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Chair

Mr. Bob Mills

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● (0905)

[*English*]

The Chair (Mr. Bob Mills (Red Deer, CPC)): Order, please.

We have a bit of housekeeping before we go on. So that our clerks can arrange the schedule of witnesses to come, we need to make a decision. We have one day now on which we're not meeting when we thought we were, and that's November 30, because the House is not sitting November 30 or December 1.

It seems, in talking it over with the clerks, that the easiest approach would be to simply move everything by one meeting and thus get the witnesses we had scheduled for November 30 to come on the next Tuesday, and so on. That would mean possibly not finishing clause-by-clause until one meeting later, which would go into that next week.

We would need unanimous consent to do that, because the motion we have before us says that clause-by-clause is to be completed by December 7. I'm basically taking a straw poll on what people think about that. Our clerks do need to know, for confirming witnesses, just exactly what we're up against.

Mr. Bigras.

[*Translation*]

Mr. Bernard Bigras (Rosemont—La Petite-Patrie, BQ): Thank you, Mr. Chairman.

First of all, I don't see any problem with that. I know that we have obligations, but we must remember the principle behind the motion that we adopted regarding Bill C-288. It intended to ensure that this bill could be sent back to the House before this current session ends. I do not have the parliamentary timetable in front of me, but isn't it possible this schedule change could prevent us from sending this bill back to the House before the end of its session?

[*English*]

The Chair: There are two days in the next week that are not, at this point, scheduled. What we would do is move from Thursday, December 7, to Tuesday, December 12. This is what I'm asking, because our clerks do need to arrange witnesses and so on.

Yes, Mr. Warawa.

Mr. Mark Warawa (Langley, CPC): To comment on that, Mr. Chair, I believe that Mr. Rodriguez or Mr. Godfrey originally recommended December 12 or December 14, and it was Mr. Bigras who had suggested that we move it up a week from December 5 and December 7. We're going back to the original recommendation, but still finishing in time on December 12. I think it still works.

The Chair: Mr. Cullen.

Mr. Nathan Cullen (Skeena—Bulkley Valley, NDP): The only consideration I would throw in, and I think the idea is fine, is that we have two private members' bills that are still waiting, as well, for the committee's attention. It would be good to get them out rather than to wait until after the Christmas break. I throw that in.

The Chair: I think, Mr. Cullen, that at least one of those is pretty much unanimous and that everyone agreed, so that could be moved through pretty quickly. We still have that one more day not booked.

Mr. Nathan Cullen: I just throw that caution in there, because we also have the motion for the minister to return to the committee. There are a few things out there, and we have to be careful not to say that we'll just do this on the last day before the break, because there are other things we've agreed to do as a committee, and it would be unfortunate to wait until February to do them.

The Chair: Are there any other comments?

Do we have consensus then to do that?

Yes, Mr. Godfrey.

Hon. John Godfrey (Don Valley West, Lib.): The only concern is if there's any danger that the House might break early.

The Chair: I don't think so. I doubt very much that it's a possibility. As long as I've been here, we've talked about that happening, and I don't think it's ever happened. I rather doubt it'll happen this time.

[*Translation*]

Mr. Pablo Rodriguez (Honoré-Mercier, Lib.): Mr. Chairman, this is still a possibility. Could we not add a session on the Wednesday like you did this week?

[*English*]

The Chair: Yes, as long as we find a room and set up a separate meeting. This Wednesday we have something. So you'd be thinking about next Wednesday.

[*Translation*]

Mr. Luc Harvey (Louis-Hébert, CPC): We don't have the room on November 30. Do we have something scheduled for November 30? The House isn't sitting on that day.

[*English*]

The Chair: Yes, November 30 is not a sitting day; that's why we have the problem now. In our planning, November 30 was a sitting day, but now it is not, so I'm just suggesting we just move it by one day, because we have the two days that weren't planned.

Yes, Mr. Bigras.

[*Translation*]

Mr. Bernard Bigras: Unless I misunderstood him, Mr. Rodriguez is suggesting that we hold a session on Wednesday, November 29. The House is sitting that day.

Mr. Luc Harvey: It would just be a matter of moving the session.

Mr. Bernard Bigras: Exactly.

[*English*]

The Chair: The problem, of course, for all of us is that we do plan schedules and we do have a lot of events on, so as soon as we start doing a meeting at a different time.... It's one thing with the European Commission people if two or three people are there, or whatever. It's just an informal thing, not official. So it does create some difficulties for some of us when we start adding extra meetings.

What's the feeling of the committee? What would you like to do?

I would propose that we move it one day later, to Tuesday, December 12, and complete our clause-by-clause and report back to the House that week. That's basically what I'm proposing, but you're in charge.

● (0910)

Mr. Mark Warawa: Mr. Chair, I would agree with you. My schedule is busy with the suggestion of meeting the extra—

I would suggest you talk to your House leader and party leader and find out. If there's a thought that we're going to be breaking early, well, then we can come back as a committee and discuss it. But I don't think that's going to happen. It may be open for discussion, but I would say at this point that we meet on December 12. Instead of ending on the December 7, we should plan on ending it on December 12, which is your recommendation, and stick with that plan, unless we're going to talk about breaking early.

The Chair: I hate to throw anything else out, but of course the minister has been asked to come and we have a committee that's going to be struck very soon to look at Bill C-30. All of these things that we talk about today might well get into trouble because of other decisions; but for the clerk's sake, I just think we need a decision right now. As I say, I would propose December 12, unless someone has a great deal of difficulty with that.

Mr. Cullen, do you have a comment?

Mr. Nathan Cullen: No, I agree with your sentiment.

The original idea of losing these two days was to make space for the Liberals' convention in Montreal. It seems reasonable; I checked with my House leader this morning to verify this. There's no substantive conversation among the House leaders right now about closing the House down early. There is a risk that it might happen, but I'll defer to your wisdom.

The Chair: Well, we could always set a special committee, even if the House weren't sitting. But as I say, in 14 years I've never seen that happen, so I think we're pretty safe.

Mr. Nathan Cullen: That's clear evidence.

The Chair: Is that the consensus, then?

Some hon. members: Agreed.

The Chair: Okay, for now, we'll tell the clerks to go ahead.

Mr. Pablo Rodriguez: It's on the agenda, Mr. Chair, the discussion about this one.

The Chair: That's true. Obviously the clerks need some guidance, and I wanted to give them that.

Witnesses, we welcome you today. We appreciate your being here —some of you on very short notice, filling in and doing the job for us.

We will start off by going in the order. We'd ask you to keep your comments to 10 minutes. Then we will go to our members to ask you questions, so you should get a chance to finish up.

We will start off with Mr. Burton, please.

Dr. Ian Burton (Emeritus Professor, University of Toronto, As an Individual): Thank you, Mr. Chairman.

It's a great pleasure for me to have the opportunity to speak to this committee. I congratulate the sponsor for introducing a bill that gives us an opportunity to think about climate change and the Kyoto Protocol in a particularly focused way.

I want to direct my comments to the subject of adaptation. Some members may feel this is a bit tangential to the main thrust of the bill. Nevertheless, I think it is an important issue that needs to be considered whenever we begin to think about an appropriate strategy for Canada and for the international community on climate change.

As members will know, the Framework Convention on Climate Change recognizes two approaches to climate change. One is mitigation, the reduction of greenhouse gas emissions. The other is adaptation, doing what we can to reduce the impacts of inevitable, necessary, unavoidable climate change, which we are facing now, to reduce our vulnerability and perhaps expand our resilience in the face of a changing climate. This can mean strengthening and redesigning and setting new design standards and codes for infrastructure; dealing with the thawing and melting permafrost and the impact that has on our Arctic communities; and enhancing and improving water conservation in various ways where we might suffer water shortage. It can mean looking at crop varieties and alternatives in places where we're faced with drought, such as the Prairies; thinking about how to manage the invasion of insect pests, such as the mountain pine beetle in British Columbia; or dealing with extreme events, such as the floods and droughts to which many parts of the country are exposed.

In the near to medium term, there is some opportunity for substitution between mitigation and adaptation. That is to say, the more we can adapt in the short term, the more time there will be to mitigate the greenhouse gas concentrations in the atmosphere and to reduce the damage for a given level of concentration. This is only a partial and temporary solution. I do not suggest that adaptation can in any way deal with the major impacts of climate change. But in the short term, it is something to which we should, and must, turn our attention.

One of the fundamental questions to ask is how much can adaptation achieve? How much can we reduce our vulnerability to climate change by taking the sorts of adaptation approaches that I've mentioned in relation to climate risks?

My thought is that this bill and, for that matter, the Clean Air Act are taking a heavily mitigation-focused view of the climate issue. Before we can understand what the costs and benefits are of one strategy or another, we need to know more about what can be achieved by adaptation, both in Canada and globally.

