mostly about light-duty transportation and renewable gaseous fuels. I will now continue with my part of the presentation, about the heavy-duty and aviation sectors.

I echo Malcolm's words of appreciation for this important opportunity to discuss renewable fuels together. I am the EVP of commercial operations and strategy at World Energy, a global leader in the production of biomass-based diesel and sustainable aviation fuels.

Some might worry that Canada's climate goals are too ambitious, while others might want the government to move faster. I'm here to tell you that net zero is real and possible. Today, right here in Ontario, my company produces a biodiesel that exceeds net-zero standards as measured by the Government of Canada's life-cycle analysis model. We're able to do this by taking waste, such as used cooking oils from restaurants and animal fats from rendering plants, and transforming them into biomass-based diesel. We also have the technology right now to make renewable diesel using other ingredients that would meet net-zero requirements.

You don't need to turn over the existing fleets of heavy-duty diesel trucks, buses and trains. The renewable diesel that RICanada members make is already 100% compatible. The same goes for diesel generators in northern and remote communities. They can all produce low-carbon power tomorrow, simply by putting in the right fuel.

Advanced biofuels are a here-and-now solution to significantly reduce carbon emissions.

Sustainable aviation fuel is another example of instant decarbonization. Right now, global demand for sustainable aviation fuel is off the charts, but supply is low because we do not have the right policies in place. Our renewable fuels are proven to be compatible with existing air fleets and are currently being used by many airlines, including United, KLM and Alaska, to name just a few.

● (1130)

As we aim to build back better coming out of the pandemic, Canada needs to ensure that sustainable aviation fuel is leveraged to attain important GHG reductions. Ultimately, this kind of policy will stimulate investment and grow the Canadian economy.

Mr. Chair, thank you for the opportunity to present to the committee. It will be a pleasure for Malcolm and me to answer any questions.

The Chair: Thanks very much, both of you.

Now we'll go to our first round of questions for six minutes each starting with Mr. McLean.

Mr. Greg McLean (Calgary Centre, CPC): Thank you, Mr. Chair.

Thank you to all the witnesses. We're building on some blocks from our last meeting. We've heard a lot of witness testimony, some of which is quite contradictory.

There's been conflicting input on Canada's and the world's ability to replace our energy system with either biofuels or hydrogen. I appreciate most of the biofuels part of it here. The pathways for each transition seem daunting, given the complete uncertainty that we've been presented here. The bigger concern, of course, is that this transition will result in GHG emissions, or are we just looking to subsidize industries that don't add environmental value in the energy equation?

My first question goes to Mr. Thomson at Advanced Biofuels Canada.

You talk about decarbonizing the internal combustion engine, which I think is a laudable goal, but we heard from Michael Wolinetz of Navius Research at the last meeting. He advised us to be careful about using new bio-feedstock for biofuel production because of the inherent depletion of soil carbon stocks and the obvious release of this carbon to the atmosphere.

Can you comment on that, please?

Mr. Ian Thomson: I can. Thanks for the question.

I can point to Canada. The data in Canada indicates that, over the last 20 years, soil organic carbon in the agricultural regions that have produced biofuel feedstocks have increased substantially, so Canadian soils have become a net sink, if you will, for carbon sequestration. As a result, the carbon intensity reduction potential or biofuels produced off those have declined substantially.

Competent regulatory authorities supported by their scientists with deep LCA knowledge have examined all aspects of the biofuel supply chain, which the committee knows goes all the way from all of the crop inputs, forestry inputs, waste, etc., all the way through to tailpipe combustions. That's how we measure LCA.

The science 10 years ago on some of the other aspects was less well known, because these kinds of regulations have been promulgated so far and wide that there's an immense amount of work going into it and—

● (1135)

Mr. Greg McLean: Mr. Thomson, sorry—

Mr. Ian Thomson: Yes.

Mr. Greg McLean: —I'm limited in time here.

The EPA has a study, and we've talked about 30 different studies that talk about actual CO2 emissions from biofuels being about double what they replace when you put them in, life cycle-wise, from an internal combustion engine. The latest one, of course, from the Environmental Protection Agency in the United States indicates that sinks are a contentious way of looking at this, I think, more than anything else.

Let me ask my next question.

Mr. McKitrick, we've had a few witnesses here, Mr. Jaccard from Simon Fraser University being one. He famously told us, as you can appreciate, that it's the policy you need and don't worry so much about the outcome, which I don't agree with. You can comment on that. He told us that he'd reviewed 20 to 30 studies that show that biofuels produce more GHGs than the product they replace, but they are wrong, according to him, because they don't use his own dynamic analysis; they use static analysis.

Could you please comment, Mr. McKitrick?

Dr. Ross R. McKitrick: I didn't hear Professor Jaccard's presentation, so I can't comment on the specific studies.

Some of the issue depends on where you get the fuels. If they're imported from the United States, they're being produced with the American electricity system, which is much more carbon intensive than the Ontario electricity system. Another issue is the scale. It's possible to do things on a small, experimental scale with very favourable parameters, but if you then need to scale it up to an economy level operation, then you do need to pay attention very carefully to those studies, because they're going to be indications of what lies ahead.

I think that Professor Jaccard tends to be very optimistic about technological change in the way that he models it, that it's induced by policy changes. That's a controversial idea in economics, that policy-makers can induce favourable technological changes. It doesn't always work out, but I would say that there's always a chance. There's always a chance that we're on the cusp of very favourable changes in technology. If we are, the carbon tax alone will get it. You don't need to add to the carbon tax mandates to force industries to change what they're doing. The carbon tax puts a price on the emissions that will cause—

Mr. Greg McLean: Good.

Mr. McKitrick, I need to move on. I'm sorry. I have only a short period of time left here.

I'll ask you the follow-up question here.

Don O'Connor from S&T Squared Consultants was here last time. He talked about not including the emissions associated with a capital build in these energy transitions for life-cycle analysis.

Contradictorily, he did acknowledge that reductions immediately are more important than eventual emissions.

How do you view capital costs of biofuels production in the life-cycle analysis of these carbon emissions?

Dr. Ross R. McKitrick: I presume that those are taken into account, although again it depends on if you are building the whole industry here in Canada versus if you are just importing them from the U.S., in which case the capacity may already be in place.

Again, though, I think pushing the life-cycle analysis back into the actual capital build gets into somewhat speculative parameters. You'd need to look in detail at those assumptions.

