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Chair

Mr. Lee Richardson

Standing Committee on Natural Resources

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● (1535)

[*English*]

The Chair (Mr. Lee Richardson (Calgary Centre, CPC)): We welcome the start of the meeting.

There have been some discussions. We'll ask the indulgence of our witnesses for one moment to dispense with some outstanding business of the committee.

We'll take about five minutes. You don't need to stay sitting there, but you're welcome to, if you would like.

I would like to ask unanimous consent of the committee to deal with an outstanding motion left over from the last meeting so that we don't interrupt the witnesses with motions during their testimony or during their visit here. I'm asking for unanimous consent to deal with the outstanding motion before we proceed with the witnesses.

Is there unanimous consent?

Some hon. members: Agreed.

The Chair: Very good. I'll then call on Mr. Cullen.

Hon. Roy Cullen (Etobicoke North, Lib.): Thank you, Mr. Chair.

With witnesses here, I apologize.

We have gone over these motions. I've read into the record why I've brought them here, and I'm not going to go over all that again. I would only seek the support of the committee to bring the motions to a vote and get on with it.

The Chair: All right. Thank you.

Mr. Paradis.

[*Translation*]

Mr. Christian Paradis (Mégantic—L'Érable, CPC): Mr. Chair, I'd like to clarify a few points before the committee moves on to the vote.

First of all, Mr. Chair, I'd like the motion put before the Standing Committee on Natural Resources not to take into account the reasons that led to the suspension of the EnerGuide Program for private homes. That decision stems from the government's promise to emphasize effective and cost-efficient programs for taxpayers. We couldn't maximize energy efficiency with programs that were costly and difficult to administer and returned only 50¢ of every dollar invested to taxpayers.

[*English*]

Our programs will promote the efficient use of energy and employ energy efficiency technologies and processes that result in a cleaner environment and higher quality of life, a stronger economy, and a more secure energy future for Canada.

[*Translation*]

That's what I had to say about EnerGuide.

I also have something to add about the WPPI program.

[*English*]

The Chair: Excuse me. Let's do one motion at a time.

Hon. Roy Cullen: I would call for the motion to be voted on.

The Chair: I've heard the question. The motion from Mr. Cullen is that the committee calls upon the Minister of Natural Resources to immediately reinstate this program. This is the motion on EnerGuide. I think everybody is familiar with the motion.

Mr. Richard Harris (Cariboo—Prince George, CPC): Could we have a recorded vote, Mr. Chairman?

The Chair: FIne. We'll have a recorded vote.

(Motion agreed to: yeas 7; nays 3) [See *Minutes of Proceedings*]

The Chair: Mr. Cullen.

Hon. Roy Cullen: Mr. Chairman, the other one is to have the wind power production incentive program be reinstated with full funding. I believe Mr. Paradis wants to comment on that one as well.

[*Translation*]

Mr. Christian Paradis: Mr. Chair, the motion put before the Standing Committee on Natural Resources falsely states that the government has frozen the Wind Power Production Incentive program. All the commitments made by the previous government respecting the WPPI program have been honoured by the new Government of Canada. The uncertainty within the industry was created by the previous Liberal government, which, during the pre-election period, announced projects that it was unsure it would be able to carry out.

[*English*]

Canada has only scratched the surface of its renewable energy potential, and Canada's renewable energy resources are well distributed in rural areas throughout the country. The government has stated publicly that we favour the development of new renewable energy resources, and we will partner with the renewable energy industry going forward.

Hon. Roy Cullen: Mr. Chairman, I recommend that we call the question.

The Chair: There is a call for the question. There has been a request for a recorded vote. I will ask the clerk to carry on.

(Motion agreed to: yeas 7; nays 3) [See *Minutes of Proceedings*]

The Chair: Thank you.

We will now proceed with the orders of the day and with our witnesses.

Appearing from the National Energy Board are Jim Donihee, Bill Wall, and Barry Lynch. Welcome, gentlemen. And from the Canadian Energy Research Institute in Calgary, we have Norman Masri and George Eynon. Thank you very much, gentlemen, for coming.

We will first proceed with a statement from the National Energy Board, if that's agreeable, then I think perhaps follow up.... Do you have a brief statement as well? Then we'll ask questions of all of you at the same time, if that works for you.

I should say that this session is more of an information session. I don't expect you should feel you're being tested here. I welcome your appearance and thank you for presenting what we hope will be useful information for the committee, and the committee members will take it in that vein. If they have any questions for clarity, they will raise them after your presentation.

At this time I'd ask you to proceed for whatever time is required for your presentation. Thank you.

● (1540)

Mr. Jim Donihee (Chief Operating Officer, National Energy Board): Thank you very much, ladies and gentlemen. It's a pleasure for us to be here today.

I hope to take you through the presentation of the National Energy Board in the next few minutes, to give you some insight into the role of the National Energy Board and some of the issues that were identified in a recent report that we put forward.

I would first like to offer to you, for your information, the vision of the National Energy Board, which is to be an active, effective, and knowledgeable partner in the responsible development of Canada's energy sector for the benefit of all Canadians.

[*Translation*]

First, I would mention that the National Energy Board is an independent tribunal that was established in 1959, which reports to Parliament through the Department of Natural Resources. We moved to Calgary in 1991. Our organization has roughly 300 employees with various energy-related skill sets. Ninety percent of our costs are recovered from the industry that we supervise. We are a separate employer within the Public Service Employment Act and Treasury Board guidelines.

[*English*]

Next I will take you quickly through the areas of responsibility of the National Energy Board; our mission statement on the safety, security, environmental protection, and efficiency of the energy infrastructure; and markets as they relate to energy on behalf of the Canadian public interest within a mandate that is set out for us very clearly by Parliament in the National Energy Board Act.

From a regulatory standpoint, we look after the construction, operation, and integrity of interprovincial and international pipelines and international power lines throughout the full life cycle of their existence, from the initial application for the construction of the infrastructure, throughout the operation of the infrastructure, and eventually through the retirement of that infrastructure.

We regulate the transportation of energy—oil, gas, and electricity—as it moves across these means of transmission. We also set tolls and tariffs for the movement of that energy. We regulate the international trade in oil, gas, and electricity. We also regulate the exploration and production of oil and gas in the non-accord areas where there is no provincial jurisdiction yet enabled to do that.

From an advisory standpoint, we monitor the smooth functioning of energy markets. We provide advice to Parliament when requested to do so. We frequently issue reports that demonstrate the fact that we monitor the smooth functioning of the energy markets.

It's also important to note what we don't do. We do not regulate energy or the development of energy within provincial jurisdictions. We do not regulate interprovincial electricity trade, and we do not regulate energy emissions.

On some of the benefits that have accrued to Canadians in 2005, the NEB monitored the safe transportation of approximately $120 billion worth of energy product. This amounted to some 12% of Canada's GDP. Toll revenues were administered that amounted to some $4.5 billion on behalf of Canadians, and revenue from regulated energy exports was in the order of $70 billion. This amounts to Canada's largest real export.

As we look at the challenges in terms of what has changed, the most recent report looking at the oil sands, released in June of this year, is an update of a more substantial report that was released in 2004. On some of the major changes that have unfolded in more recent times, undoubtedly the global demand for energy continues to increase. We've seen a new pricing paradigm in the order of $55 to $75 for a barrel of oil. There has been recognition of Canada's oil sands as the second-largest global reserve, which is indeed significant for the development of Canada going forward.

There are depleting conventional reserves in the western Canada sedimentary basin. Liquid natural gas is coming on the scene to respond to many of the demands for energy throughout North America. We have before the board at this time consideration for the Mackenzie gas pipeline, and we may play a part in the future in the Alaska pipeline. These are two significant endeavours that offer the possibility of opening up another basin for North America and the world's global energy requirements.

Throughout all of this, what makes Canada most attractive is the fact that it has an extremely stable political climate compared to many other countries around the world.

So these initial remarks provide the backdrop for the most recent report that was released in June 2006.

● (1545)

[*Translation*]

Since the report was published in 2004, oil sands development conditions have greatly changed. For example, as I said, oil prices have more than doubled, while capital expenditures and operating costs have increased sharply. That's why the Board found it necessary to update its outlook, among other things by emphasizing the most important changes and developments with regard to the oil sands. The Board intends to present an objective and independent evaluation and to encourage public dialogue for all Canadians.

[*English*]

On the eighth page you'll see the topics that the report deals with throughout. It looked at resources, supply costs, crude oil supply, markets, and pipelines. It sought to identify some environmental and socio-economic concerns as well as the impact that is offered to electricity in the petrochemical industry.

I know that from the briefings you've had from previous witnesses you're familiar with the locations shown on slide 9. Slide 9 shows the primary locations in Alberta, in the Peace River and Athabasca regions. There has also been some examination of oil sands and the potential for oil sands recovery in the Firebag region in the northwest sector of Saskatchewan, as well as in Pasquia Hills in the eastern central area of Saskatchewan.