There are important differences between these two approaches. Mitigation is something we have to agree on and pursue globally and internationally. It's something that happens by international agreement that we form, participate in, and then implement. The benefits that come from mitigation are globally spread because they're the reduction of the rate of climate change. They are globally spread benefits. Different countries will get different amounts of those benefits according to their existing level of vulnerability. On the other hand, adaptation is something that we do for ourselves. The benefits from adaptation fall where the adaptation measures take place.

My conclusion from this reasoning is that Canada should consider how much it needs to allocate to adaptation and, in so doing, consider what the degree of urgency is for us with respect to the amount of mitigation we want to pursue. We need to do this in the Canadian context, but we also need to do this in the negotiations that are ongoing with respect to the post-2012 regime that will follow after the termination in 2012 of the first phase of the Kyoto Protocol.

● (0915)

I think both in Canada and internationally, the climate issue has been too narrowly conceived, with too heavy a focus and emphasis on mitigation. There's a lot we can do in adaptation to reduce the near-term impacts, and we need to find ways of giving more attention to doing that.

This really raises a question about Canada's national interests, and I would like to see that in two parts. One is what is best to do for ourselves, in a rather narrow self-interest, in which case I think the case for adaptation is very strong. The other is what we need to do as a good global citizen, to help maintain a stable world society and economy, and there we have a responsibility to play a role and, if possible, a leadership role in the area of mitigation.

But I should make it clear that in mitigation, we can lead by example, we can demonstrate, but what we do does not make an awfully big difference in terms of global climate change. Canada contributes less than 2% of global emissions, so what we do in practical actual terms of reducing climate change does not make an awful lot of difference. We have major players contributing much more to greenhouse gas emissions—for example, the United States and the major emitters in the developing countries such as India, China and Brazil—and what they do is very important. We need to go into the negotiations with full awareness and cognizance of what they are going to do and how we might influence their choices.

So the question is, if you like, by putting our own house in order and reducing our own emissions, does this leading by example help in that direction, and how much might it help?

There is a lot we can do domestically. We could follow the example of the State of California and take some of the steps that have been taken there. We might find ways of joining with California and the northeastern United States in a carbon cap and carbon ceiling trading market. So we might get to some sort of Kyoto arrangement, not in a top-down controlling way, or not only in that way, but also by looking at the bottom-up things we can do on a regional basis with other partners in North America and potentially also Europe.

Let me make one further point about adaptation. Adaptation is not new. While we call a lot of things adaptation because of climate change, we have been doing a lot of these things already. So is it just a case of doing what we have been doing more and better? Well, partly, but we are in fact not dealing with our current weather and climate risks as well as we might be. We currently have what I like to call an adaptation deficit in relation to current climate and current climate variability. Our losses from climate variability and from climate-extreme events are in fact increasing, and if you look at the payouts that are being made by Canadian federal assistance to provinces to deal with natural disasters, you see that they have been going up quite considerably.

In dealing with climate change, we can add the concern that we have in catching up with the way in which we should be dealing with climate variability and the disasters that are associated with extreme climate events.

I'm suggesting that it's time for Canada to think about more of a balanced, two-track approach to climate change in which we address mitigation as vigorously and effectively as we can, but at the same time pay attention to adaptation for our own country and of course, where we can, through organizations like CIDA and IDRC, help the most vulnerable developing countries to deal with their own adaptation problems.

Thank you very much for hearing me. I circulated in advance a short written version of this testimony, which I understand is available in both English and French, and I would be glad to respond to any questions you have about that or my remarks.

Thank you.

● (0920)

The Chair: Thank you very much.

Mr. Sauchyn.

Dr. David Sauchyn (Research Professor, Prairie Adaptation Research Collaborative, University of Regina, As an Individual): Thank you, Mr. Chairman, and members of the committee. I appreciate this opportunity to participate in your study of Bill C-288.

The preamble to this bill accurately describes climate change as one of the most serious threats facing humanity in Canada, one that poses significant risks to our environment, economy, society, and human health.

First, I want to make the observation that scientists do not believe in global warming. They don't have to. Global warming is not a religion. Global warming is a fact. It's not a question of whether you believe or not. The evidence for global warming is extensive, conclusive, and overwhelming. There no longer is a scientific debate about global warming. The debate has shifted to the analysis of the appropriate institutional, corporate, and individual responses to climate change.

As Dr. Burton pointed out, there are two categories of response, and those are mitigation and adaptation. My message will be similar to Dr. Burton's, although I take the slightly different approach in that I'm going to provide a review of the objectives of Bill C-288, and in particular, relative to the other proposed legislation, Bill C-30.

I'd like to congratulate the proponents of Bill C-288 for their attempt to restore Canada's commitments under the Kyoto Protocol. This international treaty is a first and major step in the effort to control greenhouse gas emissions, and thereby the rate of global warming. It establishes a common language, targets, and objectives. A single protocol supports international collaboration and cooperation. We have research projects in Chile and Ukraine, and I can tell you that because they are parties to the Kyoto Protocol, it very much facilitates our international research because we are speaking a common technical language.

A made-in-Canada solution, on the other hand, separates us from a process that was developed and monitored by an international body of scientists and decision-makers. Furthermore, the Kyoto initiative will lead to further action beyond 2012, and Canada must be involved in this further planning of science and policy to deal with the causes and impacts of climate change.

In terms of more meaningful and effective targets for controlling greenhouse gases, Bill C-288 is a major step forward relative to Bill C-30, the Clean Air Act. As climate change policy, Bill C-30 has three major flaws. First of all, Bill C-30 suggests that climate change is an air quality issue. It is not. Embedding climate change in the Clean Air Act is avoiding the real issue. Secondly, Bill C-30 sets targets for greenhouse gas emissions for the 2050s. This implies that by meeting these targets we will somehow bring climate change under control by the middle of this century. This approach demonstrates a misunderstanding of the climate system. The climate of the mid-21st century is being determined today by emissions of greenhouse gases. This is because there is a lag of several decades between activities that modify the atmosphere and the full response of the climate system. As the preamble of Bill C-288 states, the problem of climate change requires immediate action.

I refer to these flaws in Bill C-30 only because Bill C-288 addresses these and avoids them. However, there is a third shortcoming of Bill C-30 that is perpetuated by Bill C-288. Both of these bills address only a small component of Canada's commitment under the Kyoto Protocol. Bill C-288 explicitly deals only with paragraph 1 of article 3 of the Kyoto Protocol. There are 28 articles in the Kyoto Protocol, and article 3 alone has 14 paragraphs.

● (0925)

To this brief I have appended other articles of the Kyoto Protocol to remind the committee that Canada is also obligated to address climate change and its adverse impacts, including capacity-building and adaptation measures, facilitating adequate adaptation to climate change, cooperating in scientific and technical research and developing systematic observation systems and data archives, reducing uncertainties related to the climate system, and addressing adverse impacts of climate change and the economic and social consequences of various strategies.

We're also obligated to implement education and training programs and to strengthen national capacity, to facilitate public awareness, and to share the proceeds from certified activities to assist developing countries to meet the costs of adaptation.

I'm making the same argument we just heard from Dr. Burton, which is that we have a policy vacuum in this country with respect to the impact of and adaptation to climate change. There are no references in either Bill C-30 or Bill C-288 to these important obligations.

Canada needs a comprehensive climate change strategy to avoid the adverse consequences of climate change. Besides the mitigation of greenhouse gases, a comprehensive strategy should address our understanding of the climate system; the influence of human activities; the impacts of climate change; the risks and the opportunities; and the necessary adjustments to public policy, resource management, engineering practices, and infrastructure design.

By focusing public policy on only one of these five components of a climate change strategy, Canada is at risk of failing to meet its treaty obligations, and in general, Canada is failing to deal with climate change.

I want to conclude by describing the impacts of climate change in my home region, the prairie provinces. I'm with a research institute called the Prairie Adaptation Research Collaborative, or PARC, based at the University of Regina. PARC was established with funding from the federal government and the governments of the prairie provinces. We were asked to research the impacts of climate change on the prairie provinces.

Currently, PARC is responsible for preparing the Prairies chapter of the national assessment of climate change that the Government of Canada will release next year. Therefore, I can tell you with confidence that the climate of the prairie provinces is changing dramatically. All the weather records show this. Summer river flows are declining as the Rocky Mountain glaciers are disappearing and as warmer winters are producing less snow and ice for the spring runoff.

The growing season is getting longer and warmer; however, the productivity of the forests and the farms is constrained by declining water supplies. The recent weather has included the worst drought since the Prairies were settled by Europeans. It also has included the worst flooding. The drought of 2001-02 cost the economies of Alberta and Saskatchewan $3.6 billion. This is in reference to the adaptation deficit Dr. Burton mentioned.