Mr. Greg McLean: Okay.

I have a final question on—

The Chair: Thank you, Mr. McLean. You're right on the button there, actually.

Mr. Lefebvre, we go over to you for six minutes.

● (1140)

Mr. Paul Lefebvre (Sudbury, Lib.): Thank you, Mr. Chair.

Thank you, again, to all the great witnesses we have today for your very interesting testimony with respect to biofuels.

We're hearing on the one side of the ledger that biofuels should be part of the future and that advanced biofuels will help certainly reach our climate targets. Then we hear Mr. McKitrick from the University of Guelph saying that's maybe a bit too hopeful.

Let's go to industry and the market.

[*Translation*]

Mr. Masselot, you said that you are making massive investments in decarbonization and that you want to attain carbon neutrality by 2050. Why are you making those decisions?

Since Air Liquide Canada Inc. is a public company, you must be looking at making a profit. It might be said that it won't work and won't be worth the effort. It might also be said that it is a very interesting business opportunity that would provide Canada with huge good fortune and potential. Could you tell us more about that?

Mr. Bertrand Masselot: Thank you. Let me make two points.

First, we understand hydrogen, because everything at Air Liquide revolves around it. We are totally convinced that this molecule is what we need. We produce several tens of millions of cubic metres of it per year, and we have done so for a little more than 50 years.

Second, we are investing for our own assets and for our clients simultaneously, not just to make a profit, but to make a profit in the long term. In other words, we want to create value for the duration.

We—the company and its managers, as individuals in the broadest sense of the term—are totally convinced that creating sustainable value will come through the acceptance of all our focus on energy, intensive though the activities may be. That is why we are conducting those activities now and why we started them some years ago. We think that we are in a position, not only to create value but to create it for the long term.

Mr. Paul Lefebvre: That is great.

Thank you.

[*English*]

Mr. Thomson, on that point, you talked about advanced biofuels and the potential they have. You didn't really talk about this in your remarks, but I want to hear about the potential for exports. What is the rest of the world doing in that sector? Here in Canada, are we the only ones doing this or are there other players around the world? Is this a huge market opportunity for Canada and for Canadian companies?

Mr. Ian Thomson: There is an export opportunity, absolutely. Canada is not going it alone on climate action. As most Canadians know, we are over-weighted in our natural resource sector capacity to population, so we're a natural for export. We export a lot of our conventional energy and the same is true for alternative energies, full stop.

Our analyses say that it's a very attractive market internationally. Today, Canada exports a substantial amount of biofuel to places like California and the European Union.

Mr. Paul Lefebvre: We heard from a witness today that the cost doesn't outweigh the benefits. What would you say to that?

Mr. Ian Thomson: I would only say that competent bodies, such as Navius Research in British Columbia and others, have studied that exhaustively with their expertise and found that to be not true. The “Biofuels in Canada 2020” report, which you can find on their website, lays out, by province, the cost of using biofuels and renewable fuel regulations.

In the case of ethanol in gasoline, it creates a negative net cost for Canadians because of the octane value. For renewable diesel-type fuels, there is a slight cost for a typical long-haul trucker.

Mr. Paul Lefebvre: Okay.

Thank you.

I'd like to hear Mr. Lewis or Mr. West on that same point, please. I think it's very important.

Mr. Malcolm West (Board Member, Renewable Industries Canada; Executive Vice-President and Chief Financial Officer at Greenfield Global): It's Malcolm West. Hopefully, you can hear me now.

Mr. Paul Lefebvre: Yes, we can hear you.

Thank you.

Mr. Malcolm West: I apologize for the glitch earlier.

I would echo Ian's comment when it comes to ethanol, which is more the world of Greenfield Global versus renewable diesel, which is Scott's world. On the ethanol side, typically at wholesale, ethanol is trading at a significant discount to gasoline. As well, it comes with it the high octane value, which saves costs as well. Overall, the use of ethanol, even taking into account its slightly lower energy density, is cheaper than gasoline.

Mr. Paul Lefebvre: Mr. Lewis.

Mr. Scott Lewis: There's been a lot of talk here about the scale of putting this in and what the actual life cycle is. I'd like to refer to a significant project, our largest one that we have in California right now, where we actually converted an existing and yet no longer viable petroleum refinery. We bought a 63-acre parcel just about 10 miles east of Long Beach. It was a 100-year-old asphalt refinery. It started out as a crude refinery and we're converting that. We saved the jobs. We kept every single employee who was there.

We're converting that into a 25,000 barrel per day renewable diesel and sustainable aviation refinery. We're operating right now at about 4,000 barrels a day and by 2023 it will be at 25,000 barrels a day, all using waste products, recovered vegetable oils and used cooking oils, etc.

In terms of the life-cycle analysis of these, it's been pretty clearly established right now. We want to make sure we're comparing apples to apples with the data that is now available as opposed to data that was available 15 or 20 years ago. There have been significant advances in that.

We find that the demand for the product and our primary customers are obligated party oil and gas companies. That's who we partner with. We have a joint venture with Shell, who is our neighbour in Hamilton. We've been supplying them for over 10 years.

We find that the oil and gas companies are the ones—

● (1145)

The Chair: Thank you.

Mr. Scott Lewis: —who are actually taking this on.

The Chair: Thanks, Mr. Lefebvre.

Mr. Paul Lefebvre: Thank you, Mr. Chair.

I thank everyone.

The Chair: Mr. Simard, it's over to you, please.

[*Translation*]

Mr. Mario Simard (Jonquière, BQ): Thank you very much, Mr. Chair.

I have a quick question for you, Mr. Masselot.

In your presentation, you mentioned investments of eight billion euros around the world. It that just for your hydrogen component?

Mr. Bertrand Masselot: Yes, I can confirm that. However, it's in the broad sense. It's not just about primary production, but from production to use and application, either for transportation or for industry.

Mr. Mario Simard: Okay.

So eight billion euros invested around the world to produce and transport hydrogen, with all that implies in the value chain.

I am wondering about regulation. Perhaps you could tell us about the regulations in Europe. Let's start with the famous hydrogen colour scheme: blue, grey and green. Do the projects you are investing in make that distinction between the different types of hydrogen?

Mr. Bertrand Masselot: Yes. We can certainly talk about the various colours of hydrogen. I would rather describe hydrogen in terms of its lack of carbon. Green hydrogen will always keep a portion of a carbon molecule, whereas other types of hydrogen will have more carbon.