The table on page 10 outlines some of the most significant changes that have shown the need for re-examining the developments between 2004 and 2006. It points out clearly the changes that are so real in terms of the price of oil per barrel, the price of gas, the light and heavy differentials and how they have figured out, and the exchange rate between the Canadian and the U.S. dollars, all of which have been significant drivers in terms of the continued and enhanced development within the oil sands.

The chart on page 11 indicates that the NEB has identified 46 major bitumen recovery projects, which encompass approximately 130 individual project phases that, as has been publicly announced, will unfold beginning in 2006 and ending in 2015. The blue columns in that chart show the all-up case. In other words, if everything was to unfold as it has been announced, the black line would represent the base case, the tempered case, given the market dynamics and forces that are at play, which are tempering some of the announcements that have been made in the public domain. The base case, then, shows some $94 billion being invested in total, which means in the order of about $9.4 billion or $10 billion per year between now and 2015.

Moving to slide 12, you see again low case, base case, and high case, in terms of how things could unfold in the actual development, and the amount of production that would arise from the oil sands, with the base case demonstrating an eventual growth in production to about three million barrels per day. The low case would be just in the order of two million barrels a day, with the high case being in the order of just over four million barrels per day.

The low case represents a situation in which oil prices might fall to $30 to $35 per barrel, so the economics involved in the projects temper themselves considerably, and obviously it becomes less attractive for the development that might unfold. The high case, obviously, represents continued growth with high returns in terms of the value of oil per barrel, and doesn't, perhaps, recognize many of the other dampening factors around labour and capital costs and things of that nature.

Slide 13 shows that the oil sands require large amounts of natural gas for their development. There is indeed a high-intensity energy requirement for the development of the oil sands, and we could see that reaching about 2.1 billion cubic feet a day by 2015, in comparison to 0.7 billion cubic feet a day as it stood in 2005 at the time the study was developed.

The flattening of the curves as you approach 2010 reflects an assumed start-up of some of the more advanced technologies that will reduce the intensity of the gas requirements. You will see a flattening of the curves as technology continues to mature, reducing the overall demand of gas per barrel of oil as it is developed.

● (1550)

On slide 14 you will see the study went on to examine the requirements for pipelines. If the production does grow in the manner in which it is predicted to grow, there is a need for additional transportation in order to bring the oil that would be produced to market.

This map illustrates the major Canadian-U.S. crude oil pipelines that are currently in place. The Enbridge main line, which originates in Edmonton and extends across the Canadian prairies to the U.S. border near Gretna, Manitoba, connects to a Lakehead pipeline system and then reaches down into the United States and travels back up to Sarnia to reach refineries in the Toronto area.

Kinder Morgan's Trans Mountain Pipeline originates at Edmonton and extends west across British Columbia for delivery to markets in that province, as well as for the export off the Westridge Dock in Vancouver, as well as down into Washington State.

Kinder Morgan's Express Pipeline originates at Hardisty, Alberta, and delivers crude to locations in the U.S. Rocky Mountain area and connects to the Platte system in Casper, Wyoming, for delivery of crude oil into the Midwest United States.

With the reversal of the Spearhead and Mobil Pipelines in the U.S. Midwest in the spring of 2006, western Canadian crude oil is now being delivered to Cushing, Oklahoma, and reaching as far south as the U.S. Gulf Coast as a result of that as well.

On slide 15 you will see a bar chart, the dark bars at the bottom of the chart being the current production that comes out of the western basin. The line that shows growth out and to the right, as you look out to 2015, demonstrates the growth and production of oil that could be coming from the basin, with the smaller bars representing the various projects that are either being considered or are before the National Energy Board at the moment, in order to support the growth in production that would need to be taken out of the basin.

What I would bring your attention to, in looking at that chart, is the time period of 2007, where you will see that production begins to outstrip the current capacity of transmission. This would induce some constraint, obviously, should the production grow in the way it's currently forecast.

Apportionment on some of the pipelines—bidding and trying to win capacity on the pipelines in order to get product out and to the markets—is definitely going to become an issue if there isn't some capacity increase and if everything unfolds as it is currently laid out.

While we don't regulate the environmental issues as they pertain to the considerations that unfold in the province, the study did seek to point out some of the environmental challenges that do arise, given the rapid growth of the oil sands. And as it pertains to water, the oil sands require large amounts of water in order to develop and there may not be sufficient water available during certain periods of the year.

Technologies have become much more efficient in terms of dealing with that, and some areas of the industry have established holding ponds in order to ensure that they have sufficient water stock and to not draw from the aquifers, thus seeking to minimize the impact they will have. These are all measures that are being taken to try to mitigate some of the impact that the demand for water has as the industry goes forward.

In terms of greenhouse gas emissions, the intensity per barrel of oil produced has decreased by over 20% from 2000 to 2005, but the overall rate of growth and production have outstripped those decreases, so the total amount of greenhouse gas that is released does continue to grow over time.

Carbon dioxide capture and carbon dioxide flooding do present viable technologies and viable opportunities to try to reduce the amount of carbon dioxide that is released into the environment. There is considerable promise here as the industry looks to the future as well.

● (1555)

Land reclamation remains an issue as well, as the water is drawn off and there is disturbance. Again, regulated at the provincial and the federal level, they're monitored very closely in order to see that mitigation measures are put in place and monitored pretty closely as the projects continue to develop.

[*Translation*]

In the oil sands region, certain major factors affect socio-economic conditions. There is a labour shortage. Alberta currently has only a limited number of skilled workers. Not only is the oil sands sector experiencing difficulty finding the workers it needs, it must also attract them to the region. A skilled labour shortage could slow implementation of scheduled projects.

Over the next five years, capital expenditures of $1.2 billion will be necessary to meet public infrastructure needs in the region. These infrastructures will include municipal projects, water supply systems, sewers, road works, recreational facilities and educational institutions, highways, health facilities and low-cost housing.

[*English*]

On slide 18 you see a chart that shows the growth that is forecast on the base case at the moment, from 1.1 million to 3 million barrels per day at the end of this period, in 2015, which the study examined, with the dampening factors shown above the arrow you see on the page and the factors that tend to precipitate or support the growth that is forecast shown below the arrow: high crude prices; rising, continued global demand for energy; enhancements in technology; a very stable investment climate in Canada; and a large U.S. market. These are counter-balanced by the need for market and pipeline development, rising capital and labour costs, rising operating costs, labour and infrastructure shortages, and the need to manage the environmental impacts that the projects introduce as well.

As I say, ladies and gentlemen, the study really sought to provide an update to the much more in-depth study that was authored in 2004 by the National Energy Board. It seeks to bring balance and to identify all of the issues that need to be considered in order to manage this rapid growth that's unfolding. The report is done on behalf of Canadians in order to bring these issues to light and to encourage debate, and I'm sure they are addressed effectively.

Mr. Chairman, that concludes my comments.

● (1600)

The Chair: Thank you, Mr. Donihee, and thank you for the time and effort you have put into putting together this proposal.

I would also highly recommend to the committee that they have a look at the June 2006 assessment, *Canada's Oil Sands: Opportunities and Challenges to 2015—an Update*. Do you have that with you?

Mr. Jim Donihee: I do.

The Chair: What we're trying to do here is so important. Just go to page 10 in your executive summary, the final paragraph—the outlook. It more or less capsulizes what we're trying to do here. I think it would be important for the committee, if you wouldn't mind, for you to read that into the record. That would be the outlook at the bottom of the page, page 10—that is, page *x*—of the executive summary.

Mr. Jim Donihee: Yes.

> It is expected that there will continue to be rapid growth in the development of Canada's oil sands. There are, however, issues and uncertainties associated with the development of the resource. The rate of development will depend on the balance that is reached between the opposing forces that affect the oil sands. High oil prices, international recognition, geopolitical concerns, global growth in oil demand, size of the resource base and proximity to the large U.S. market, and potentially other markets, encourage development. On the other hand, natural gas costs, the high light/heavy oil price differential, management of air emissions and water usage, insufficient labour, infrastructure and services are concerns that could potentially inhibit the development of the resource.

The Chair: Thank you very much.

With that, perhaps we could then carry on to a presentation from CERI.

Before you do that, Mr. Masri, if you could, would you take a couple of moments to explain to the committee who is and who are the Canadian Energy Research Institute, just by way of background?

Mr. Marwan Masri (Vice-President, Research, Canadian Energy Research Institute): I'll be happy to do that. Thank you, Mr. Chairman.

Good afternoon. On behalf of the Canadian Energy Research Institute, I'd like to thank the committee for the opportunity to appear here and to contribute to the information the committee is seeking on the oil sands.

The Canadian Energy Research Institute conducts independent, objective research on energy economics and the environment. We have a Canada-wide scope in the research we do. We also conduct major conferences on energy. Annually, we have four conferences that we conduct. We have public education that we carry out in the energy, environment, and economic sphere.