Ecosystems have begun to change. There are threats to the integrity of the ecological services that support agriculture, forestry, the recycling of water, and the traditional lifestyles of our first nations.

The Rocky Mountain pine beetle has devastated the B.C. forests. This year it skipped over the Rocky Mountains. It now exists in Alberta, and there is a real threat that the boreal forests of Canada will be devastated by the pine beetle because it is surviving the warmer winters.

● (0930)

Finally, these shorter winters are also a problem for northern industries that require frozen ground to move materials and supplies. We are losing the advantages of a cold winter in the interior of Canada.

These are just some of the changes that Canadian scientists have documented for our region. Please note that I made no mention of air quality. The impacts of climate change are occurring first in the Arctic and the Prairies, where air quality is just fine, thank you, except for maybe Calgary or Edmonton.

The rate of climate change and its consequences will almost certainly accelerate through the coming decades, and until we are able to retard the rate of greenhouse gas emissions, as a Canadian citizen and a climate change scientist, I am deeply concerned by actions that would have Canada undermine our international treaty on climate change. I'm also deeply concerned by the lack of action to deal with the climate change and impacts that are presently occurring.

Our children and their children urgently need your leadership to create public policy that will reduce greenhouse gases as quickly and as much as possible. However, we also need your help to enable individuals, institutions, communities, and industries to adapt to the impacts of a rapidly changing climate. These impacts are already serious, and we are already locked into more severe impacts in the immediate future.

Thank you.

The Chair: Mr. Teneycke.

Mr. Kory Teneycke (Executive Director, Canadian Renewable Fuels Association): Thank you very much for inviting me to join you today.

I'm with the Canadian Renewable Fuels Association. We're the industry association for ethanol and biodiesel in Canada, as well as for other renewable technologies.

Our industry is really going through an unprecedented global growth spurt right now that is being driven in part by rising energy prices as well as by improvements in technology for producing renewable fuels. Over the last couple of years—a year and a half, I guess—our ethanol production has risen from 230 million litres a year to 520 million litres for the end of this year. We've almost doubled ethanol production, I guess, in 18 months. Similarly, biodiesel production has gone from less than 5 million litres a year to just short of 100 million litres.

So Canada is a part of the global growth that's going on. That's being driven today primarily by changes in provincial policy.

I want to address, as our other witnesses have today, our thoughts on addressing climate change in a comprehensive way and how we would be an example of domestic action. It is our perspective, in terms of Kyoto—I'm just pointing this out—that bold international talk is not a substitute for taking action domestically. Similarly, bold talk about initiatives on the domestic front is equally lacking in terms of delivering what I think Canadians want: measurable, practical, visible steps being taken to reduce greenhouse gas emissions here in Canada.

We believe we are one of the examples of action that can be taken domestically to improve our domestic GHG emission profile.

We think the policy of having renewable fuel content as a part of our energy sector is positive. It's positive whether you're doing it in the electricity sector, requiring renewable portfolio standards, or if you do it in the transportation energy sector, which we represent.

We're very supportive of the initiatives brought forward by this government to have 5% average renewable content by 2010. I would point out that this is the same policy as two of the opposition parties brought forward as well. We think there is a remarkable amount of consensus on this approach between provincial governments of all political stripes and federal parties, irrespective of which one you're looking at. There is a great deal of consensus on this issue.

This comes with benefits not only to the environment. An average of 5% renewable content would reduce GHG emissions by five megatonnes a year in the transportation sector, which is not a solution to all our climate change problems, obviously, but it is a measurable, tangible, practical step that we can take today that also has economic benefits both for our agriculture sector and our rural economy.

In terms of the specifics of what progress we have seen in implementing this, it's a little bit of a mixed update. We don't have much to report that's changed since the last time I had the privilege of addressing this committee. We were expecting an interprovincial meeting sometime this fall to discuss implementing the 5% renewable standard. That has not happened, nor has a meeting been scheduled to date.

We have also not heard any additional details on what the government's renewable fuel standard will look like. Some provisions of that regulation need to be enabled by changes that have been proposed in the Clean Air Act, and obviously the Clean Air Act is in a state of political limbo.

● (0935)

In terms of some of the changes we're looking for to address parity in terms of tax treatment, we're hoping to see those changes made in the next budget. But of course, it's a bit of a black box as to how decision-making is taking place on that.

I guess the total effect of this uncertainty is that it creates a lot of instability for potential investors who are looking to invest in the facilities to make renewal fuel and to feed the government's requirement.

My message to you would be that the fundamental issues in terms of implementing this step of tax parity and market access still exist. We think the stated direction of the government, the opposition, and the provincial governments is the right direction; however, we're somewhat frustrated by the apparent delays in getting there. We're looking not only to the government but to the opposition parties and the provincial governments to redouble their efforts to make this policy, for which there seems to be broad agreement, actually happen in this Parliament.

With that, I conclude my remarks. Thank you.

● (0940)

The Chair: Thank you, Mr. Teneycke.

We'll go to Mr. Cleland.

Mr. Michael Cleland (President and Chief Executive Officer, Canadian Gas Association): Thank you, Mr. Chairman. I'd like to thank you and the committee for the invitation to appear before you today on this important matter.

Let me just take a few minutes to introduce the Canadian Gas Association. We're the association that speaks on behalf of Canada's natural gas delivery industry. Our principal members are the local distribution companies that deliver gas to almost six million Canadian business and residential customers from coast to coast in Canada.

Natural gas accounts for something over one-quarter of the end-use energy used in Canada: 30% of industrial energy, 44% of commercial energy, and 46% of residential energy. As well, natural gas accounts for a growing part, albeit still a small part, of the power generation energy and a small part of our transportation fuel.

CGA and its members have been active participants in the climate change debate for well over a decade, and we take the perspective that the natural gas delivery industry is part of the solution. By that, I mean three things.

First, while our direct emissions from the gas delivery operations are relatively small, we are part of the so-called large final emitters groups of industries, and we have worked and are continuing to work with government to develop a framework to manage our emissions. By that I mean a framework that includes short-term, medium-term, and long-term targets.

We also work with our customers and our regulators to develop and implement demand-side management programs aimed at improving the efficiency with which natural gas is used. Finally, we advance the use of natural gas as a clean alternative in many applications, an alternative that not only can reduce GHG emissions but is also extremely effective at reducing other air contaminants. They can be brought together, though I agree that they are not essentially related.

In short, Mr. Chairman, CGA believes that by using multiple strategies, Canada can cost-effectively manage its greenhouse gas emissions and, over time, begin to reduce them. I think the question of meeting the commitments in the Kyoto Protocol, however, is another matter.

While the intent of Bill C-288 is laudable, with the greatest of respect to members of this committee, I would argue that its substance is ill advised. It is ill advised for two reasons: because it is not possible for Canada to meet the Kyoto target, and because the continuing debate about whether we can or can't do so and who is to blame is a distraction from getting on with solutions.

Let me comment briefly on both of these points.

Why can't we meet Kyoto? Simply put, I would argue that it was conceived with almost no consideration of the underlying reality of Canada's energy system. In 1997 when we signed on, we were well aware of the following things. Greenhouse gas emissions had been growing at something over 1.5% a year for several decades. That growth was a consequence of energy production and energy use throughout the economy. Every individual and every business decision every day affected and continues to affect our GHG emissions. Meeting Kyoto even then would have required us to turn the economy on a dime and get on a trajectory of something like minus 1% a year as compared to the 1.5% a year growth we'd seen for the past several decades. At the time there were no economically available options to capture emissions or to deal with them.

We are now beginning to see that the fourth point may not be true if we can solve the capture and sequestration problem from large emitting sources, and I'm optimistic that we will be able to. But the first three remain true, and indeed, in 2006 there is no meaningful physical possibility for Canada to meet Kyoto. We could buy international credits if we could find them in sufficient quantity, which is in some doubt. But the arithmetic is fairly simple, and I'll leave it to you as parliamentarians to reflect on how government could explain to Canadians that billions of dollars of Canadian taxpayers' money will be sent abroad to meet a commitment that, I would argue, we had no business making in the first place.

More importantly, I think the reason we focus on Kyoto per se as opposed to getting on with climate change is that it distracts us from getting on with solutions. Canada clearly has a very big challenge. We are an inherently energy- and GHG-intensive economy for many historical reasons. That history has left us with an interesting legacy, a strong economy with a heavy proportion of natural resource-based industries, sprawling cities, large houses, large cars, and all manner of energy-using equipment that most of us enjoy having and using. What goes with all of that is a very high level of greenhouse gases per capita, a level much higher than almost any other country.

● (0945)

In these circumstances, it strikes me that we should be focusing on solutions. It is less obvious why we would be focusing on trying to meet a target that is roughly the same target as the European Union. They have very different historical, geographical, and economic circumstances, and indeed, they already had their target in the bank when they signed on to it in 1997.