Today, if we consider the projects among which we are positioning ourselves, we see projects based on electrolysis first and foremost. That does not make green, or low-carbon hydrogen by itself. It first needs the electricity in order to do so, including intermittent and other kinds of power.

We are also positioned for carbon capture, using more classic hydrogen-producing units. We have already conducted projects of that kind. An example is with natural gas steam reforming units. Since 2018, we have been recovering carbon dioxide from a natural gas steam reformer.

Most of our investments are being made in the hydrogen with very low carbon emissions. As I have told you, we are looking at investments in the order of three gigawatts of electrolysis, compared to the 20 megawatts we have just invested in Bécancour.

Mr. Mario Simard: Do the regulations in Europe allow for the production of hydrogen with a carbon capture strategy?

In other words, can you make hydrogen from renewable natural gas, as long as you have a carbon capture strategy?

Mr. Bertrand Masselot: Certainly. Today, an industrial concern like Air Liquide is able to invest in all those means of primary production. I would tend to say that we will be guided by the energy situation and the possibilities in the countries in which we find ourselves.

In Canada, and in Quebec in particular, clearly the abundance of renewable energy, in the form of hydroelectricity, is pushing us towards electrolysis. On the other hand, we are in the process of investing in and starting up a unit that will produce 30 tonnes of liquid hydrogen per day for the transportation market in California. The plant is located in Nevada and works by reforming natural gas, renewable to a huge extent, because we are fuelling it using our own fuelling technology for that type of unit, mostly with biomethane.

So we can assume that the next stage will be to capture and sequester the carbon dioxide produced, making it net carbon negative in this case.

● (1150)

Mr. Mario Simard: Let me go back to the cost of production. If you produce a molecule of hydrogen in Canada, the cost of production must be lower if you do it in Quebec using hydroelectricity, than if you do it in western Canada using renewable natural gas. That is because you have to use a carbon capture strategy.

Is that in fact the case?

Mr. Bertrand Masselot: This is where it is so important to have all the players all lined up, including the authorities and the politicians. Generally speaking, what we can certainly say, and say very clearly, is that our situation today is that, if we compare today's cost of so-called grey hydrogen from regular natural gas to what we are currently doing with elecrolysis, we end up with a product that is not expensive and that is top-of-the-line. That is how I would describe it, and therein lies the interest in scaling-up, of course.

Scaling-up provides us with three things. It means that we can drastically reduce the cost of the investment by automating the actual manufacture, such as with the electrolyzers. It also allows us also to reduce the price per kilo or per tonne of hydrogen that is produced and shipped to the point of end use.

Today, actually, we no longer worry about the competitiveness of a hydrogen solution in relation to any other kind of fuel. Hydrogen is already competitive for fuelling forklifts. For heavy transportation, we know that we are going to quickly reach that level of competitiveness. After that, everything will actually depend on the use made of it, using figures showing the frequency of use, the number of kilometres covered, and so on.

What actually happens is that price levels are not the same. They are dependent on geography, the input costs and the method by which the hydrogen is produced.

Mr. Mario Simard: Let me ask you one last quick question. It comes from an article I read on carbon sequestration.

In your opinion, how safe are the carbon capture and sequestration strategies that you are aware of?

Mr. Bertrand Masselot: First, today, we know how to sequester gases in deep geological layers. At Air Liquide, we have been doing it with natural gas for a number of decades. We also do it with hydrogen. We currently have networks of hydrogen in the United States, in the Gulf of Mexico, where they have what they call caverns, in which hydrogen is stored. It is easy to imagine storing carbon dioxide in the same way, as it is a relatively stable molecule. That's the first point.

As for how effective the capture and sequestration processes themselves are, the technology has been in existence now for a number of years and it is reliable. We demonstrated that in 2018 at Port-Jérôme in France. We have one unit of that kind in operation.

We have also been injecting carbon dioxide into geological layers for many years.

[*English*]

The Chair: Thanks, Mr. Simard.

[*Translation*]

Mr. Mario Simard: Thank you.

[*English*]

The Chair: Mr. Cannings, we'll go over to you.

Mr. Richard Cannings (South Okanagan—West Kootenay, NDP): Thank you. I'd like to continue on with Monsieur Masselot from Air Liquide Canada.

What's interesting to me with Air Liquide is that you have that capacity at every stage of the value chain, and a lot of what we've been talking about in this study is how we scale up these processes to get cleaner fuels in use across Canada and around the world.

I'm just wondering if you could perhaps expand on that scale-up. Especially, for instance, if we're going to use hydrogen for heavy transportation and other places where it seems to be best suited, what do we need to do? What are the important steps that you need to take in your company? How can the government incentivize that or help that to get this scale-up moving quickly? We obviously have to do that. What are the important steps? Are they hubs? What can the government do? Where can the government investments be best placed?

Mr. Bertrand Masselot: Thank you.

To begin, according to us, what is totally critical is to make sure that the investment we're going to do, scaled up larger, will be based on what we could define as encore customers. No matter if the encore customer is a large industry or basin, like a captive fleet of trucks in—I don't know—an airport, what's important is that it's based on solid, reliable, relatively continuous need of hydrogen, preferably, low-carbon hydrogen, to build a demand justifying the set up of the primary production of hydrogen. That's the first step. Then it would be far easier in the second step to add multiple other types of use, including intermittent ones. When we're dealing with transportation, notably passenger vehicles for example, it's very intermittent.

That's why, according to us, it's important to create or to build the demand. There, for sure, authorities and communities can help with their own fleets. It could be buses. It could be ferries. It could be trains. All of those captive fleets have the interest of very often, if not always, coming back to their original location. That means it's limiting, to a certain extent, the importance of the investment in terms of overall supply chain or the set up to be in a position to fuel vehicles. That's the first point.

The second important point is de-risking. I'm an industrial; I'm ready to take risks. That's why, by the way, I'm asking for a certain return. Nevertheless, we need a good level of policy alignment. We need to have strategies. We need to have an overall coordination. It's the same thing for regulations, ease of doing business and permitting, typically.

At the same time, it's key for us and for all players around the table, I'm sure, to do it in a safe and sustainable way. That's something we're doing now, if you are speaking about hydrogen, for four or five decades.