We are supported by a broad base of government, private industry, and academic institutions, and we are a not-for-profit organization that seeks to shed light on, again, major economic, energy, and environmental issues.

The Chair: Thank you.

Mr. Marwan Masri: The subject of our presentation today is to briefly summarize a study that CERI released in October 2005. The focus of the study was to look at the macro-economic impacts of oil sand development under certain scenarios.

What I'll do today is give a little background about the study and the objective we sought to accomplish. The slides are not numbered, but this is a slide called “Outline”. There's a key finding in that study and some sensitivity analysis that we conducted.

The study background.... Obviously, as Mr. Donihee mentioned, it is one of the world's largest resources, deposits of oil, second only to Saudi Arabia in proven reserves, but the crude bitumen in place is much larger than that, and it's 1.6 trillion barrels. It's equal to or exceeds the total conventional oil deposits in the world. About 11% of that, the total in-place oil, is proven reserves, and 174 billion or 175 billion barrels remain to be exploited. To put it in perspective, this is sufficient to supply Canadian demand for oil for 250 years.

The study motivation.... Projected investment in the oil sands to 2020, over 20 years, is about $100 billion—we will be talking about a lot of large numbers here today—and that investment will result in the production of crude oil valued at $570 billion.

As Mr. Donihee mentioned, the development of the oil sands requires vast amounts of energy, among other inputs and resources, to enable that production. Initial investment of any type, really, would ripple through the economy and produce a multiple of it by the time the interaction with the rest of the economy occurs, and that's really the basis for our study here: to trace the value of the production investment in the oil sands throughout the Canadian economy, even globally, beyond Canada, to see what the macro-economic effects of that development might be. That's what the objective of the study is, really, to assess those economic effects of the oil sands development over a 20-year period at the local, provincial, national, and international levels.

The methodology we use is a CERI-developed model called the input-output model. Those types of models have been used for decades, and really what they portray is the interaction of different sectors in the economy. If you introduce a disturbance or injection in one sector, how does it then flow through the rest of the economy and what might the final impacts be?

We measure the impacts on the economy by four major parameters or indicators: the first is gross domestic product; the second is employment; the third is employment income, labour income, the results from that; and finally, government revenues that result from the revenues that are generated in this sector and in other sectors that are affected by it.

On the next slide, “Oil Sands Production—Unconstrained Case”, we have two cases where we look at the future development of oil sands, and we go to 2022 in this slide.

● (1605)

One case is what we call the unconstrained case or the potential case. All projects are announced and known and proceed as scheduled, with no delays, no resource constraints, and business as usual. Obviously, we think it's not a realistic outlook, but it's what we would see if development proceeded without any constraints. It will be somewhat over four million barrels per day by 2022.

We then apply our expert judgment. We know there are constraints and there'll be issues with projects proceeding. We apply some delays to projects depending on where they are in the development stage, where they are announced only or under construction, at permitting stage, and so on.

Depending on where they are in the development stage, we assign them either a zero delay, if they are well under construction and on their way, or delayed a number years, depending on whether they're announced or speculative. We then apply probabilities to create an expected output. A fraction of 100% of each of those categories of projects are delayed because of resource constraints.

Once we do that, we get to what we call best case investment, which is approximately $100 billion cumulative over the period. Again, the production resulting from that, both bitumen and upgraded bitumen to synthetic crude oil, add to the value of it to $570 billion.

What drives these analyses is really the monetary value. We need to translate the physical output into monetary value to then measure the economic effect.

On the impact that we had estimated in the study, the economic impact first on GDP, the first parameter or indicator is that the total impact worldwide of this development would be $885 billion cumulative, almost a trillion dollars.

About 10% of that will be generated outside Canada, and 90% of it or $785 billion will be generated in Canada. Of that, an increase of $634 billion in GDP over that period will occur in Alberta; $102 billion will occur in Ontario; and $8 billion will occur in Quebec. The rest of Canada would experience an increase of $45 billion in GDP. Outside Canada, other countries would experience an increase of $96 billion, as I said, about 10% of the total.

The reason that the other provinces and the rest of the world are affected by this development is again because the world is interconnected economically. We trade with other provinces, and Canada trades with the rest of the world.

To the extent that the inputs used in the oil sand development are imported, the development of the oil sand will then have a positive impact on the economies where those inputs are imported from, be they within Canada or outside Canada.

Percentage-wise, on the distribution of GDP impacts in total, 72% of it will occur in Alberta; 11% will occur in Ontario, equal to the effect on economies outside Canada; another 11% occurs outside Canada; Quebec receives 1% of the GDP impact; and the rest of the provinces receive 5% of the total impact, which is about a trillion dollars.

To put that into perspective, the economic impact measured in terms of GDP, over the 20-year period, is cumulatively equal to about 61% of Canada's GDP in 2004.

On the annual GDP impact in Alberta, in the year 2000, the beginning year of our analysis, the oil sand impact on GDP accounts for about 9% of Alberta's GDP. That is projected to increase to 20% of annual GDP in Alberta by the year 2020.

For Canada, the annual GDP impact is about 1.5% in 2005 and will rise to about 3% in the year 2020.

I'd next like to talk about the employment impacts. I should say this is the demand for labour that will be created by this development.

● (1610)

This development will require 6.56 million person-years over the entire period, and 5.43 million of that will occur in Canada. Alberta's job creation from this development will amount to about 3.7 million person-years; Ontario's will be about a million person-years; Quebec's will be 125,000 person-years; the rest of Canada will be 612,000 person-years; and 1.1 million person-years will be created in other countries, making up the total of 6.5 million person-years.

On the distribution of this employment across Canada and the world created by this development, 44% of the total employment impact will occur outside of Alberta, with 56% in Alberta. Ontario's share in this employment creation will be about 16% of the total. Quebec's share will be 2%, and the rest of the Canadian provinces will be 9%. For economies outside of Canada, their share of the employment created by the oil sands development will be 17% of the 5.6 million person-years.

We also assessed the employment impact on the local economy. As we said, 68% of the jobs created within Canada will occur in Alberta. In the Wood Buffalo and Cold Lake region, where most of the development will take place, employment will increase by about 780,000 person-years, which will be about one-fifth of the total employment created in Alberta.

Outside of Canada, job creation will be about 1.1 million person-years. It's more than any other province except Alberta, but less than the total provinces combined.

Another thing to understand here is that with the oil sands development, job creation does not occur only in the oil and gas sector; it occurs throughout the economy. In fact, four times more jobs will be created outside the oil and gas sector than in the oil and gas sector as a result of this development. The oil and gas sector will receive about 18% of the total job creation, and the other 82% will be created in other sectors of the economy.

The last thing we measured on the macro-economic impact of development is government revenue from the economic activity created. On the value of output and income that will be created from both business and labour, in addition to different kinds of taxes the total will be $138 billion of tax revenue globally. Of that, $124 billion will be in Canada and the rest will be generated in the economies outside of Canada.

Of the $124 billion in tax revenues that will be generated in Canada over 20 years, we estimate the federal government will receive $51 billion—the largest recipient. The Alberta provincial government will follow with $44 billion. Other provinces and territories will receive $12 billion in tax revenues. Municipalities will receive $17 billion. Outside of Canada, $14 billion of tax revenues will be generated, for a total worldwide of $138 billion.

On the distribution of this $138 billion of tax revenues, the federal government will receive 41%; Alberta will receive 36%; Alberta municipal jurisdictions will receive 9%; other municipal jurisdictions will receive 5%; and other provinces besides Alberta will receive 9%.

● (1615)

The tax revenue comes from many sources, the sources of government revenue that we talked about. The largest portion from which this revenue is generated is personal income tax—25% of all tax revenue, followed by corporate income tax, which is 21% of the total. Next is royalty revenue—and this occurs only in Alberta—20% of the total. Indirect taxes—PST, GST, excise taxes, and all these other non-income taxes—account for 16% of the total tax revenue. Property taxes amount to 18%.

We conducted a few sensitivity analyses on the different prices for oil. For the base case, I used $32, in 2005 dollars, per barrel of crude oil. We then looked at $25 per barrel—I don't know if we'll ever see that again. We also looked at $40 per barrel of oil, for sensitivity. We did that for both what we call the expected, or constrained, case and the potential, or unconstrained, case. Then we looked at a case of increasing the portion of bitumen that's upgraded in Alberta. For this we assumed a base case price of $32 per barrel of oil.

● (1620)

The Chair: Excuse me, Mr. Masri, could you tell me what SCO is?

Mr. Marwan Masri: SCO is synthetic crude oil—upgraded bitumen that's taken and turned into light crude oil.

The Chair: It's one of those questions you're sorry you asked.

Mr. Marwan Masri: Next we have the results of our sensitivity analyses in terms of investment and production. Obviously, the higher the price of oil, the higher the value of production, and thus the higher the economic impacts in all the indicators we measure.