Mr. Chairman, let me talk about one possible solution that I think is germane to your discussion. My association has been advancing the concept of clean energy for Canadian communities and a strategy to do that. Let me put it in context. About half of the energy we use in Canada is consumed in Canadian cities and towns: about 30% in buildings, about 13% in urban transportation, and about 7% in small urban industries. We all seem to agree that a real climate change plan needs to start action now, but it also needs to look out to around the mid-century and what will involve reductions of 50% or 60%, or more, from today's levels, even though we expect the economy to continue growing. This will entail a transformation of historic proportion, and one part of that transformation needs to be the way we use energy in our cities and towns, in our communities.

To date, the public policy debate on energy and energy and the environment has focused on individual fuels and technologies, and the respective merits or demerits. I would argue that this piecemeal approach ignores the fact that energy is a system of closely interconnected parts and is proving to be suboptimal. We need to do a few things. We need to significantly accelerate our energy efficiency efforts, where the main challenges involve system integration rather than individual technologies. We need to provide an enabling platform for emerging on-site renewable energy sources. We need to reduce the pressure on existing traditional energy delivery systems by ensuring that the right fuel is used in the right place and that we extract the full energy value from the energy delivered.

Energy consumers, businesses, and individuals purchase fuels and technologies to deliver energy services. While consumers want better environmental performance and energy efficiency, they are almost never willing to sacrifice things like safety, affordability, or reliability for environmental performance. We know that from a lot of years of experience. The question is, the challenge is, how do we make sure those factors come together as opposed to being in opposition to each other? That needs a strategy.

Our proposal would be to have something called a “clean energy in Canadian communities” strategy, which would be a platform for moving forward a variety of initiatives that ensure reliability, affordability, and environmental performance delivered at the same time.

Four principles would guide this strategy, Mr. Chairman, and then I'll wrap it up.

One is that we should build on the existing infrastructure and energy service businesses. Canada's energy system is a complex of infrastructure and businesses and customer relationships that we should be making maximum use of in order to ensure that we can deliver those energy services to Canadians using less energy and using cleaner energy.

We should recognize the benefits of diversity, and “diverse” means delivering energy services. We need to bring the grid base—the electricity grid, the natural gas grid— on-site renewable sources, and energy efficiency technologies together to create optimum solutions.

We should develop and deploy new technologies. We should benefit from market-ready technologies today and, at the same time, support the development and deployment of emerging technologies, the full benefits of which will emerge in coming decades.

Finally, we should mobilize stakeholders. We should mobilize interests among new and traditional energy suppliers, equipment and service suppliers, including new technology developers, builders, and community leaders.

In all this, Mr. Chairman, there are many important roles for the federal government, as a partner, working with provincial governments and municipal governments, to move such a strategy forward.

Let me wrap it up by saying that this is a strategy that I believe would receive strong approval from provincial governments. As I say, it could be done in partnership with them without in any way intruding on their jurisdiction. It would improve federal leverage on the efforts that it now undertakes.

● (0950)

Members of the committee, I applaud your commitment to ensure that Canada acts responsibly on climate change, but I leave you with a caution. We have today talked a great deal and done very little to come to grips with our GHG challenge—and other speakers have said this too. We may well be at an historical turning point when we can turn from rhetoric and recrimination and begin to focus on action. In order to do so, we'll need to mobilize every resource at our disposal, every idea, every technology, and every ounce of political will.

Thank you very much, Mr. Chair.

The Chair: Thank you, Mr. Cleland.

We'll go to Mr. Godfrey.

Hon. John Godfrey: I want to thank all the witnesses for their participation. I know it's a bit frustrating to be brought in at the last moment and then given an assignment that may not play to your strengths or interests.

When we originally drew up our work plan, we thought that it would be useful to have a session that dealt with three things.

One was the various mechanisms for reaching targets. That would be things like market trading systems, carbon trading systems, and so on.

Another issue we wanted to think about was the challenge of target setting. If the way in which we went at target setting the previous time wasn't effective, what would be a better way? How do we then relate the anticipated effectiveness of the various mechanisms so that we can actually make those objectives the targets? We've had some discussion on that.

Finally, the third issue we were talking about was modelling. In this case, I think modelling was really seen as a kind of projection into the future of various impacts. I suspect we've had a fairly good discussion on that by previous witnesses who have basically told us the modelling is getting more and more sophisticated and more refined in terms of what we can expect by way of impacts, and so on.

What I'd like to do, in a way that leaves the witnesses comfortable and not stretching into areas that don't match their expertise, is talk about target setting and mechanisms. I realize people want to talk about other things like adaptation, but that's not really what we're talking about and it's not what the bill is talking about.

As I think Professor Sauchyn indicated, the bill is designed to address a very specific problem, which is the short-term target setting for Kyoto. I think the assumption is that if we can't meet the 2012 targets, how should we recalibrate those targets in a more realistic fashion for the remainder of this period? How do we relate the measures we're going to take with the results we expect?

If I can redirect the witnesses to the question that we're trying to look at today along those lines, I would start with Professor Sauchyn and Dr. Burton. Do you have some reflections on a more realistic way of target setting? How can we relate that to the expected yield from certain mechanisms?

Dr. David Sauchyn: First of all, I have to acknowledge that my expertise is certainly not in the technologies by which greenhouse gases are controlled, although I share a building at the University of Regina with some of Canada's experts in that field. They tell me, as Mr. Cleland said, that this technology has advanced significantly in recent years such that it's probably worthy and it's probably necessary that we at least attempt to achieve the targets that are specified under Kyoto. We'll never know if those targets are achievable unless we try.

I appreciate the constraints that Mr. Cleland identified. We are in fact currently working with the energy sector in the Prairies to identify options for adaptation and mitigation. Our experience has been that industry is showing a lot of leadership. In fact, in my opinion, industry is quite a way ahead of government in terms of taking action on climate change, and ultimately it's their responsibility.

I can't honestly say from a scientific perspective whether the Kyoto targets can or cannot be achieved, but we'll never know unless we try. Certainly, the targets the government is currently speaking about or proposing are disturbing.

Once again, Mr. Cleland referred to targets for the 2050s. If other countries took the same approach, if we took greenhouse gas concentrations for the 2050s and put them in a climate model, the climate becomes catastrophically warm. The impacts are so extreme that the cost of the damage of climate change well exceeds the cost of mitigating and reducing greenhouse gas emissions.

I'm sure the committee is well aware of the recent report that came out of the U.K. by the economist Dr. Stern. He indicated that under a business-as-usual scenario, the cost of the impacts of climate change will be in the tens of trillions of dollars and will greatly exceed the cost of mitigating climate change in attempting to achieve as much greenhouse gas reduction as possible in the short term.

● (0955)

Hon. John Godfrey: Dr. Burton, do you have anything to say on target setting?

Dr. Ian Burton: Yes. Mr. Godfrey, I was interested in the phrase that you used, “recalibrate the targets”. I'm not quite sure what you mean by that.

It seems to me that thinking into the future about the use of targets, how those are going to be calibrated or recalibrated is going to depend very much on the international negotiations. So my thought about that is that we need to be much better prepared in the negotiations this time than we were in the last time around, and we need to have a much better understanding of what the economic consequences are for Canada of one target or another. The last target we picked just more or less came out of the air, frankly. So it seems to me that there will likely be a new set of targets.

There'll be some new goals set out in this second period of the Kyoto commitment, but it's impossible to state at this stage what they're likely to be. The indications are that they will be much more variable and flexible than the single aggregate lump target that was agreed to in the first commitment period under Kyoto. It seems unlikely to me that agreements will go forward unless a broader set of players is brought into the agreement, and the broader set of players are insisting on a more flexible way of expressing, calibrating, if you like, those targets, thinking of targets by sectors of the economy and things of that nature. It suggests to me that we need to think much more carefully about the economics of the targets or the calibrated targets that we are accepting.

What does this mean in the short term for the next few years, until the expiration of the first commitment phase in Kyoto? I am not sure. It presses the bounds of my expertise. I'm inclined to agree with those of my colleagues who say, let's get on with it. Let's focus on doing what we can now, practically and effectively, in the short term. We have lots of options that have been put on the table. We tend to be talking about them rather than getting on with them.

I hope that helps.

The Chair: I believe Mr. Cleland wants to get in.

Mr. Michael Cleland: Mr. Godfrey, I think you put your finger on an important question, and I don't think anybody's going to be able to give you a simple answer. But let me give you four ways that are worthwhile thinking about as you think about targets.

One is that you have to bring aspirational top-down targets together with bottom-up targets; you need both. You need to think about how they come together. Kyoto was purely aspirational, top-down. It was out of the air. It was never connected to the ground. You have to do both. If you only stay on the ground you'll be conservative, and you won't move it forward. So that's one thing.