Last but not least, incentives will help as there's still, and it's known, an economical gap, not negligible, between volumes we need to hit and it's the scaling up or the ramp up where hydrogen or any other fuel—it's one that's a technical breakout parameter—will be at par with the historical way of fuelling for fossil fuels or others.

In a nutshell, that would be my answer.

● (1155)

Mr. Richard Cannings: Thank you very much.

I'll turn to Mr. Lewis and ask more or less the same thing about the scale-up, if we have time. I don't know how much time I have, Mr. Chair.

The Chair: You have about a minute and a half.

Mr. Richard Cannings: Okay, good.

Biodiesel seems that it could be a quick way to change things so we reduce the overall emissions, but how close are we to scaling up? How difficult would it be to scale up in terms of having the feedstocks to buy...?

Where would we be by 2030? Can we do this by 2050 to convert all our diesel stocks to biodiesel? That's where we have to be by 2050.

Mr. Scott Lewis: Thank you very much for the question.

I think there is an immense opportunity to be able to expand. As I say, in California, we're taking this plant from 3,000 barrels a day when we bought it, up to 25,000 barrels a day. We're looking to make additional investments. We can expand our plant in Hamilton, Ontario. We can do that because we have to have a way to have transparent trading credits that can establish this market here. Right now, the California market has a very strong and transparent trading economy on carbon reductions. If we could establish that in Canada through the clean fuel regulation, that is going to attract investment and we will be able to scale up and make significant advancements.

That's not to mention we're constantly looking on every upgrade that we do to any plant. We assess that on a carbon basis as well. What is the most efficient way to do that? By generating more carbon reductions with every capital investment we make and every gallon we produce, we can achieve that faster.

Over the last 15 years that we've been producing, we have made investments that have made every gallon more valuable from a carbon reduction perspective, including upgrading the by-products to replace petrochemicals and things like that, which allowed us to get past a net-zero basis.

The Chair: Thank you, Mr. Cannings.

Mr. Richard Cannings: Thank you.

● (1200)

The Chair: Okay, we're moving into the next round for five minutes each.

We will start with Mr. Zimmer.

Mr. Bob Zimmer (Prince George—Peace River—Northern Rockies, CPC): Thank you, Chair, and thank you to our witnesses.

Affordability is something that we've asked about many times. It has to be affordable for Canadians for them to pursue this. I think Dr. McKitrick brought up the disastrous policies in Ontario that led it to be the largest subnational debtor in the world. It was their electricity policy, subsidization and a bunch of other related issues that really caused these problems.

Dr. McKitrick, I'm concerned about the impacts in terms of affordability on our food costs. You did talk about it driving up costs. Can you speak to that effect?

Dr. Ross R. McKitrick: Yes. That's been a long-standing theme in the economics literature around ethanol and biofuels policy. There's competition with the food supply. The run-up in corn prices in the latter part of the last decade was attributed to an expansion, especially in the United States, of the ethanol mandate. We would expect to see the same kind of effect here in Canada.

When you look at the cost of the biofuels policy, it's fair enough for industry to look at their own production costs and say, "This is how much it costs for us to produce the ethanol." However, from the economic analysis point of view, we also try to take into account all those second order effects in the economy, including, in this case, the increase in the price of food, because that's also borne by households.

Mr. Bob Zimmer: Dr. McKitrick, again, following up on that, you mentioned some really alarming numbers. This is what we had been suspecting and we've read on our side about its effectiveness. Certainly, we all want renewables, we all want to do what's better for the environment, but when you said some numbers, such as for every three dollars spent, there's only a dollar benefit. You later said that for every six dollars of cost, there's only a dollar of benefit. That doesn't sound very effective to me.

Can you explain those numbers?

Dr. Ross R. McKitrick: There's a lot more detail in my written submission. In the case of the evaluation of the 2008 to 2012 biofuels policy, we tabulate throughout the paper all the sources of those cost numbers. Then we talk about the most optimistic estimate of the reduction of greenhouse gases that came about from the policy. That was the 3:1 ratio.

The second one was a macroeconomic model that looked at all the costs throughout the economy of this increase in fuel production costs. That number is larger because we're widening the scope of the analysis.

I do want to say the technology does change over time and the industry will be in the best position to say, "This is what we could do in the future." However, it's still incumbent on you as policymakers to do what Ontario did not do, which is to test those assumptions. Is this really going to lower the cost of electricity the way it claims?

Mr. Bob Zimmer: Right.

I'll just get in one more question for you, Dr. McKitrick.

Six to one doesn't seem very effective to me at this point. Like you said, maybe in the future it will be.

Being an economist, how do you make it effective? What needs to be done to make it effective, where we actually are seeing a dollar-for-dollar efficiency?

It's interesting on this side to hear all the complaints. I hear other members of the committee talk about incentivizing or subsidizing this when they decry subsidizing oil and gas. I would agree with them. I don't think we should be subsidizing oil and gas, but then, in some respects, we have to expect it on the other side of the coin.

Can you explain what can be done to make this an effective policy?

Dr. Ross R. McKitrick: I can't address the engineering aspect, but from an economic point of view, our reasoning around environmental policy generally is to pick one instrument and let it do its work. The government has chosen carbon pricing. If carbon pricing works and if these numbers are favourable for ethanol and biofuels, the market will make that switch. However, if you think that you need a lot of mandates and rules in addition to carbon pricing, then in effect you're saying that you don't believe those cost numbers that the industry is reporting are valid.

I would tell you to pick a price that you think is appropriate for CO2 emissions, then let the market find the lowest-cost way to achieve the emission reductions.

● (1205)

Mr. Bob Zimmer: Doctor, thank you.

Thank you, Chair.

The Chair: Mr. Weiler, you're next.

Mr. Patrick Weiler (West Vancouver—Sunshine Coast—Sea to Sky Country, Lib.): Thank you, Mr. Chair.

Thank you to all the witnesses for being here today. There's been lots of really interesting testimony.

I'd like to ask my first question of Dr. McKitrick to continue on that line.

You mentioned perhaps some preference of using one economic instrument. You highlighted the price on pollution. You saw that as perhaps the best way of leading to some of these fuels...switching to lower carbon fuels.

In your analysis, what level do we need to see per tonne on greenhouse gases to start encouraging some of that price switching that you'd like to see in the market?

Dr. Ross R. McKitrick: Any price you put in place will establish a threshold, so that the market then has an incentive to find the emission reductions that cost less than that amount per tonne. We would expect that, already at the $20 to $30 range, we would be seeing the market working to find those.