We see that in the central case, for example, total investment and value of production is $632 billion. When we look at $25 oil, the impact on investment and production is lower. In the $40 oil, it is higher.

The more bitumen that's upgraded in Alberta, the higher the economic impact. Imports are usually leakage in economic terms. They create economic impacts and stimulation in the economies outside of Canada. So the less of it that leaves Alberta and Canada, the higher the economic impacts will be.

With respect to the GDP impacts, for the same sensitivities that we've done, when the oil price goes down from $32 to $25, the GDP impacts are reduced by 17%. On the other hand, when we look at the $40 oil, compared with the base case of $32, the GDP would be 17% higher.

In the expected case, we did the same exercise. Looking at the potential case, the higher the price of oil, the higher the GDP impact. The impact we went over earlier could be as much as 55% higher, if the highest development scenario takes place, which is the potential case and a high price of oil of $40. Nowadays, $40 is not really that high. The upgrading of more bitumen into synthetic crude oil in Alberta, or in Canada, would increase the GDP impacts by 23%, or a trillion dollars.

In conclusion, the investment, under the scenarios we described, in the oil sands would be about $100 billion over 20 years, resulting in over $571 billion. It could be as high as 55% more, at the upper end. The GDP impact is $885 billion, and about 6.6 million person-years of employment would be created. Economic benefits extend well beyond Alberta into the rest of Canada and the rest of the world —in job creation, GDP, and tax revenues. The federal government receives the highest share of tax revenues generated from this development.

Mr. Chairman, this concludes my presentation. I would be happy to answer any questions.

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

That was a remarkable presentation, and I do appreciate it. I know that a lot of work went into it. For a committee that's not steeped in this knowledge, it's a lot to comprehend all in one sitting. At the same time, I'm sure you've generated a number of questions here for both you and the National Energy Board.

The clerk has started a list of questioners. I am prepared to accept more names on that list.

We'll begin with Mr. St. Amand.

Mr. Lloyd St. Amand (Brant, Lib.): Thank you very much, Mr. Chairman.

I'd like to echo what was just said. That was a very comprehensive presentation, gentlemen, so thank you very much. It was comprehensive to the point of almost being overwhelming, frankly.

I'll begin with a few comments. I presume we can agree that the oil is not going anywhere. It's in the ground, and it's quite a chore to extract it from the ground, so it's not going anywhere. It's not as if, for some ecological purpose or reason, we need to get this stuff out of the ground within the next five years or lose the opportunity. In fact, the opportunity to extract it from the ground is with us for however many decades, I presume.

Is that fair to say?

I don't mean this disrespectfully, Mr. Masri. You've quite systematically explained the billions of dollars that will be yielded by various levels of government, with the federal government receiving arguably more than the Government of Alberta. I understand that. There would be $124 billion for Canada in the next 20 years. But I presume what's unspoken is that individuals and companies will be earning billions and billions of dollars as well over the next 20 years.

Fair?

● (1625)

Mr. Marwan Masri: That is correct. That's the value of our output, $570 billion. That's the value of the oil produced.

Mr. Lloyd St. Amand: Right. And somebody other than government is getting that money.

Mr. Marwan Masri: Absolutely.

Mr. Lloyd St. Amand: Right—corporations and individuals.

Mr. Marwan Masri: Yes.

Mr. Lloyd St. Amand: I suppose the question I come around to is what's the hurry? You are persons of experience and depth on this issue, so you will know that there's a cry in some quarters for a slowing down of this unprecedented process that's going on in Alberta. And I think it is unprecedented.

Mr. Donihee, this was already mentioned by the chair, but I'd like to go back to this sentence from your outlook:

> On the other hand, natural gas costs, the high light/heavy oil price differential, management of air emissions and water usage, insufficient labour, infrastructure and services are concerns that could potentially inhibit the development of the resource.

From anything I've read or heard, we're already there in terms of the emissions, the concern about the environment, the concern about the infrastructure, too few people for too many jobs, no housing. I think we're there, quite frankly.

I would just like to ask you to comment on what would be so terribly dreadful—apart from the effect on the bottom line—for us as a country if this process were to be slowed down for a period of time.

Mr. Marwan Masri: I would simply comment that slowing down the process would just shift the impacts into the future and spread them out over time. If that same development takes place over 30 years, then obviously all of the annual impacts would be spread further.

The oil will be in the ground until it's exploited. Depending on the rate at which it's exploited, we're able to estimate what it would do to the economy. With no judgment on what rate it should be exploited at, we take what we think really is happening and translate it into economic impacts.

Mr. Lloyd St. Amand: But that's presuming a continued reliance, globally, on oil, and the tardy, very slow development of wind, solar, etc. Am I correct that in fact this is the presumption you're working on in saying that this terrific demand for oil will be with us for the next 50 years ?

Mr. Marwan Masri: We don't make an assumption on that. We actually say "if...then." We are saying if that oil is produced at this rate, these are the impacts. Whether the demand will be there to absorb it or not is a whole different question.

Mr. Lloyd St. Amand: It sure is.

Mr. Marwan Masri: In other words, if there isn't sufficient demand to take that output, the output will not be produced. And to the extent that happens, the impacts would be less.

Mr. Lloyd St. Amand: Again, I don't mean this impolitely, but because the demand is seemingly there now, hence the rush to get this stuff out of the ground. That's got to be the conclusion.

Mr. George Eynon (Vice-President, Business Development & External Relations, Canadian Energy Research Institute): If I might, I think it's not just because the demand is there; it's also that the oil price, globally, had increased over the last number of years. And the economic incentive was there because the revenue from the projects exceeds the costs of doing that business.

So yes, you're right. There's an economic incentive for the owners of the leases to monetize their assets. And that's what we're reporting on, that level of planned activity. In essence, you're right. Those other influences that Jim Donihee enumerated will likely slow down the pace of activity beyond what we've even shown in our constrained cases. I think already since we did our piece, those constraints have increased, if anything else.

● (1630)

Mr. Lloyd St. Amand: Thank you, Mr. Chair.

The Chair: Thank you, Mr. St. Amand.

Madame DeBellefeuille.

[*Translation*]

Mrs. Claude DeBellefeuille (Beauharnois—Salaberry, BQ): Thank you very much for your presentations. That's a lot of material to absorb in a short period of time.

Mr. Masri, I'd like some clarification. At the start of your presentation, by way of introduction, you said you belonged to a research firm specializing in energy and the environment.

Do you do research in areas other than oil and gas? Do you have any other study areas or do you specialize solely in the oil and gas fields? I'd like a quick answer for my own information.

[*English*]

Mr. Marwan Masri: Thank you.

The research we do is really the research that is funded. We are non-profit, but we cover our costs of the research. This research was done, sponsored by a cross-section of different agencies and entities. We are capable and ready to do research on other aspects of that sector, such as environment, if that funding is available.

[*Translation*]

Mrs. Claude DeBellefeuille: Pardon me for interrupting you, but the great majority of your current studies focus on the oil and gas sectors and it's businesses in those factors that fund you, don't they?

[*English*]

Mr. Marwan Masri: It is funded by government and industry. We have the Alberta Department of Energy as one of the sponsors; Alberta Economic Development; the Alberta Energy Research Institute; Alberta Finance; Natural Resources Canada; Shell Canada Limited; Total Energy Services Ltd.; and the Canadian Association of Petroleum Producers. As I said, it's a cross-section really of both government and industry that have sponsored this study.

[*Translation*]

Mrs. Claude DeBellefeuille: Could you tell me, of the total amounts granted to your business, what percentage was granted by the Government of Canada for research in the oil and gas sectors over the past fiscal year? Do you have that information?

[*English*]

Mr. Marwan Masri: I'm sorry, I don't have it, but I will be happy to provide it.

[*Translation*]

Mrs. Claude DeBellefeuille: Perfect. Here's my other question.

I'd like to talk about economic studies. I'm not an economist by training; pardon me for that. You've studied the sources of revenue from oil sands operations. It seems to me that, when you conduct an economic study, that you also have to determine costs. However, in your study, we only see revenues. You disregard costs. I'm wondering about that.

What are the infrastructure costs for Alberta as a province, and for the cities concerned? What are the oil sands operating costs using current methods? How much does it cost for health care, for Aboriginal people, among others? In fact, I find it curious that we're being presented with a study focusing on only one component, revenues, and that costs are disregarded.

Could you tell me why your study focuses on a single component, revenues?

[*English*]

The Chair: If I could interrupt here for a moment, Madame, we didn't ask the witnesses to come here today to get challenged on their points of view. We asked them to give an economic impact of the oil sands. There will be other witnesses who will provide some of those things you're asking for. But that was not the intent of this meeting today, nor of the groups that are presenting today. They were asked specifically to give the economic impacts of the Alberta oil sands industry. They're not on trial here; they came to give us information and to present the point of view.