Secondly, you have to take a long-term perspective or a perspective consistent with the scale, the scope, and the weight of the problem. This one needs a longer-term perspective than almost any other, but it needs milestones. It needs something along the way. It needs a trajectory. One of the problems with Kyoto is that we always focus on the gap. Instead of focusing on the gap, we should be looking at the trajectory. What is the slope of that line and what do we need to do with that line if we're going to get there?

Think about a band of possibilities as opposed to a point. If it's a point, it becomes an accounting exercise, a "gee, I met this number" or not. If it's a band of possibilities, it's more consistent with the way the real world actually works.

Finally, whatever target you've set up needs to send a signal that is believable, that is taken seriously by policy-makers and by economic decision-makers. I would argue that one of the problems with Kyoto is that it doesn't have that character.

● (1000)

The Chair: You're at 10 minutes. One final 30-second question.

Hon. John Godfrey: I guess, then, the question is—and I'll refer to Mr. Cleland—if you're going to establish a trajectory, you can't establish it for the medium term and the long term; you actually have to start in the short term.

Mr. Michael Cleland: Absolutely.

Hon. John Godfrey: So what the Commissioner of the Environment said to us was, if you can't meet the target that you thought you could, set another one. I guess today's exercise is really about trying to figure the best way of doing it. This bill at least says, try to figure out a realistic way of relating the measures you take with the results you expect so we can get on to the right trajectory.

The Chair: Mr. Bigras.

[*Translation*]

Mr. Bernard Bigras: Thank you, Mr. Chairman.

Welcome to this session of the Bill C-288 of the committee.

Thank you Mr. Burton and Mr. Sauchyn for reminding us of the importance of adapting to climate change. Mr. Godfrey told us that this wasn't the objective of the bill, but we have to admit, especially after the Nairobi conference, that this issue of adapting to climate change is becoming increasingly important. In Quebec, there is a group that you have no doubt heard about, the Ouranos Consortium, which deals with adapting to climate change and which revealed, just two weeks ago, that the estimated cost of the effects of climate change on the St. Lawrence is $1 billion. This shows how important it is to fight climate change.

In Nairobi, the President of Switzerland proposed providing funding for climate change adaptation programs. He proposed a CO_2 tax for industry and consumers. I would like to know what you think of this system that would put a tax on CO_2 emissions, with the revenues going into a climate change adaptation fund. I have always found that adaptation has often been the poor cousin in the federal strategy. Do you think that a CO_2 tax to fund adaptation initiatives would be effective for industry and consumers?

[*English*]

The Chair: Who wants to jump in on that one?

Mr. Teneycke.

Mr. Kory Teneycke: With respect to a carbon tax, we followed the proposal in Quebec with some interest. The concern I raise with any dedicated tax is that revenues go into general revenues, and our experience with dedicated taxes in the past hasn't been very encouraging. The road tax doesn't go to roads, the GST doesn't go to the debt, the health care tax in Ontario is not related to health care funding, and it's unlikely that a carbon tax in the long term is going to actually change the amount of revenue governments put in to deal with these issues.

There are useful measures that could be taken through the tax code to address cost differences between new technologies and traditional technologies. That would probably yield some outcome in what you're looking for. But we just haven't seen a lot of examples of these dedicated taxes being used for what they were initially prescribed to deliver on.

● (1005)

[*Translation*]

Mr. Bernard Bigras: I am only referring to a tax whose revenues would go directly into a climate change adaptation fund. This is key. There would be a tax on projects under the clean development mechanism. As long as the tax revenues are put directly into a fund, they could finance adaptation initiatives.

I am turning to my second question because the clock is ticking. Mr. Cleland, could you report on the technology available in your sector? You say that in 1997 you miscalculated the increase in GHGs. You say that by applying the Kyoto Protocol, we would stifle our economy. You also say that it may be possible to meet the Kyoto targets, but only by buying credits from other countries, which would result in capital flight. Have you assessed the technology available in your sector? Have you done an extrapolation to find out how much GHG you could reduce by optimizing use of this technology in your sector?

[*English*]

Mr. Michael Cleland: Just to clarify, what I said was that in 1997, in my estimation and I think that of several other people, we set a target that was completely unrealistic. I meant for the whole Canadian economy. I wasn't talking specifically about the natural gas delivery sector or any particular sector.

On the question about having today's available technology and applying it 100%, again, in the case of the natural gas delivery industry, we're a relatively small part of emissions. Our own use of energy is from pumps and compressors, and energy in our buildings and our fleets. You'd have to ask that question with respect to all those individual things.

We know there's all sorts of technology out there. We could in theory turn, let's say, the residential sector, which uses natural gas, into a much less emission-producing part of the economy if we could tear down all our houses and replace them and put in all the new technology that's available. But I don't see how that's a policy-relevant question, because we know that's not feasible economically or in any other way. Frankly, I don't want my house torn down even though it is not as efficient as it could be.

The individual technologies exist. The point I was trying to make is that we need to find ways to ensure that when we do new things we put the best possible technologies in place. I would argue that in the building sector, in particular, we think about how they come together, because often it isn't about individual technologies; it's about what people in the energy efficiency business call system integration. That is a big challenge. That's why I think we need the kind of strategy that I talked about.

[*Translation*]

Mr. Bernard Bigras: Thank you.

To my great surprise, the minister told us that she intended to table regulations on fighting climate change in January, and she repeated this pledge in Nairobi. To date, have you had any negotiations with the government about these regulations?

[*English*]

Mr. Michael Cleland: We've had a couple of briefings with the government on what it might look like. It hasn't gone as far as negotiations.

What we have said to the government is that we think we've made a lot of progress over the past couple of years in understanding the emissions from our sector and understanding what we think might be a realistic framework for managing those emissions. We would like to use that as a starting point and hopefully, as soon as possible, an ending point for getting a framework in place that puts in place mandatory requirements. We think we need to get on with it.

● (1010)

[*Translation*]

Mr. Bernard Bigras: Do you think that it is possible to meet the January 2007 deadline, given the current status of your discussions with the government?

[*English*]

Mr. Michael Cleland: Quite conceivably, yes.

With respect to greenhouse gas emissions, yes. With respect to other air emissions and air contaminants, no, and I think that's probably true for most sectors.

The Chair: Thank you, Mr. Bigras.

We'll go on to Mr. Cullen.

Mr. Nathan Cullen: Thank you, Mr. Chair, and thank you, committee members.

Mr. Teneycke, you made some reference to the announcement of the 5% early on in this administration. How would you describe the activities since that point, from your industry's perspective? What further signs or investments or indications have you seen for encouragement or otherwise?

Mr. Kory Teneycke: You're seeing some investments that were in late-stage development to fill demand and to meet the requirement in Saskatchewan, Manitoba, and Ontario have proceeded since that time. However, new investments are really waiting to see what the federal policy looks like—

Mr. Nathan Cullen: Maybe that's my specific question, not so much from the industrial side, but from the government side.

Mr. Kory Teneycke: From the government side, we've been in a very extensive period of consultation followed by, in the last couple of months, a period of waiting.

The timelines originally laid out have been missed in terms of having a second interprovincial meeting in the fall and some announcement in terms of what the regulation and the financial package would look like. We're now hearing that the financial package would be in the budget and the interprovincial consultation is being postponed indefinitely. It's not altogether good news. We're not hearing that this is not proceeding; we're hearing that it is, but the timelines are being stretched. I don't have any particularly great insight into the reasons why, but I do know it's concerning for us, given that expectations have been created that aren't being met.

Mr. Nathan Cullen: Thank you.

Mr. Cleland, as a representative of a portion of the industry that doesn't itself emit a great deal of greenhouse gas but that is in the business of it, since either the folks producing the energy or consuming the energy are part of that equation, do you not think there is not a conflict of interest—and I do not mean this as a disparaging remark—when energy companies that make a profit from the use of energy are the ones that communities, society, and government look to to be the lead when there's a great call for a reduction in the amount of energy we use, particularly fossil fuel energy? I'm just wondering.

It doesn't seem to be your role. It's not what your shareholders expect of you. That's to use as much energy as possible.

Mr. Michael Cleland: Yes, that's a fair question, and there are a couple of answers to that.

First, I don't think we would claim to be the lead. I think we would claim that we can play an important role as a partner working with others in designing solutions. Yes, we sell energy, and we make money selling energy, but we also know a lot about energy systems. We also know a lot about solutions. In fact, we work with our customers to help them design ways of becoming more efficient. Those ways are mandated by our regulators and are set up in a way that doesn't impair our profitability but that does bring our expertise—and the fact that we connect to six million individual customers—to the table as one part of the solution.

Mr. Nathan Cullen: Is it fair to suggest that those members of your industry see climate change as a significant problem?

Mr. Michael Cleland: I don't know very many people who don't see it as a significant problem.