In the case of motor fuels, demand elasticities are very low. Demand is very resilient. In that case, it's possible to calculate. I believe the number we would need as a carbon price to hit Paris targets would be about $230 or $240 a tonne.

A better question at that point would be what an appropriate price per tonne is as far as the estimated social damages go. That may not be consistent with specific targets like net zero and Paris.

Mr. Patrick Weiler: Thank you.

I'd like to ask Monsieur Masselot my next question.

Earlier this year you inaugurated the largest proton exchange membrane electrolyzer in Quebec. I'm curious what made you decide to open this facility in Quebec relative to some of the other areas around the world where you work.

Mr. Bertrand Masselot: There are two or three reasons for that. First of all, when we are looking at the technology provider, it's the company Cummins—ex-Hydrogenics—based in Mississauga, where Aire Liquide has 19% of shareholding. It's Canadian technology and a Canadian project in terms of investment.

For sure, the abundance of relatively non-intermittent green energy through Hydro-Québec is helpful. The price of megawatt is helping, as well as subsidies that we had from the Minister of Finance of Quebec as well.

The location is very well positioned for the northeast corridor, and why not, later on, the Canada highway to Windsor, Toronto and more.

Last but not least, and important for us, it's the location where we have strong technical capabilities linked with the Université du Québec à Trois-Rivières. We have a Ph.D. working for us in this location. We have skills and we already had utilities in these locations.

We are already producing and liquefying, so we are back to the notion of basins, scale-up and making sure we have encore customers making this project viable and alive.

Mr. Patrick Weiler: Thank you.

I'd like to ask Mr. Thomson the next question.

In your opening, you had two main recommendations. In your second recommendation, when you're looking at the life-cycle emissions, you were talking about how you want to make sure that in Canada we're going to be consistent with some of the North American standards.

I was hoping you could expand a little bit on that point.

Mr. Ian Thomson: Thank you, Mr. Weiler.

It's really very simple. Of the 100% of emissions coming out of a car, 75% of those come from the crude oil. You pull it out of the ground, process it and burn it. There's nothing you can do to take that fact away.

You could reduce the carbon intensity of the way you manufacture those fuels, but you could never take them to zero that way.

In it's comparable regulation, the renewable energy directive, the European Union said to obligated parties that they can do pretty much anything they want, but the credit they generate and the actions they take need to be proportionate to the life cycle. If we're going to fundamentally take all of the carbon—or most of the carbon—out of transportation, we can't focus just on the 25. We have to work on the 75. This might come as advanced biofuels, hydrogen, low-carbon hydrogen, renewable natural gas and electric. All of those things have to be part of it.

The Europeans quite literally said that they have to deliver their credits in proportion to those proportions. In Canada, its 75-25.

● (1210)

The Chair: Thank you, Mr. Weiler.

Mr. Patrick Weiler: Thank you.

The Chair: Mr. Simard, it's over to you for two and a half minutes.

[*Translation*]

Mr. Mario Simard: Thank you, Mr. Chair.

I would like to ask Professor McKitrick a question.

Earlier, you were talking about a price on pollution and on carbon. In your presentation, you talked about a study on ethanol that you conducted from 2008 to 2012.

I don't know whether you have the figures, but having quickly looked at the issue, we came to the conclusion that the oil and gas industry had received federal government financial support of about $24 billion in the period from 2017 to 2020. As we studied the very recent allocations in the Department of Natural Resources, we see that, for the 2021-2022 year, an additional amount of $560 million has been set aside for reducing greenhouse gas emissions.

Knowing that the oil and gas sector is hugely supported by the federal government, do you not believe that there should be a change in strategy if we want to reduce greenhouse gases?

[*English*]

Dr. Ross R. McKitrick: I've done a study more recently on the definitions used for subsidies for calculating the kinds of numbers that you refer to. I would need to see more detail. The input-output tables use one type of definition, but other times people group in ordinary tax writeoffs and things like that.

As a general matter though, I don't support subsidies for oil and gas. I know the federal government put a lot of money into subsidizing the *Hibernia* oil platform, and I believe it continues to plan to support that platform. What you want is a neutral playing field for all the energy sectors.

The costs of reducing greenhouse gas emissions, we don't calculate them by looking at subsidies to sectors. They are calculated using economic modelling strategies that look at who bears the cost throughout society, including the increased price of energy that propagates throughout the entire economy.

The Chair: I have to stop you there, Mr. Simard.

It's over to you, Mr. Cannings.

Mr. Richard Cannings: Thank you.

Mr. Lewis, I'm going to continue with where we left off.

You mentioned this new plant in Long Beach, California. I guess 25,000 barrels per day is the target for that plant. In terms of the scale-up, I know there are a lot of french fries produced every day in North America, but what is the capacity there for a feedstock to produce biodiesel from these sources in relation to the overall diesel market in North America? Is that possible, or where does that lie? I can see that you could have one plant in California. What does that scale-up look like? Is it truly [*Technical difficulty—Editor*]?

Mr. Scott Lewis: It's actually quite amazing.

We're seeing right now a significant expansion in the number of new facilities that are being built. The majority of them are being built by oil and gas companies that are pursuing more and more becoming producers of renewable fuels as well. Whether it's Marathon or Philips 66, Valero, they all have their own renewable diesel facilities. We are actually an independent, a merchant refinery, if you will. But it is becoming more and more a part of the integrated supply chain that gets blended with petroleum diesel and with biodiesel as well.

Right now, the places where these products are going are to the jurisdictions that are looking to have policies to reduce carbon the most. It really is about a carbon reduction that is carrying the weight and driving the investment. That market will be created.

In terms of the greatest interest, we know there are several majors that are looking to become net-zero emission petroleum companies or energy companies by 2040 and 2050. We've seen a significant drive around the globe to build more and more of these facilities. Neste is a Finnish oil company that is the largest producer of renewable diesel around the world. This is really about Canada carving out that the supply should be built here by ensuring that the demand is going to be here through policy.

● (1215)

Mr. Richard Cannings: Can I just interrupt? Sorry, I just want to get—

The Chair: Mr. Cannings, you have about five seconds left.

Mr. Richard Cannings: I just want to make sure that the feedstock, the cooking oils or whatever, will be there to match the overall need for diesel that we have today.

Can that be 100%, yes or no?