I just wanted to clarify that.

● (1635)

Mr. George Eynon: If I might add to that, CERI is capable of doing exactly that kind of research, and we would willingly do that kind of research. We've looked at the cost side, in terms of the capital investment, operating costs, and so on. The other piece, which we haven't looked at, has been the socio-economic cost, but those are things we looked at in some specific areas for the Alberta government. We don't have those results with us today. But yes, we're capable of doing that, and you're right, it's an area that should be studied in more depth.

Does that answer your question, Madame?

[*Translation*]

Mrs. Claude DeBellefeuille: Yes, thank you. My other question, if I have any time left, Mr. Chair, is for Mr. Donihee.

I'm still gathering information, and I still have things to learn about the various functions of the agencies and commissions that have direct links with the Department of Natural Resources. You say in your brief that you are responsible for regulation, construction, operation and even the integrity of interprovincial, federal pipelines and so on.

Do you also regulate responsibility for pipeline maintenance by the companies that build them? Do you establish that regulation?

Mr. Jim Donihee: If the pipelines cross a provincial border, it will be us. If the pipeline is entirely within the province of Alberta, it's the Alberta provincial agency that's responsible for regulating that pipeline.

Mrs. Claude DeBellefeuille: For all matters pertaining to maintenance, for example?

Mr. Jim Donihee: Yes.

Mrs. Claude DeBellefeuille: To your knowledge, is there regulation on that matter?

Mr. Jim Donihee: Yes, of course. There's an agency locatedin Calgary; it's

[*English*]

the Alberta Energy and Utilities Board,

[*Translation*]

which is very professional in its way of doing business.

Mrs. Claude DeBellefeuille: Thank you.

Do I have any time left, Mr. Chair?

[*English*]

The Chair: That's about it for this round, but we'll come back for another round. Thank you.

Mr. Bevington.

Mr. Dennis Bevington (Western Arctic, NDP): Thank you, Mr. Chairman.

It's very good to hear the presentations today from all groups here.

I had some questions as well, and I'll start with Mr. Donihee of the National Energy Board.

You're an independent tribunal. Do you receive a mandate in any fashion from the federal government at this time?

Mr. Jim Donihee: Our mandate is the National Energy Board Act, which gives us the construct of the organization and sets out in law the mandate of the board. Aside from that, we do not receive a mandate from government to act in any way other than in the best interests of Canadians.

Mr. Dennis Bevington: If the government determines that the best interests of Canadians are to reduce energy intensity in the oil and gas industry, would you be charged with ensuring that the projects coming before you have this as part of their structure?

Mr. Jim Donihee: Unless the act was changed in some way to introduce that kind of limit, cap, or some form of constraint, the NEB would continue to act as a result of the law of the day, which is the way we conduct ourselves at the moment.

Mr. Dennis Bevington: Take for instance the case of liquified natural gas coming into Canada, where it's not a provincial responsibility to determine the public interest in allowing this development. In conducting the regulatory reviews of these projects, would the National Energy Board have a say in putting forward those national interests?

Mr. Jim Donihee: To this point in time, we regulate the import of LNG; we do not regulate the infrastructure that is built in terms of supporting the receipt of that LNG. Those are provincial undertakings and dealt with in that way.

Mr. Dennis Bevington: For instance, with the Gateway pipeline that was proposed, to Kitimat, where we were looking at the potential exporting of bitumen to other countries, would you once again be engaged in determining the national interest in the disposition of that resource?

● (1640)

Mr. Jim Donihee: In that instance, we would, most definitely, because that would be an interprovincial pipeline that would traverse from Alberta through to B.C., and then ultimately we would make a determination, based on the interests of Canadians as to the export of that oil.

Mr. Dennis Bevington: And likewise if you're changing the use of existing intercontinental pipelines for the exporting of raw crude.

Mr. Jim Donihee: That is correct.

Mr. Dennis Bevington: Okay.

With the Mackenzie gas project, you've also indicated that you're going to be doing your regulatory work based on the Mackenzie Valley Resource Management Act. Is that correct?

Mr. Jim Donihee: I may need a little help on this one.

The MVRMA belongs to the territories. We don't have direct oversight to it. There are interactions between us, but it's not our—

Mr. Dennis Bevington: It's an act of Parliament. It is handled by the minister for DIAND.

Mr. Jim Donihee: Yes.

Mr. Dennis Bevington: It's a federal government act. Wouldn't you then be responsible for that act as well?

Mr. Jim Donihee: No.

Mr. Dennis Bevington: I think you should check on that.

That gets to a point where, in the Northwest Territories, we have federal lands. Do you have any particular responsibility for the processing, the collector fields, on federal lands?

Mr. Jim Donihee: We do look after the permitting of exploration and production on federal lands in the non-accord areas.

Mr. Dennis Bevington: Okay, thanks.

On the tar sands environmental issues, you've talked about greenhouse gas emissions, but you didn't mention air pollution. You don't consider that an issue with the tar sands?

Mr. Barry Lynch (Technical Leader, Oil, National Energy Board): We identified several areas of concern. These were the three that we have identified for you today. There are more in our book here. We don't discount that it is an issue. There's also sulphur as an issue, and air pollution too.

Mr. Dennis Bevington: Yes. There are considerable air emissions of volatile organic compounds—is that not correct?—through the smokestacks of the developments.

Mr. Barry Lynch: Yes.

Mr. George Eynon: If I could add something to that, the provincial government has jurisdiction over manufacturing, as this is in Alberta. So the AEUB and Alberta Environment also have some jurisdiction over that.

Mr. Dennis Bevington: Okay.

You said that the energy intensity of the tar sands was declining. Yet the overall energy intensity, according to Natural Resources Canada, in the oil business in Canada is projected to go up over the next 20 years. So the energy intensity of the whole oil stream is actually going up. Is that not correct?

Mr. Barry Lynch: Yes.

Mr. Dennis Bevington: The total energy required is going up at a rate faster than the unit energy. Is that correct?

Mr. Barry Lynch: Yes.

Mr. Dennis Bevington: So that's the situation in the oil industry right now.

Then, in the refining industry, which of course is very important to the tar sands, you're seeing there's about a 25% projected energy intensity increase per unit in the refining of oil in Canada. Is that not correct?

So we're really seeing that the oil industry is actually going to increase in energy intensity over the next 15 years per unit, not decrease.

Mr. Jim Donihee: No.

Mr. Bill Wall (Technical Specialist, Oil, National Energy Board): In our report we speak to the energy intensity of the oil sands operations in terms of upgrading and the extraction of bitumen.

I'm not sure about your reference to refining as such, but the energy intensity of those operations is actually decreasing, as we show in our chapter on the environment—

● (1645)

Mr. Dennis Bevington: Maybe I could quote you on this:

> The processing of heavier oil grades of crude oil will increase the energy intensity of Canadian refineries from the present level of 3.0 gigajoules per metre cubed to 3.8 gigajoules by 2020.

Mr. Barry Lynch: We didn't look at the refineries in Canada, and that's what that's referring to there. NRCan looked at the refineries. Mr. Wall was only addressing the oil sands projects themselves, in Alberta.

Mr. Dennis Bevington: This government has set out in its Clean Air Act, or in its direction, that they want to see energy intensity reductions in industry. How would you suggest this is going to...? Well, with energy intensity reductions you'll see emissions intensity reductions; they're directly related. I guess we can agree with that.

How would you see this happening in Canada over the next 15 years?

Mr. Bill Wall: Historically, over the last ten years or so, there has been a decrease in energy intensity of over 1% per year through the steps that industry has taken to decrease their energy usage. In our report we do have a chart that shows that, in our environment section.

The Chair: I think we've gone considerably over time for this round, but you're welcome to come back and pursue that in the next round.

I'll go to the next one. Mr. Trost.

Mr. Bradley Trost (Saskatoon—Humboldt, CPC): Thank you, Mr. Chair.

I apologize again. In committees we tend to wander all over, because we have such a short period of time, so my questions will be in a few areas here.

In your report on the overall impact economically across Canada, you noted it wasn't only going to be concentrated in Alberta, and it wasn't only going to be concentrated in the oil and gas sector. Could you give me a better idea of what specific industries—in Alberta, and particularly in provinces like Ontario and Quebec, since those are the two you broke out—will most directly benefit from the spinoff?

Again, I'm looking for provincial breakdowns, such as what industries benefit most in Quebec, what industries benefit most in Ontario, as specifically as you can. I know this can be difficult.

Mr. Marwan Masri: I don't have that by province, but in terms of the types of industries beyond the oil and gas that will experience a positive impact, there would be what we call FIR: finance, insurance, and real estate.

I have the information here. I can look it up.

Mr. Bradley Trost: You're saying such as the banking industry in Toronto—

Mr. Marwan Masri: Correct.

Mr. Bradley Trost: Okay.

Mr. Marwan Masri: Yes, that's one of the largest, actually. Impacts would be on that sector. And I can quickly look up here the other sectors that would be positively impacted.