Mr. Nathan Cullen: The reason I ask is that when we're looking at questions of, say, the development of the tar sands in northern Alberta, the proposal to use your industry to transport natural gas to that development to then produce tar sand oil is, in a climate change analysis, a rather terrible equation in terms of the amount of greenhouse gas emitted throughout that process. It is using one of the cleaner products we have to produce what would be called one of the dirtier products. The full equation of that on a climate change front is rather disastrous.

Is it not, as suggested by former Premier Lougheed and even by Mr. Klein, up to government to play some sort of facilitating and cost accounting role? When you folks build the transmission and others produce the natural gas and others use the natural gas in that way, no one is picking up the tab for the emissions that are coming out. I didn't hear in your presentation any notion of a cap-and-trade system or any of those types of solutions that have been suggested. Does that not need to be developed in order to truly capture the cost of something like the tar sands project and bring it under some control?

● (1015)

Mr. Michael Cleland: I would argue that, yes, it does. And I'm sorry if I didn't make the point clear. In fact, we have been working with the government to develop a system for capping our emissions, albeit on an intensity basis, and that has been debated. It has ultimately the same effect.

It's a matter of creating the economic signal. That's the issue. So first, we think we do need a system that applies across the economy on an even-handed basis to send that economic signal. If you get that economic signal, the people developing the oil sands will be looking at other options to reduce their emissions. And indeed, we would not want to see the use of gas mandated for or against. We don't like the idea of mandates of one sort or another.

Mr. Nathan Cullen: But it's more about including the costs of using natural gas versus something else.

Mr. Michael Cleland: Indeed, I think it makes a lot of sense for us to be thinking about a system that makes sure that the economic signal gets through. We would much rather have the natural gas to sell to our residential and commercial customers.

Mr. Nathan Cullen: Fair enough.

Mr. Sauchyn, there has been a lot of talk from folks who are maybe a little less concerned about climate change that often what is talked about in the adaptation question is the negative aspects: the increase of flood activity, the storm intensity, and all the rest. Has there ever been any study on the positive aspects, like growing grapes in northern England and all that?

Dr. David Sauchyn: Well, I'm growing grapes in southern Alberta right now.

Mr. Nathan Cullen: Congratulations.

Dr. David Sauchyn: So certainly, in terms of the extra heat and the productivity of our force and our fields—our farms—potentially, agriculture could be extended further north in Canada. But there is a serious constraint, at least in the prairie provinces, in terms of whether the water will be available. Therefore, the fact is that most of the impacts of climate change are adverse. And that's mostly because we have developed a resource management strategy in this country and in the western world that's quite inflexible, and we are not well adapted to the current climate. Therefore, any change in climate has adverse conditions.

We behave as if the climate is some static entity, when in fact the climate is quite dynamic and is currently changing at unprecedented rates.

Mr. Nathan Cullen: There have been some denouncements of this bill. We're studying the implications of this bill, and the denouncements have been more on the economic front perhaps.

What support do you bring to the question of how we would be able to achieve the 2012 targets? It's been proposed that if the government and industry are unable to adapt in time to the emissions reductions that we need, there will be a need to buy an extraordinary amount of credits overseas, not necessarily enabling our economy to be ready for the next round of emissions cuts.

How do you answer that question?

Dr. David Sauchyn: With all due respect to Mr. Godfrey, I don't think we can isolate mitigation from adaptation. The degree of adaptation that will be necessary will depend entirely on the extent to which we're able to slow the rate of climate change. So we can't consider one without the other.

The fact that Bill C-288 is exclusively focused on a single paragraph in the Kyoto accord simply underscores the fact that there is a policy vacuum at the federal level and that we're not developing a comprehensive strategy for climate change.

● (1020)

Mr. Nathan Cullen: So if this were the piece of legislation that brought us to 2012, what kind of confidence would you have in Canada's readiness or ability to be a leader on this issue globally? How good would it be if this were the bill that carried us forward to 2012?

Dr. David Sauchyn: In terms of addressing a very critical but small component of climate change, I'm very much supportive of this bill, but as I said, it addresses only a very small part of the issue.

As I mentioned earlier, and as I responded when I was asked to be a witness, my expertise is not in terms of greenhouse gas reduction. Even so, I was invited to be here.

I was at a meeting recently with the vice-president of a large energy company in Alberta, the fifth largest energy company in Canada. When I met with him he gave me an education. He told me that it would take about 15 years to retrofit one of their coal-fired generating plants in Alberta. As Mr. Cleland put it, you can't turn the economy around on a dime.

I appreciate that it applies to these large-scale projects, but it seems that there are other smaller projects in this country that could be retrofitted quite a bit more quickly. One project that we're all engaged in is getting to work every day. I've read that about 90% of all vehicle use is to move a single person less than five kilometres, to work and back each day.

Come on, we're all capable of walking or riding a bicycle five kilometres.

Mr. Nathan Cullen: Maybe we'll make an amendment to Bill C-288 to encourage walking.

Dr. David Sauchyn: Let's just make it sexy to ride a bike.

Mr. Nathan Cullen: Mine is locked up outside; Mr. Godfrey's might be as well.

Dr. David Sauchyn: So why don't we start right there?

Mr. Nathan Cullen: Yes, maybe we'll start with the committee members.

The Chair: I don't want to mention the climate problems in Regina, riding that bicycle at minus whatever—

Dr. David Sauchyn: Yes, three months of the year, that's right.

The Chair: Mr. Warawa and Mr. Harvey.

Mr. Mark Warawa: Thank you, Mr. Chair. I will be sharing my time with Mr. Harvey, as you mentioned.

Thank you to the witnesses for being here this morning.

As has been pointed out, the focus is to be on targeting and modelling. I appreciate the comments on adaptation, because it's an important topic, but that's not the topic this morning.

We've heard some comments from the Liberal Party regarding Bill C-288. It sounds as though they're already considering amendments to this bill in relation to targeting. But Bill C-288, as it is before us, is quite clear, even in its title: An Act to ensure Canada meets its global climate change obligations under the Kyoto Protocol.

In terms of targets, the Kyoto Protocol requires that Canada reduce its average annual greenhouse gas emissions, during the period of 2008 to 2012, to 6% below their level in 1990. We've heard from the Commissioner of the Environment that we will not meet those targets. We've heard from the Minister of the Environment that we will not meet those targets. We've heard from the witnesses at this committee already that we will not meet those targets. One of them said that Bill C-288 would have been a good bill in 1998, but it's not relevant anymore. We had an opportunity to meet those targets, possibly, but it's too late.

My first question to you is this, and I think some of you addressed this already during your comments. Without spending billions of dollars internationally to meet those targets, can we domestically meet those targets?

Mr. Sauchyn, I think you said you don't know.

Perhaps I can ask each of you for a yes , no, or I don't know to this question: do you believe we can meet those Kyoto targets, which is what Bill C-288 is asking us to do?

The Chair: We'll start with Mr. Cleland and go across.

Mr. Michael Cleland: I hope my testimony is reasonably clear on that. I think the answer is clearly no.

But I would like to add that I disagree with the witness who suggested that it might have been a good idea in 1998. I disagree with that. In 1998 it was a bad idea too; we couldn't meet those targets then. We reached too high, and as a consequence, we ended up stifling a lot of the things we needed to do. We needed to understand the economy better.

● (1025)

Mr. Mark Warawa: I hate to cut you off, but I have very limited time. So could I get the next comment?

Mr. Kory Teneycke: No.

Dr. David Sauchyn: To say we can't meet those targets is a self-fulfilling prophecy.

Dr. Ian Burton: No, we can't meet them.

Mr. Mark Warawa: Thank you.

Mr. Sauchyn, I find your comments quite interesting, actually. You said that Bill C-288 only covers a very small portion of the Kyoto Protocol. Yet you said you didn't know if we could meet it, and you also said you're very supportive of it. So I find that a little bit puzzling, but that's fine.

Dr. David Sauchyn: Can I address that? I'm sorry, I just meant that I'm supportive of the Government of Canada participating in the Kyoto process, because there are lots of reasons to be engaged in this process besides specific emissions targets.

Mr. Mark Warawa: I agree with that, but at this point you're not sure whether or not we can meet those targets?

Dr. David Sauchyn: I'm just saying I don't have the professional expertise to answer that question.

Mr. Mark Warawa: Thank you.

Mr. Teneycke, this tags on to Mr. Cullen's question regarding Bill C-288 and whether this would be a good bill to guide us in moving forward. Do you see anything in Bill C-288 that would advance the use of renewable fuels? You said there was this limbo right now, with Bill C-30, the Clean Air Act, having been introduced, and now we're in this time of political limbo where the opposition, the Liberals and the Bloc, have said they're not going to support that bill. It's created this instability in the investment market.

Does Bill C-288 provide that security or stability?