Mr. Scott Lewis: No, it will not be 100%, but it's a feathering-in of a variety of different solutions to overall mitigate the amount of carbon that's being emitted through our existing infrastructure today.

The Chair: Thank you.

We'll go over to Mr. Lloyd for five minutes.

Mr. Dane Lloyd (Sturgeon River—Parkland, CPC): Thank you, Mr. Chair, and thank you to the witnesses for being here.

My first line of questioning will be for our renewable fuels folks, maybe Mr. Lewis or whoever feels competent to answer the question.

I'm reading with a great deal of concern about buy America provisions and more protectionism from our biggest trading partner in the area of canola, which we know is a major feedstock for biofuels.

I wonder if you could give this committee the lay of the land. What is going on with the industry in regard to protectionism? What is the threat to our industry, and how is this going to impact the development of biofuels in Canada?

Mr. Malcolm West: Scott, do you want to take that?

Mr. Scott Lewis: Sure.

Right now, these products are moving quite freely throughout the different jurisdictions. The only thing that's really happening with these protectionist policies is that you're changing trade flows. It is the same amount of product that is going in to the various sectors, but it is being displaced. Trade flows are being moved, but so far, we haven't seen that as being detrimental to our industry.

Certainly, as we come out of COVID, we're seeing excessive demands for certain feedstocks. It's not being driven so much by biofuels as by overall demand from other sectors, including food and other things like that. It's amazing how the agricultural and waste industries are also expanding to meet those demands.

Mr. Dane Lloyd: If you're forecasting into the future with the best information you have at hand, do you think Canada will continue to have fairly easy access in terms of developing an integrated biofuel supply chain with the United States, or do you think that's an area of some risk? What are the risks, and what can the Canadian government do to ensure that stays open?

Mr. Scott Lewis: Primarily, we have to rely on this as an evolving and adaptive industry in itself. We need clear policy to denote what the industry needs to do, and therefore, new feedstocks, whether it's cover crops, algae or a variety of other types of solutions, can come on board because we know that the demand is going to be there.

Therefore, we are very active in pursuing a variety of new feedstocks. We do not see that market as static. We see that it has the ability to increase and to meet the needs of the policies that are put in, but we need clear direction from government on policy to let us know that these are safe places in which to invest.

Mr. Dane Lloyd: In terms of my next question, you know that Canada is quite a cold country. We have very volatile weather and some people have brought up the concern about cloud point. If you're raising the biofuel requirements, how is this going to impact the cloud point? To address that issue, are there any changes we need to make in terms of how our engines are made?

Mr. Scott Lewis: No. We certainly see with renewable diesel that it doesn't have any cloud point issues. Ours is able to be blended with petroleum or to be used as a straight renewable diesel 100 in diesel engines and we are able to meet the cloud points as required.

When we make sustainable aviation fuel, we have that all the way down to a cloud point of -55°. When you have renewable diesel, it's just different cuts that you can put. You can make boutique blends for boutique regions.

Mr. Malcolm West: There are no cloud point issues associated with ethanol.

Mr. Dane Lloyd: That's excellent.

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

The Chair: You have just under a minute and a half.

Mr. Dane Lloyd: I have a quick question for Air Liquide.

What are some of the things you're looking for, for Canada, to make investment into your industry? When you're making an investment in a country, what are you looking for?

● (1220)

Mr. Bertrand Masselot: To begin with, looking at the relative capital intensity activity we have, we are looking at stability.

When we decide to make such an investment, it's not for the coming 10 years. It's for—

Mr. Dane Lloyd: What do you think would cause instability in Canada?

Mr. Bertrand Masselot: We have overall relative economic and political stability in Canada, but when you're speaking about stability, stability in terms of rules, when I am making an investment today, I'm not looking specifically at carbon price today. I'm looking at what I expect carbon prices to be in 10 years, 15 years and more. It's the same thing in terms of what are the constraints, and more.

Typically, the things we are currently looking at and dealing with when we are bringing up, let's say, a strategic investment validation process is not only financial elements. It's making sure as well that what we invest today will be sustained and in the market in a 15- or 20-year period of time.

The Chair: Thank you, Mr. Lloyd. You're right on time.

We will go to Mr. May now for five minutes.

Mr. Bryan May (Cambridge, Lib.): Thank you very much, Mr. Chair.

I want, first of all, to thank all of the witnesses for being here today. This has been a fascinating study and today is no exception.

Before I ask my question, I have to jump in on one of the previous comments. Specifically, Mr. Zimmer brought up Ontario and the cost of the the transition. The cost is incredibly important, but I think it's important to get on the record the cost of inaction and the fact that here in Ontario we now have one of the greenest grids on the planet with zero smog days in places like Toronto, and of course a whole lot fewer kids having to carry puffers at school.

I'm a firm believer that if you want shade today, you should have planted the tree 30 years ago. I think this is the challenge that we have in front of us, that is, what do we do now in order to be prepared for our future.

Mr. McKitrick—

Mr. Bob Zimmer: I have a point of order, Mr. Chair.

The Chair: Mr. Zimmer, go ahead.

Mr. Bob Zimmer: I would just like to clarify that I was very specific in saying I care about the environment, but we don't want to bankrupt the country to do it.

Thanks.

The Chair: Go ahead, Mr. May.

Mr. Bryan May: That's not a point of order, Mr. Chair, and I hope that doesn't take away from my time.

The Chair: It won't. Go ahead.

Mr. Greg McLean: I have a point of order, Mr. Chair.

The Chair: Mr. McLean.

Mr. Greg McLean: Mr. May said something there that I've never heard before about there being fewer puffers in school now. I was wondering if he could, for the sake of this committee, table that information for us as well.

Mr. Bryan May: I'm not a witness on this panel—

The Chair: No, we're not.

Go ahead, Mr. May.

Mr. Bryan May: —but I think we can definitely have that conversation off-line.

If I could get back to my questions, that would be great.

My question is for Mr. McKitrick.

You talked a little bit about the idea of carbon leakage in one of your answers. I'm wondering, sir, if you could talk about that a little bit more. I'm concerned about the idea that we should be waiting to see what countries like China or the United States do before we set environmental policy. I'm wondering if that's what you're suggesting.