Mr. Bradley Trost: Sure, that would be appreciated.

Mr. George Eynon: The other thing is that when you have a four-to-one ratio of a multiplier effect, you also affect very mundane things like the number of teachers required to support schools, the number of health care workers to support the hospitals. If you're going to put that many jobs into the oil sands, it has a spinoff effect on those individuals needing to be supported, not simply in the province where the jobs are located but across the country.

We did make a slight underestimation of the impact on other provinces, because we assumed, for example, that all those salaries of the jobs in Alberta were spent in Alberta. But the fact is that a lot of that gets repatriated to places like Nova Scotia, Newfoundland, Quebec, Ontario, and B.C., where the workers come from. And Saskatchewan, of course.

Mr. Bradley Trost: Massively so.

Mr. George Eynon: So the impact is very, very broad on a large number of sectors. I'm not being very specific for you, I know.

Mr. Marwan Masri: Specifically, we have 19 sectors that we traced the effect on, any increase in economic activity, really, whether it be from the oil sands or anywhere else.

Mr. Bradley Trost: The reason I'm asking the question is to try to relate it to the rest of the country, how it impacts them, because this committee doesn't only represent Fort McMurray. We're trying to explain to places like Montreal and Toronto how the oil sands impact them. So if one could have more specific examples, it would be helpful.

● (1650)

Mr. Marwan Masri: Yes, we can do that. Again, manufacturing and the financial sector would be the largest recipients of the economic stimulus. Gas utility would be one of the larger ones. Again, all 19 sectors experience some kind of economic stimulus, but to varying degrees, some more than others.

Mr. Bradley Trost: With all economic models there are variables, some with considerably more degrees of sensitivity than others. I'm particularly interested in what are the most sensitive variables because I'm trying to find out, number one, what they are, and then what we can do from a government policy perspective to lower the downsides on those highly sensitive variables, be it for labour and so forth. The more sensitive they are, the more risk-prone.

What are the most sensitive variables in your models?

Mr. Marwan Masri: Obviously, as I mentioned earlier, there's a direct impact of dollars—for example, that's how we did the sensitivities on the price of oil—and that directly translates into higher value of output and investment. Keep in mind that the economic injection into any economy, regardless of where it comes from, will result in a multiple of itself, so that's very sensitive.

The input-output model has limitations that are used; there's no question about that. Interactions among different sectors that create these ripple effects of economic stimulus are based on established relationships of how much input each industry provides to the others. We have what we call coefficients that tell us, for instance, that one-tenth of the output of crude oil comes from manufacturing, just to throw that out. Those coefficients change over time, so the input-output analysis is more accurate in a shorter range of time, since those coefficients can be assumed to be stable and unchanging, but to the extent there's technological change over time, those relationships among different sectors will change, and therefore distributional impacts will also change. In other words, they're static coefficients, not dynamic ones; they don't take into account that the farther you go into the future, the less accurate it's going to be.

Mr. Bradley Trost: Maybe the National Energy Board might want to answer on this too; what are in many ways the most sensitive factors for how many projects will get built? The price of oil is the obvious. I think you used $50 a barrel in one of your case scenarios, and you used $40, which will actually come up with some other things.

I know I'm asking for the obvious, but can you state again the variables that will most likely slow down the potential projects?

Mr. Bill Wall: I think we've identified them and talked about them already. They include escalating costs, potential labour shortages, and perhaps to some extent environmental issues. The price of oil is another important variable. If prices fall into the $35 to $40 range, it'll result in a significant slowdown.

Mr. Bradley Trost: If the labour shortage was taken care of, and the two factors of energy and water could be handled through technology or policy or whatever—because it's highly energy intensive to produce more energy, ironically enough—then wouldn't the likelihood of all those projects going forward greatly increase, or am I missing another major factor?

Mr. Bill Wall: No, you're probably fair in what you're saying.

Mr. Barry Lynch: I think slide 18 that Mr. Donihee presented captures most of the issues, both on the downside and the upside. To take it one step further, in addition to labour and to what Mr. Wall said, you also have the issue of pipeline capacity. We don't have enough pipelines leaving Alberta at the moment. We're expecting a number of them to come in, so—

Mr. Bradley Trost: That brings me to my next question: what other projects that are not directly related may be impacted by oil sands development?

I've heard some fanciful things from the Northwest Territories. Even nuclear people talk about it. I'm not sure how many of these are even realistic, but what other major projects could be impacted as we see the development go forward? Are there any comments?

Mr. Barry Lynch: The pipelines are one, and then further downstream are the markets—where will this oil go? Will it continue to go into the United States and farther down? Will it go off the west coast? Mr. Bevington mentioned the gateway project earlier—will it go off there to California?

Markets have to be found. If you're going to bring two million barrels a day more than today, where's it going to go? The existing markets are near saturation—or you add upgraders in Alberta or the United States to process that bitumen. Those refineries can't handle it today.

Mr. Bradley Trost: Yes, so it could—

● (1655)

The Chair: Mr. Trost, we're running out of time. We'll catch you on the next round. Let's try to do five-minute rounds here if we can.

Mr. Tonks is next.

Mr. Alan Tonks (York South—Weston, Lib.): Thank you, Mr. Chairman.

Thank you very much. I'm sure on its visit to Fort McMurray the committee is going to have the benefit of another perspective brought through your two deputations.

I want to follow up, just for a moment, on Mr. Trost's questions.

I would take it that the capital incentives that have been created through programs like the accelerated capital cost allowance would be an incentive, along with all the other variables that you suggested, to the production and the acceleration of production, or even the retarding, if you will, of production. Those incentives exist and are creating this kind of activity. We also have been aware that the technology can mitigate some of the spinoff effects that are occurring as a result of the production.

What would you recommend as the kinds of incentives that would also bring into balance, in that equation of sustainability, new technologies that you then would take into consideration in analyzing the sustainability of production at various levels—in addition to what you have mentioned? What incentives on those technologies would you suggest to this committee that we could pursue as a matter of public policy?

Would you take that under advisement?

Mr. George Eynon: I'd first comment that CERI's role is to analyze alternatives and to inform public policy, not to recommend. We try, because we're an independent agency, to provide analyses of different situations, but we steer clear of recommendations because we want to retain our objectivity. We can analyze any number of things. Increasing by a percentage here or decreasing by a percentage there is something we can analyze as a sensitivity, but we are not mandated to provide policy opinion on it, sir.

Mr. Alan Tonks: Mr. Chairman, that takes me just one step over toward the National Energy Board, then.

What levers exist within your mandate to act in the public interest with respect to sustainability—I think Mr. Bevington was trying to get to this—if you were to feel that certain technological innovations would mitigate the harmful impact on the environment and impact on the economic development of the tar sands? What levers do you have that you could kick into that process?

Mr. Jim Donihee: I think you'd find the National Energy Board works within the mandate of the act. As I mentioned at the outset of the presentation, we look at it in terms of permitting the free market system to work. Lots of the factors you're seeing as to why many of the announced projects will not go forward are in fact coming into play. As various companies seek to develop competitive advantages, they are pushing into new areas of technology just by virtue of endeavouring to reduce their costs.

The board does not introduce measures of that nature in terms of the manner in which it assesses the projects. We look at the project that is put before us. If it is a contested project, we have a very open and transparent hearing. We solicit the views of all Canadians, of all interested parties, and then make a determination as to the viability of that project as it represents the Canadian public interest.

The Chair: Thank you, Mr. Tonks.

We have crossed over several times, in the interests of the witness, the various roles of the witnesses and of the agencies of the government, and what your regulatory capacity is.

As you're well aware, Mr. Tonks, as the former chairman of the environment committee, there is CEPA. There are other acts in the environment department particularly that impose regulations and strict guidelines as to the operation of corporations and others. That just doesn't happen to be one of the roles of the National Energy Board.

But if you want to call some of those witnesses, again, I'd be very pleased to have them here so that we could have those questions answered—and the kinds of questions that Mr. Bevington was asking, too—because it is important to our overall theme here. It's just not always appropriate to the witnesses at hand.

Next we'll hear from Mr. Ouellet.

● (1700)

[*Translation*]

Mr. Christian Ouellet (Brome—Missisquoi, BQ): Thank you, Mr. Chair.

First, I'm going to refer to the table appearing on page 2 of the National Energy Board's document. It states that Saudi Arabia has reserves of 260 billion barrels. I see that those figures date back to 1980, because, in Vienna, on June 15, 2005, Saudi Aramco, the national oil company, determined that it still had 130 barrels of oil in Saudi Arabia.

American investors say reserves are 30 billion barrels. If that's true, it's also true for reserves as a whole, which have been overestimated. We know that; everyone says it. We know that most countries have already gone beyond their peak oil reserves, and their production is declining, except in Canada.