Mr. Kory Teneycke: I think it's addressing a different issue. Insofar as the government has targets that are long term, stable, and viable both environmentally and economically, I think that's a positive piece of the puzzle. I would agree with those who are saying this is one component of what needs to be a broader strategy.

But I think where we're in limbo as an industry is from the lack of clarity on direction on specific issues that pertain to us—and I think that's something you'll probably hear from many other industries too. And no, they're not in Bill C-288. And some of those issues aren't in the Clean Air Act either. We're having the government saying, we're going to change all the rules, but we're just not going to tell you what the new rules are going to be. Understandably, people don't want to invest in that climate.

So I think there's plenty of blame for everyone to share in, but moving past the recriminations to clarity is what's necessary.

Mr. Mark Warawa: I appreciate the critique, and my time is up. Thank you.

The Chair: Mr. Harvey.

[*Translation*]

Mr. Luc Harvey: Mark is giving him some of his time, but he's being stingy and he isn't leaving me much time. So, I'll have to ask you to give me very brief answers.

We have seen the effects of global warming and we understand that we have to act. That has been done. However, we haven't talked enough about solutions. I would like to know whether you are aware of technology or initiative that gives us reason to believe that we can start reducing emissions now in various industries, including the automobile and energy sectors? I would like to start with Mr. Burton. Do we have access now to technologies to help us do this?

[*English*]

Dr. Ian Burton: Do we have all the technology we need to achieve that? No. Can we develop it? Yes. Will it take us some time to develop it? Yes. Can we sooner or later wean ourselves off fossil fuel or a carbon emission economy? Yes, it will take time.

[*Translation*]

Mr. Luc Harvey: How much time?

Dr. Ian Burton: Half a century.

Mr. Luc Harvey: Mr. Sauchyn.

[*English*]

Dr. David Sauchyn: We have lots of technology. Technology is not the only solution. There are many behavioural adjustments and institutional adjustments. There are lots of solutions; government simply has to enable them.

● (1030)

Mr. Kory Teneycke: I would agree with the 50-year number. I think it's at least that amount of time.

The challenge for policy-makers is that there's not enough money both to fund that technology development and transition your economy and to spend money on foreign credits. There are just not enough resources to do both. That's one of the challenges. If you're designing credit trading systems, you need to address that.

Mr. Bernard Bigras: *Monsieur Cleland, rapidement.*

Mr. Michael Cleland: I would agree with most of the previous speakers. I think that 50-some-odd-year timeframe is right for getting, I would argue, emissions to that 50% or 60%, or whatever percentage we're talking about. Whether that eliminates the use of fossil fuels is another matter—I doubt it—but whether we can manage the carbon emissions is conceivable. We can see most of the technologies from where we sit today. A lot needs to be done to develop them further, to make them more economic, and to actually get them in place.

[*Translation*]

Mr. Luc Harvey: Under the Kyoto Agreement, Canada's target is to reduce CO_2 emissions by 6%, while Australia's target is over 10% and China has no targets. Mr. Burton, what do you think of Canada's targets vis-à-vis Canada's real capacity to reduce emissions?

[*English*]

Dr. Ian Burton: Canada's targets, which we agreed to under Kyoto when we signed and ratified it, were a bit of guesswork. They were not very thoroughly researched and understood. I don't think we really understood what we were committing ourselves to.

Mr. Bernard Bigras: Monsieur Sauchyn.

Dr. David Sauchyn: I agree.

Mr. Kory Teneycke: No further comment.

Mr. Michael Cleland: Yes, I would have to agree with that. We have to understand the Canadian economy if we're going to get this right.

[*Translation*]

Mr. Luc Harvey: Mr. Teneycke, we couldn't hear your answer.

[*English*]

Mr. Kory Teneycke: I said I have no comment different from that. I don't think we had any conception, at the time we signed Kyoto, of what it meant. In terms of trying to meet it now, I think the only way to do it is by buying foreign credits, and I don't see government revenues being large enough both to fund this technological investment and transition and also to export billions of dollars a year to buy foreign credits. I just don't see how you can do both, unless you're going to decide you're not going to fund something else of great importance, such as health care. There's just not enough money.

The Chair: Thank you, Mr. Harvey.

Now we'll go to Mr. Scarpaleggia in the second round, for five minutes.

Mr. Francis Scarpaleggia (Lac-Saint-Louis, Lib.): Thank you, Mr. Chair.

Just to follow up on the discussion that had been started on the carbon tax, I found out to my surprise a couple of weeks ago when I attended a symposium at which one of the speakers was one of the leading experts on biofuels, from Georgia Tech university, that in fact many large companies in the United States—and I assume that means oil companies—have already calculated the carbon tax in their revenue projections and so on. I think that's an interesting point.

But going back to Mr. Cleland's original point, which was that we're wasting time focusing on Kyoto when we could be doing more productive things, personally I think we've wasted years trying to debunk the fact that climate change is happening. We're wasting more time trying to debunk the Kyoto accord.

To me, the Kyoto accord is in many ways like a flame around which the international community can come together. If there had been no Kyoto, would we have a climate change plan in the province of Quebec that, despite some shortcomings, has been lauded by experts? Would we even have a Clean Air Act? It wasn't more than a couple of years ago that members of the then opposition Conservative Party were still trying to debunk the fact that climate change was anthropogenic. Without Kyoto objectives, it appears we won't be able to get a Montreal emissions credit trading system up and running.

● (1035)

Mr. Mark Warawa: I have a point of order. The honourable member knows very well that there's nothing stopping the Montreal exchange from setting up a carbon trading market similar to Chicago. There's nothing stopping that. That is just for clarification.

The Chair: That is actually debate, Mr. Warawa.

Let's carry on. Mr. Scarpaleggia, please.

Mr. Francis Scarpaleggia: I agree, Mr. Cullen, that bottom-up and top-down should meet at some point. I remember when the United States said they were going to go to the moon in eight years, and all of a sudden scientists turned to each other and said, well, how are we going to do that? But it happened.

My question is to Mr. Sauchyn. You deal with adaptation. Are you familiar with the Canadian Climate Impacts and Adaptation Research Network, C-CIARN?

Dr. David Sauchyn: Yes, very familiar. In fact, our research institute was the first node in C-CIARN.

Mr. Francis Scarpaleggia: The previous government followed a dual track. We aimed at mitigation, but we also invested in research aimed at adaptation, but my understanding is that C-CIARN's funding has been interrupted, if not killed.

Dr. David Sauchyn: That's correct. C-CIARN expired last March. It was resurrected in June, but only for 10 months, so it will expire again.

Mr. Francis Scarpaleggia: That is a real shame, I think.

Mr. Burton, my next question is to you. You say there are two possibilities, mitigation and adaptation. I would like to maybe add a third in between the two, which is adapting to the mitigation measures of larger countries. In other words, I think what's going to happen in the next while—and this process has been accelerated by the shift of power that has taken place in Congress in the United States—is that the United States will start to move quickly on climate change, and then their industries will become more competitive because they will invest in energy efficiency in a more aggressive way than we are, and then we'll be playing catch-up with them in the competitive North American economy.

What do you think of that idea, that there's this third category, adapting to the mitigation measures of larger countries like the United States?

Dr. Ian Burton: Yes. When I said there are only two, I am speaking actually in terms of the language of the climate framework convention, and that's what they use. I agree there are many different horses to ride, and I think you may be right, and I hope you are right about the accelerating or new interest in energy efficiency and diversified energy sources in the United States. I think it's something we should be doing as well.

Mr. Francis Scarpaleggia: Thank you.

The Chair: Thank you, Mr. Scarpaleggia.

Mr. Vellacott.

Mr. Maurice Vellacott (Saskatoon—Wanuskewin, CPC): Thank you, Mr. Chairman.

I think it has been fairly plain again, in our testimony today, that the Kyoto targets as originally set by the previous government were just not realistic and were very misleading, in terms of getting up false hopes and so on. That's been plain to me from the testimony.

I am intrigued in terms of the issue of adaptation...the mitigation, of course, is the reactive mode that it is necessary to deal with, and then the adaptation required in Canada. I go to the old saying that necessity is the mother of invention, and how the change does provide new opportunities. Change is a constant of life, and in this area it may be not as much, but there certainly would be opportunities that appear now. I'm a little curious, and in exploring that frontier a little, Mr. Sauchyn mentioned growing grapes in southern Alberta. I guess he sees an edge or a possibility there.

I'd like each of you to respond to that whole issue of change providing new opportunities. I agree that the reactive mode, dealing with the emissions and so on, has to happen. Is enough time and energy in Canada being put into exploring some of the very positive possibilities? Are there positive possibilities? What are some of the things we need to do to look at that side of the equation, where it seems that less time and energy is being given, because we're into the reactive mode more?

I'd like a response from everybody, actually.