Dr. Ross R. McKitrick: We don't have to wait and see what China or India or even the United States are doing. We can see not only is China building its coal-fired plant capacity, they have enough planned and on the books to exceed the current coal-fired power plant capacity in the United States just with the additional increment. They are also investing—

Mr. Bryan May: Sir, is it your belief then that we should not have gotten rid of coal in Ontario?

Dr. Ross R. McKitrick: Let me go back to that point. You said we don't have smog days. I don't know if you're asserting that's because we phased out the coal-fired power plants, but the province's own analysis of that showed that the coal-fired power plants contributed less than one per cent of the particulate in smog pollution.

They like to promote this idea that Lambton and Nanticoke were the causes of those smog days, but if you look on the Ontario Ministry of the Environment website, they attributed—

● (1225)

Mr. Bryan May: Sir, I have really limited time. I had a very specific yes-no question.

Do you think we should have eliminated the coal plants in Ontario?

Dr. Ross R. McKitrick: No. I think we should have continued the retrofit on them, which was under way at that time, which would have eliminated most of the air pollution from them.

Mr. Bryan May: Sir, you also bring up the idea of regulations not contributing to advancements. I was a little bit surprised by that, given, frankly, what we've seen over the last five years, especially in industries like the auto industry where we've seen the complete transition in the auto industry moving toward electrification.

Could you maybe cite some research you were talking about that connects those two things and shows that regulations don't in fact contribute to the advancement of technology?

Dr. Ross R. McKitrick: What I said was that if you're going to use carbon pricing, you should let the pricing mechanism do the work of picking the most cost-effective strategy. If you put a carbon price in place and then you also add in a lot of regulations where you then try to direct industry over and above the carbon price, you're undermining the economics of the carbon pricing system.

Mr. Bryan May: Thank you, sir.

I'll go quickly to Mr. Masselot, because I know my time is limited.

We just had an announcement this morning of $1.5 billion from the minister with regard to a hydrogen strategy. Do you believe that's going to increase the probability of advancement in that technology?

Mr. Bertrand Masselot: I think it will to a large extent. When we are looking at other countries.... Let's take Europe, where there are nine billion euros in Germany and seven billion euros in France, just to give you a couple of examples.

It's important because it's a question, as well, of maturity of technologies. When you're looking at all technologies, there are these, let's say, gaps you need to close. One way to do it very clearly is through the help of government, through subsidies, to bring technologies at par.

Mr. Bryan May: Thank you very much, sir.

I think that's my time.

The Chair: It is. Thank you, Mr. May.

Members, it's 12:27. The agenda says we're stopping at 12:30. We just finished a round.

I propose we go a little bit longer. We're going into another five-minute round.

What I propose to do, absent any objection, is give one member from each party one question, which will take us probably to about 12:35 or 12:40.

Mr. Bob Zimmer: That sounds good.

The Chair: Okay, thanks, Mr. Zimmer.

Mr. Patzer, it would be your turn.

Mr. Jeremy Patzer (Cypress Hills—Grasslands, CPC): Thank you very much.

I'll just figure out what direction I want to go here with one question.

The Chair: It's a lot of pressure. I apologize.

Mr. Jeremy Patzer: No, it's good. I appreciate the opportunity to still be able to engage with the witnesses.

The direction I'm going to go is back to the cost.

Mr. McKitrick, you elaborated a little bit on the six dollars for every dollar of benefit, but you also said $440 per person, per year just on the clean fuel standard alone that this government is implementing.

We had a witness last week who said that, because you have one policy that's disproportionately impacting rural and remote Canadians, seniors living on a fixed income and single mothers, you should also have an offsetting policy in a different area of government to help make up the difference or make up the gap.

Are those some of the problems you've talked about with policy when you have to have multiple policies to offset other bad policies? Is that what you were alluding to there?

Dr. Ross R. McKitrick: That particular number referred to the total macroeconomic cost of the clean fuel standard. To understand that, I'd refer you to the discussion earlier about whether the feedstock would be available for the expansion of biodiesel.

If you're going to get more feedstock, you have to take it out of the food supply or somehow find a way of expanding the production of the feedstock. Those second order costs really add up and affect people, especially if you're raising both the price of energy and the price of food. Those costs disproportionately fall on low-income households.

You can then propose band-aid solutions, but they are never quite adequate. Look at what Ontario's doing trying to transfer the cost now of the renewable energy contracts onto the taxpayer. The C.D. Howe Institute has estimated that we're now spending more for those subsidies than we spent on our entire long-term care budget in Ontario. Band-aid solutions down the road still don't get away from the fact that there are costs, and they have to be paid by someone.

● (1230)

The Chair: Thanks, Mr. Patzer.

Mr. Lefebvre, we'll go over to you for a question.

Mr. Paul Lefebvre: Thank you, Mr. Chair.

I think this may be my last question in a committee as a parliamentarian, so I certainly want to thank all of you, my colleagues from all sides of the aisle, and certainly you, Mr. Chair, and the great team. To the analysts, it's been an amazing run. Your team of analysts has been amazing, as well as the people who take care of the committees.

[*Translation*]

It was a great pleasure and privilege to work with you.

[*English*]

I'll direct my last question to Mr. Thomson and Mr. Lewis.

I want to talk about the job opportunities here. Certainly, as we're looking at biofuels and as we're looking at this transition, we've heard from many witnesses—a lot of scientists, anyway—that it needs to happen and that a lot of companies and a lot of businesses are going down that path.

I want to hear very quickly about the economic opportunities and the job opportunities in this sector. How do you see it, Mr. Thomson and then Mr. Lewis?

Mr. Ian Thomson: Thank you, sir, and thank you for your long years of public service. I hope you enjoy your “retirement”.

We will provide to the committee—in fact, we might have already done it in our briefing notes—the data that we have done. On our website you'll find an analysis from late last year, which is the source that I used to quote my sources.

I can give you an example. In British Columbia, we've had a low-carbon fuel standard since mid-2013. In the last 12 to 18 months, we've had about $500 million to $700 million of investments into the energy space here from companies in the forestry sector, refiners and others. Those are very directly tied to the British Columbia low-carbon fuel standard, which now has sent this very effective signal to the industry to build out.

We're very clear in British Columbia. We've seen it, and our studies indicate a similar kind of effect in Canada.

The Chair: Thank you, Mr. Lefebvre.

Mr. Paul Lefebvre: Mr. Chair, I had asked Mr. Lewis for an answer. I asked both of them.

The Chair: Oh, sorry. That's right.