I find Mr. St. Amand's question interesting and I'm going back to it. What is your strategy? What do you advise? If we quickly use up the oil we have, we're obviously going to produce maximum pollution. We're probably polluting enough to cause major climate change, which could lead to the disappearance of the human race by 2050. If we take our time and slow down the rate of pollution, we'll obviously have a chance of finding technical solutions to reduce greenhouse gas, or GHG emissions, when we use that oil.

However — and this is the catch-22 — I don't at all believe in the forecasts that state that our reserves could last 250 years; that makes no sense. We're currently using 30 billion barrels of oil a year. Do the calculations, and you don't even come up with 50 years of reserves.

So I go back to my two assumptions, and I ask you the following question: what strategy do you recommend for Canada? If we conserve oil — that would be somewhat Mr. St. Amand's idea, which I find very good and interesting — and if we're eventually the only people who have oil on Earth, that will cause enormous global conflict. We'll have our oil taken away from us. So what strategy do you recommend to us?

That's an economic question, Mr. Chair.

[*English*]

The Chair: Yes, it is an economic question, but it's a question that's asking them for their opinion, their recommendation, their strategy. They don't have recommendations; they don't have opinions; they don't have strategies. They have a mandate provided to them by the government at hand. The minister to whom they are responsible will be appearing before the committee, and those questions can be suitably asked of him when he appears.

I don't mean to restrict your questioning in any way. I just want to make it clear that it's not fair to these witnesses to be asked an opinion in front of the committee when that is not their responsibility. Their responsibility is to carry out the mandate of their act.

[*Translation*]

Mr. Christian Ouellet: I withdraw my question, Mr. Chair. I apologize.

I would like to have a very brief answer to the following question. You talk about synthetic crude oil. Could you tell me exactly what that is? What is it made of and how? Who could answer that technical question?

[*English*]

Mr. Jim Donihee: Synthetic crude oil, sir, is the bitumen, and invariably they could add other types of product to it, such as a lighter oil, to reduce the viscosity so that it is able to flow through the pipeline. They could add a solvent; they could add a lighter oil; they could add any number of fluids to it that seek to reduce—because it's very tarry, very heavy in its composition—that viscosity by adding another product to it such that it can flow through the pipeline.

● (1705)

Mr. Bill Wall: I'll supplement that answer somewhat. Synthetic crude oil is really a result of the upgrading of bitumen. It's a kind of refining process. The bitumen is high in carbon and low in hydrogen compared with normal crude oils. The process is to either reduce the carbon or add hydrogen or both. The end result is that it's a synthetic crude oil that's not unlike a light, sweet crude oil that you might find in other situations.

[*Translation*]

Mr. Christian Ouellet: I'm no less surprised, Mr. Chair. We request an economic opinion from a research centre, from CERI, the Canadian Energy Research Institute, and from people working with the Government of Canada, and they give us a presentation that would not be accepted by a student with an MBA, a master's degree in business administration. In this kind of study, external factors also have to be considered. They are part of any economic assessment done today. Nowhere have external factors been calculated, such as the cost of water supply services, roads, health services, the cost to clean up land and air and so on. I'm very surprised.

Why don't you include the cost of external factors, which are calculated by all businesses operating in all fields, whether it be aluminum, Alcan, steel or others?

[*English*]

Mr. Marwan Masri: I can only say that CERI is ready to do that type of research if we're asked to do it. It is the other side of the picture. We presented what we were asked to do, which was the economic impact of a certain amount of development. We say this is what it is, factually. That doesn't mean it's the complete picture. There are other aspects to it that we were not asked to study, but we can. If we were requested to do that, we could do it.

Again, as the chairman indicated, we're not to make recommendations or give opinions, but we can analyze any issue, any problem, and give you our findings. It just did not happen to be in the scope of this report that we prepared.

[*Translation*]

Mr. Christian Ouellet: I'm a bit shaken. I don't see how we can continue this discussion, how I can ask you questions, if you can only answer me on aspects that are part of your presentation. In other words, your answer is only, yes, we're making money; yes, that's marvellous; yes, everyone will get by and Canada will be at a very good advantage. That's all that you can tell me. I don't see how we can continue the discussion in these conditions, Mr. Chair. I'm going to stop asking questions; I find this report incomplete. We can't ask people to give us only part of the whole picture. It's as though we were inviting people and asking them only to talk about the environment, refusing to hear about anything else. Then people would say we had a bias. If we only talk about the economy, we show a bias. I can't continue. I don't understand how we can get a valid assessment of the oil sands situation from a totally distorted presentation, even regarding the current oil reserves of 20 countries. That's not right.

I pass my turn.

[*English*]

The Chair: Madam Bell, did you have any further questions?

Ms. Catherine Bell (Vancouver Island North, NDP): Sure.

I'd like to thank you for your very comprehensive presentations. I have to agree somewhat that it doesn't leave a lot of room for other questions, but I suppose that could be seen as good or bad, depending on which side you're on.

I hear a lot of concern for the environment at this table, and I'm just going to ask a technical question. Could you tell me what the prospects are for carbon capture and the storage of carbon in western Canada in the sedimentary basin?

Mr. Bill Wall: Certainly the idea of carbon capture and storage, along with the idea of enhanced oil recovery through carbon dioxide injection is being looked at quite seriously. I think there are five carbon dioxide EOR pilot projects under way right now. There is the operating Weyburn carbon dioxide project that has been in operation for two or three years in terms of carbon dioxide enhanced oil recovery.

Part of the problem is that the capture of carbon dioxide from smokestacks is relatively expensive, on the order of $60 per tonne. The folks who are doing the enhanced oil recovery can only afford to pay about $20 to $25 a tonne, so there's a bit of a disconnect there between the two sides.

Having said that, there are some projects by Penn West. They do plan to construct a small pipeline from, I think, Fort Saskatchewan to Pembina to undertake a carbon dioxide flood of the relatively mature Pembina field.

Beyond that, we recognize that there are some incentives or programs that are being sponsored by NRCan in terms of CCS.

● (1710)

Mr. George Eynon: I might add to that.

You were asking about the technical capability. CERI did a study about two or three years ago on the capability of the basin, working with the Alberta Geological Survey, SNC-Lavalin, and Adams Pearson Associates. They evaluated the capacity of the reservoirs in Alberta and western Canada to sequester carbon dioxide, and again for tertiary recovery, which my colleague has talked about. The technical capability of the reservoirs is very high. If you can get oil and gas out of these things, you can also put carbon dioxide into and take it out of these things as well.

So the technical capability is there, but as my colleague Bill Wall said, it comes down to the fact that there is a cost issue. How that can be done economically or commercially is another matter. But the technical capability to do it is there. The rocks will work.

Mr. Bill Wall: In chapter 2, we did quantify the quantities of carbon dioxide that could be sequestered.

Ms. Catherine Bell: I guess we're all concerned about whether it makes money or not. If it's good for the environment, though, then we should be doing it and mitigate our environmental degradation. That's what the big concern is here for most of us.

You mentioned incentives. Maybe we're not moving as fast on the environmental side of it as we are on the production and development side. Are there more incentives that might be needed to further stimulate the application of new technology to limit the environmental impacts?

Mr. Bill Wall: I'm not sure if there are any significant incentives as such. It certainly would be a good place to look to provide incentives. There are some research and development programs that are being funded by the federal government and by provincial governments. As I recall, the Alberta government provided $50 million to look into the support of pilot projects looking into carbon dioxide capture and enhanced oil recovery.

Mr. George Eynon: I also think there exist more recent incentives, in the sense that the industry itself and the Government of Alberta are looking at the number of alternative fuels.

To get to Mr. Bevington's issue about energy intensity, currently the amount of gas being used is an expensive process for the generation of steam and electricity. The companies are looking at alternative fuels, like the gasification of petroleum coke or creation of an emulsion from a bitumen that can be utilized, and there are pilot studies for each of these. There are strong economic incentives to reduce the energy intensity and the use of other fuels as well. Those are being looked at by the industry itself and by governments.

The Chair: If we can do it quickly one last time, we'll go to Mr. Harris, then Mr. Russell, and then we'll close with Mr. Bevington.

Mr. Richard Harris: Thank you very much, Mr. Chairman, Mr. Donihee, and guests.

The NEB is based in Calgary, and I have to wonder how you're being affected by the boom out there. Given the labour situation in Alberta, I wonder how that's affecting your capacity to do the job, because as government regulation increases, companies in the energy business out there have an increasing need to comply and fund people to deal with regulatory processes. Who better to hire than people from the NEB?

So I'm just wondering if your staff is being poached on a regular basis. Is that impeding your organization in any way? Are there some measures the government can take to deal with poaching, for example, if it's becoming a serious problem for you?

● (1715)

Mr. Jim Donihee: The board, quite honestly, is struggling to retain staff. Throughout all the sector, it is quite a challenge. The private industry is in a position where they can respond far more rapidly to the demands around salaries and so on. So unfortunately, the board has not been able to keep pace with what is unfolding in the sector.