Mr. Paul Lefebvre: Mr. Lewis.

Mr. Scott Lewis: We are just finishing an economic analysis for the plant that we're doing, an expansion conversion plant of an existing refinery down in Long Beach. We were amazed. From this project, where our investment is over a billion dollars, ourselves, it was generating over $18 billion of add-on economic activity with the number of jobs. It's a four-year project to build. We employ currently over 150 people there who would not have their jobs had it been left as a petroleum refinery, because it was no longer viable in that form. Yet, with the environmental concerns as a result of the fact that it was a refinery for 100 years, it would have effectively been scorched earth, so to be able to rejuvenate that is amazing. Its place within the community is huge. This is down in the U.S., where the average value of a job there is over $85,000 in U.S. dollars. This is real, but it's in the U.S., and these are high-paying jobs in the sector.

I don't have the specific numbers for Canada right now, but I can say that they are exceptional in the project we're doing in the States. We expect that you will see similar values, numbers and scope up here in Canada with the right policies in place to stimulate the investments.

Mr. Paul Lefebvre: Thank you.

The Chair: Mr. Simard.

[*Translation*]

Mr. Mario Simard: Thank you, Mr. Chair.

I have two quick questions for Mr. Masselot.

First, for your project at Bécancour, did you have any federal government support?

Then, in terms of the issues of hydrogen and of the federal government strategy, what should be established in the short and medium terms, in your opinion?

Mr. Bertrand Masselot: On your first point, about our own investment, the support we received was provincial, as I said. This was both for the price per megawatt and in terms of the much appreciated efforts of Quebec's Department of Finance.

Then, the important thing for us today, as we have said, is not only to provide assistance and support, but also to generate demand. It seems to me that this is how, with policies that are both credible and proactive, we can generate uses for hydrogen in population basins and in quite large industries at the same time. This is specifically the case with transportation, as long as the demand is sufficiently great so that we are no longer in demonstration mode. We are past that.

We know that the technologies exist and that they work. So now we have to take quite a broad view and make sure that the whole hydrogen chain is progressively rolled out. It can be used all over the country, not only for transportation, but also to decarbonize anything industrial.

● (1235)

Mr. Mario Simard: Thank you.

[*English*]

The Chair: Thank you.

The last question goes to Mr. Cannings.

Mr. Richard Cannings: Thank you.

I'll go back to Mr. Lewis again.

While I can appreciate that we need to use every tool we can to decarbonize our economy, I want to try to establish what the limits of biodiesel are, for instance, in doing that, because we have to get to net zero by 2050. Maybe this doesn't involve biodiesel, obviously, but you mentioned aviation fuel, and that the supplies were low.

I've heard some very concerning things about the acreage of canola needed if we were producing aviation fuel from canola, for instance, for every flight across the Atlantic or Pacific. What are, I guess, the limits on that in terms of the feedstock, in terms of how much we would be able to use of that by 2030 or by 2050? What's the contribution that biofuels can make there?

Mr. Scott Lewis: Well, I think it's significant in terms, of course, of the straight carbon reduction and the demand from the industry itself.

United Airlines is one of our customers. It has announced that it's going to be a zero-emission company by 2040. It's a challenge when what you do is fly planes. One way it's doing that is by engaging with us. We've been supplying it with sustainable aviation fuel out of our California facility since 2016. Currently we use animal fats and recovered vegetable oils. We haven't even looked into taking food crops there, because of where it's located. Of course, using these second-use products out of a very heavily populated area is one sector that is growing.

On another board I'm on, down in the Advanced Biofuels Association, we've actually recently committed to do a feedstock study for just these purposes, to look at it in the greater scope. I can say it isn't just about existing crops, because those are going to be very important, but I think that new technologies with algae, with camelina, with cover crops, that's where the expansion is going to come. Right now that's where the primary value is going to be created, by putting them into biofuels. They're not going to be done without having these policy indicators to allow us to expand.

We're not just looking at the food for fuel debate. We're looking at where we can get lipids on a massive scale. Certainly all of these feedstocks are a piece of the puzzle, a part of the layer, but I think we will continually be searching to go to the lowest carbon feedstock we can to generate some very high yields in very small areas with the new crops and lipid-based oils that are available.

Mr. Richard Cannings: Thank you.

The Chair: Thanks, Mr. Cannings.

That takes us to the end of our final meeting on a very interesting study. We're going to go in camera, but before we do that, I just want to say thank you to our witnesses today. We've had several amazing panels and today was no exception. Your contribution is much appreciated. It's a great way to cap off this study.

The last thing I want to say is that this probably will be Mr. Lefebvre's last meeting in this committee. Over the summer we don't know what's going to happen, but regardless, committee membership could change. I really hope I see you in September. I know, speaking on behalf of the committee, you've been an outstanding colleague. You've added so much to this committee.

Personally, you've made my experience as an MP much better. I've learned far more from you than you could ever learn from me. For that alone I'm very grateful. You are really going to be missed. Mr. Lefebvre, thank you.

Mr. Paul Lefebvre: Thank you, Mr. Chair.

Mr. Greg McLean: If I may, Mr. Chair, on this side of the House I echo that. Mr. Lefebvre has been an excellent colleague. It's always a joy to come to this committee because of his participation in it, his gentlemanliness and his general respect for all of us around the table.

Mr. Lefebvre, you will be missed. Thank you.

● (1240)

The Chair: Mr. Simard.

[*Translation*]

Mr. Mario Simard: Mr. Chair, I would also like to say a few words to Mr. Lefebvre.

Mr. Lefebvre is a cool guy. I feel that my first experience in the committee could not have been better. I could not have asked for a more affable colleague opposite.

I am very happy that I was able to work with him, and I wish him all the best in the future.

Mr. Paul Lefebvre: Thank you very much, Mr. Simard.

[*English*]

Thank you, everyone.

Mr. Richard Cannings: I'll chip in, obviously, too, to say my best wishes, Paul. I actually hope we'll see you back in the fall, because I'm hoping that's the way things go, maybe not on this committee but in Parliament in some form. If not, best wishes. Come out to the Okanagan. We can have a glass of wine on the patio.

Mr. Paul Lefebvre: That sounds good. Thank you, Richard.

The Chair: That sounds like a perfect way to adjourn the public portion of our final meeting on this topic and of this session.

Thank you all.

I will see committee members in camera momentarily.

[*Proceedings continue in camera*]