As an example, of 300 staff, last year we lost 55, some of that due to retirement, but many of that due to moves that individuals chose to make to go to private industry. So we're actively engaged with Treasury Board at the moment to try to seek relief to this and to put in place a way to respond to the pressures we're feeling. Again, with the growth that's occurring in the sector, with the number of projects that we spoke to in the presentation, which you see coming before the board, and with the need to retain qualified staff on behalf of Canadians to deal with and to study these very technical issues, we do need some relief. It's posing quite a challenge for us.

Mr. Richard Harris: Is there a serious competitive deficit, from your point of view? Is your ability to match private sector offers a serious problem in what you're able to offer by comparison?

Mr. Jim Donihee: We tend to be very competitive at the entry level. We are able to recruit some very talented and competent young staff. With the staff at the more senior levels that we've lost in the recent past, most of the exodus that I mentioned would have been at the experienced and senior level. We are not able to attract experienced staff. We're just not in the game as far as the ability to match.... Quite honestly, we don't seek to match the salaries. The NEB is a very positive work environment. We're not seeking to achieve parity with industry—I think that's unrealistic—but to at least stay in the ball game in terms of being on the playing field, and then hopefully allowing the very concerted effort of the leadership and so on to keep the working conditions positive and to approach it from another number of ways to reward staff and offer training. It's fascinating and incredibly rewarding to work on behalf of all Canadians on issues such as this. We need the means, hopefully, to stay in the game in terms of attracting the calibre of people who are necessary to deal with these very complex issues.

As you saw in that first slide, it's everything from engineering to economics to the environment. As a truly integrated decision-maker on behalf of all Canadians, we really cover the broad spectrum of skills that are required to be able to do that.

Mr. Richard Harris: So just briefly, who do you make your appeals to?

Mr. Jim Donihee: As I indicated at the start of my presentation, we report to Parliament through the Minister of Natural Resources. So we have dealt with the Minister of Natural Resources, in that way, and worked with the staff of the public service. We're an independent employer, as I mentioned, so we have some latitude. But by and large, we're housed within the larger public service, and we work through Treasury Board, as would any other entity, in order to try to deal with the challenges we face.

Mr. Richard Harris: Thanks very much.

The Chair: Thanks, Mr. Harris.

We're going to have to move on quickly. I'm going to go to Mr. Russell.

Mr. Todd Russell (Labrador, Lib.): Thank you very much.

We certainly understand the impacts of the oil sands, even in the smallest communities in the north, in Labrador, where a lot of our expertise is being sucked out, not only from the NEB, I guess, in Calgary, but even in communities smaller than 100 in population. It's amazing how far this reaches. But that's not my question.

This question is to the NEB. I'm very keen on this, because we're talking about energy transmission in Labrador, Lower Churchill, and of course across interprovincial boundaries, and maybe even into international markets and that type of thing.

If I have an energy project that falls under your mandate, what steps do I have to take? I know I have to go through the federal government under the CEA Act and under the provincial government, provincial regulations. I'd have to go to you as well, wouldn't I?

● (1720)

Mr. Jim Donihee: Depending on the nature of the project, sir.... Again, if it's a pipeline that transits across provincial or territorial boundaries, ultimately the NEB is the decision-maker, and we would certificate the project with a recommendation to the GIC that it be permitted to proceed.

Mr. Todd Russell: You would actually grant a permit to proceed?

Mr. Jim Donihee: That's correct.

Mr. Todd Russell: How do you arrive at granting that permit?

Mr. Jim Donihee: The application is structured. There are guidelines as to how the application would be structured. The application is made to the National Energy Board. All of the elements that relate to the environment would be dealt with by CEAA and the provisions that exist within it. Then all of the engineering aspects, all of the operational aspects, some of the physical aspects of environmental considerations are brought before the board.

We consult broadly through a very open hearing process to hear the views of all Canadians, both the proponent and those who would not be supportive of the project for whatever reason, and then eventually come to a determination—having heard all of those views and considered the risk, the environmental issues, legal issues, economic issues—as to whether permitting that project is deemed to be in the best interests of Canadians.

That permit then goes to government, and it has the final say on actually endorsing that recommendation from the board.

Mr. Todd Russell: So it is a recommendation; the government can either abide by it or not abide by it.

Mr. Jim Donihee: In practice, the government has demonstrated great confidence in how the board has conducted its duties, throughout the full lifetime of its existence, and to my knowledge has never overturned that recommendation. But it does go to GIC for their final sanction of the recommendation.

Mr. Todd Russell: Thank you, Mr. Chair.

The Chair: I found that interesting as well. Thank you, Mr. Russell.

We're going to wrap it up in about five minutes.

Mr. Bevington.

Mr. Dennis Bevington: Thank you, Mr. Chairman.

I'll go back to the carbon sequestration issue, because it seems to be a hot topic.

The commissioner gave us a report a few weeks ago saying the program that was sponsored by Natural Resources Canada was expected to return 3.5 megatonnes of carbon capture and they were reporting only 0.08 megatonnes. Do you understand why that program was such a failure in terms of the carbon dioxide reduction that came from the investment Canada made in it? It was 3% of the target.

Mr. George Eynon: I'm not aware of the report you're referring to.

Mr. Dennis Bevington: It was the commissioner's report on the greenhouse gas programs that the government undertook from 2000 on. It really did bring a question to my mind about how successful this carbon sequestration is to date. There were supposed to be five projects. They only reported on one. I've only ever heard of one that's actually up and running in Canada. Has industry made any effort to push this forward?

Mr. Bill Wall: There are five projects that involve carbon dioxide for enhanced oil recovery. This may be somewhat different from sequestering carbon dioxide without the additional benefit of the oil recovery.

I'm really not familiar with what NRCan has been doing with respect to that program or its success, so I really can't comment on that.

Mr. Dennis Bevington: The Weyburn project was mentioned in this report as the one project that had gotten money from Natural Resources Canada. It was up and running, yet they were reporting these very low numbers for the carbon dioxide reductions that were encompassed by the program. I was just curious whether you could answer. Obviously you can't.

I know there is the dynamic right now between removing carbon and adding hydrogen to the oil sands product. Is there any sense of which is the better of those two for carbon dioxide intensity, or are they a saw-off?

● (1725)

Mr. Bill Wall: I'm really not sure. I suspect the idea of adding hydrogen would probably be a better idea, in that the yield from it is about 100%, whereas with a delayed coking operation the yield is maybe 81%.

I'm really not sure, though. I just intuitively feel that hydrogen addition is a better way to go.

Mr. Dennis Bevington: So when you make hydrogen, you're using natural gas. That's been a bit of a problem because the price has gone up. So then coking became more popular because of the pricing issues.

But is there any sense that we could look at the development of hydrogen from clean energy, rather than through using natural gas? Could you use perhaps electric, perhaps wind, perhaps some other forms of energy that would provide some kind of carbon dioxide relief to this very valuable resource we have in the tar sands?

Mr. Marwan Masri: I'll just make a general comment on that. It is possible, technically, to produce hydrogen via electrolysis, whereby the electricity is generated from a zero-emission source. It's really an economic question more than a technical question at this point. There's a loss of efficiency as well in going from converting twice to electricity and then to hydrogen. The technology does exist, but the economics do not favour producing hydrogen from a renewable resource at this point.

Mr. Dennis Bevington: And have you done a comparative analysis? I know one of the reasons we were looking at nuclear power in the tar sands was to make electricity so that we could use that for hydrogen addition. So that was kind of a renewable source. What's the formula for the price of natural gas versus electrical costs? That should be a fairly simple formula for you guys.

Mr. Marwan Masri: Actually, it's not. I was speaking from my general experience using wind or solar to electrolysis, not nuclear. Nuclear is something we are proposing to look at as well in the oil sands as a source of hydrogen, steam, and electricity. It's a proposed project that we are putting together now to study. But we have not done that yet.

Mr. Dennis Bevington: Okay. There were some previous studies done in the early 1990s on that work, when natural gas was at $1.25 a gigajoule. And those were done by Alberta oil sands research at the time. So I'd say that there is some base of information about this. And I would assume you would have some sort of—

Mr. George Eynon: The work that was originally done was back in the 1990s, as you said. The conditions and the costs and the supply and demand are all changing, and this is exactly the reason we're looking at the economics of nuclear use in the oil sands for a broad spectrum of things, including hydrogen generation, and looking at it as an alternative fuel to reducing the energy intensity, in terms of carbon and so on. That's exactly why I wanted to look at it, and we'll be doing that over the next number of months, we hope.

Mr. Dennis Bevington: Thank you.

The Chair: Thank you, Mr. Bevington.

And thank you again to our witnesses. We have just beat the bell, I believe. I appreciate the time you took to prepare these submissions and your responses today to the committee. Thank you for your appearance.

With that, the meeting is adjourned.

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