Dr. David Sauchyn: I responded previously that yes, there are opportunities afforded by a warmer climate, in particular in the agricultural sector, if there is sufficient water, and that's crucial. All the indications are that at least in western Canada, in the prairie provinces there are declining water resources.

I also want to make the point that adaptation does not have to be expensive. Dr. Burton pointed out that humans have been adapting throughout history, and there are probably no more adaptable people than prairie farmers in terms of what they've had to withstand to sustain farming. This adaptation process just has to be facilitated and enabled by governments, because there are lots of mechanisms, there are lots of existing programs by which individuals, corporations, and communities can adapt if some of the constraints are lifted by governments.

● (1040)

Mr. Maurice Vellacott: Again in this whole issue where, for every problem there's a solution, or somebody who has a good economic head will see a solution, there seems to be an economic opportunity too.

Dr. Ian Burton: We tend to assume that there is a lot of room for spontaneous adaptation. Hopefully the private sector and communities habituated to looking for their own self-interest will see the opportunities, as well as the dangers, and respond accordingly.

A role for government in this is to provide the best scientific information about climate change—its variability, trends, and future scenarios—and then engage the Canadian stakeholders, public and private, in an informed debate about what they can best do to respond to the risks and opportunities, and adapt accordingly.

Knowledge about the best way to adapt is not just scientific; it's the knowledge by the people in those sectors—those who are at risk or have the opportunity. As your question suggests, we need to generate a whole debate and a sense of the development of public policy as to how to encourage and facilitate people to go about this, which means removing the barriers and creating the opportunities.

Mr. Kory Teneycke: I'll give you one really quick example. The mountain pine beetle is often pointed to as a wholly negative force in terms of what it's going to do to the forestry industry. It's also creating an opportunity to make ethanol out of wood waste, which wasn't there before.

So even in the darkest rain clouds, there are some silver linings. That's one I would point to, and there are many others. But it's a fact of life, and trying to find the opportunities within those changes is going to happen.

Mr. Michael Cleland: I'm not sure that I can speak to opportunities in the area of adaptation, but in the area of mitigation, for example, from my industry's perspective, as we look forward at a kind of medium-term horizon, we see our business as basically delivering energy solutions to people.

People don't buy natural gas, electricity, gasoline, or ethanol. They buy mobility, they buy heat—they buy all of those things. We need to make sure we are providing these services, and in the cleanest, most efficient way possible. I think there are all sorts of opportunities for business, including my members' businesses, to do that.

The Chair: Thank you, Mr. Vellacott.

Monsieur Lussier.

[*Translation*]

Mr. Marcel Lussier (Brossard—La Prairie, BQ): My question is for Mr. Teneycke.

You mentioned that you were uncertain about biodiesel or renewable fuel production. I have two concerns about renewable fuel. First, how much energy does it take to produce one litre of biodiesel or renewable fuel? Scientific data on this issue are somewhat contradictory. How much energy does it in fact take to produce one litre?

My second concern is about production capacity. People are talking about introducing 5% biofuel content in all gasoline. I think that industry cannot produce this 5%. But my main concern is that there will also be demand from vehicles that run on 85% biofuel. How do you respond to these concerns? Do you have a great deal of data on the efficiency of biodiesel or ethanol? Secondly, will you be able to meet the demand for vehicles that run on 5% or more biofuel over the next few years?

● (1045)

[*English*]

Mr. Kory Teneycke: The energy balance question is the easiest one to answer in the sense that if you use data and farming methodologies from the late 1970s and ethanol technology from the late 1970s you would get a negative energy balance. If you're using today's technology and today's agricultural practices, you'd get a positive energy balance on a life cycle basis. What that number is varies a bit depending on where you're located and what your agricultural industry looks like there. Agriculture Canada's numbers for corn and wheat are about two to one—so positive. If you were using a coal-fired ethanol plant and you were irrigating the corn, it would be something less than that, probably about one and a half. It depends, like any other life cycle analysis, but for the Canadian context the numbers are about two to one.

In terms of having enough feedstock, absolutely.... Just using today's technology, using grains and oilseeds, the amount of wheat we export from Canada alone is enough to almost meet double the 5% requirement. We have a lot of feedstock.

If you add in cellulose technology, where you're making it from wood...and I would compliment the Quebec government, which has made investments in this area for a number of years. Their feedstocks are almost limitless. So I think that issue is an easy one to address.

[*Translation*]

Mr. Marcel Lussier: That doesn't quite answer my question. You say that the wheat, corn and wood are there, but the industry is not.

[*English*]

Mr. Kory Teneycke: Industry will be there if there's clarity in terms of how it's going to be taxed, how it's going to be regulated. Right now we're operating in a vacuum and we're being told that everything is going to change, but we don't know what it's going to change to. It will come where there is clarity.

In terms of going beyond 5%, any vehicle on the road today can use 10% ethanol without any modification. The technology exists to use up to 85% ethanol in a vehicle. We're the tail on the dog in the sense that we will move in whatever trajectory the U.S. auto market goes, and certainly the trend lines are towards more flexible fuel vehicles today. There are major increases in flexible fuel production from the big three auto makers, and I anticipate that trend will continue. In Brazil it's between 30% and 40% for ethanol used in their vehicles.

[*Translation*]

Mr. Marcel Lussier: Thank you.

Mr. Cleland, Quebec has chosen to reduce its dependence on oil.

What is your position on the Rabaska project in Quebec to import natural gas from abroad? Are you in favour of this project? Do you believe that we should reduce our dependence on oil?

[*English*]

Mr. Michael Cleland: I must make a distinction between oil and natural gas here, which I think is important. In point of fact, the Quebec energy policy has an interesting look at natural gas and an interesting look at the possibility of using natural gas instead of electricity for heating applications where it makes a lot of sense, where it makes more sense for the electricity to be exported to the benefit of Quebeckers.

With respect to Rabaska or any liquefied natural gas project, my association takes the view that we need more and more diverse supplies of natural gas in North America. We are going to increasingly need to rely on foreign sources, and Canada should approve a number of LNG projects to make sure we get it into our marketplace. Quebec would benefit enormously from having an LNG project on the St. Lawrence River.

● (1050)

The Chair: Mr. Calkins

Mr. Blaine Calkins (Wetaskiwin, CPC): Thank you, Mr. Chairman.

I'd like to thank the members for being here today.

I want to go back and talk a bit about something Mr. Sauchyn said. One of your comments was that if we don't set goals it'll become a self-fulfilling prophecy. I would also put a comment back to you to see what you think about it.

If you have an unachievable goal, that too becomes a self-fulfilling prophecy in the fact that nobody will make the effort to try to achieve it. I think we're seeing the results of that right now. We set the minus 6% target rate, and everybody knew at the time it was a pie in the sky target. It wasn't a highly consultative process, and it became its own self-fulfilling prophecy. We knew we weren't going to be able to live up to it back in 1997 or 1998, and that's why we're at the position we're at today, talking about this.

I'd like to leave that with you, and perhaps you have further comments on that. You have to set a realistic goal in order to be able to achieve anything. If we don't set goals we're not going to achieve them, but if we set unrealistic goals we're not going to achieve them. Either one is a self-fulfilling prophecy for failure, is it not?

Dr. David Sauchyn: That's a good point. One of the members mentioned earlier that even though we have seriously failed at reducing greenhouse gas emissions, the fact that we have been engaged in the Kyoto process has resulted in other programs and activities. So there are lots of other reasons for remaining a party to Kyoto.

I also want to mention that there are a lot of parallels drawn between the smoking issue and the resistance to the evidence that smoking was harmful, and the climate change campaign. There have been recent documentaries.

I want to suggest that there are other lessons we can learn from this on how quickly smoking became socially unacceptable. Why can't we make producing greenhouse gases by individuals socially unacceptable, so that somebody like me who drives an SUV would be considered a social deviant, just like somebody lighting up a cigarette in this room?

Mr. Blaine Calkins: Okay, I'm going to move on here. I didn't really want to talk about smoking, but the point is taken. There are lots of analogies.

Basically every one of you has said categorically that a 50-year benchmark or a long-term goal of achieving something might be the right way to go. Along the way, there are going to have to be some milestones. You don't get to the end without achieving milestones and having a step-by-step plan.

From a philosophical or theoretical perspective, going back into each of your personal areas of expertise, my question is, what would be a realistic greenhouse gas emissions target? What would be reasonably achievable by 2020?

Dr. Ian Burton: I don't think we know the answer to that question. Earlier on, Mr. Godfrey asked something about recalibrating. Let me put a hypothesis on the table. Suppose we say that by some date hopefully in the near future, we would simply stabilize our emissions—not reduce them, but stabilize them. So that year by year, they didn't continue to increase and would stop at a given level. That would be a fairly clear target. We would say that we are not going to grow them anymore.

I don't know how feasible that is or how much it would cost. I don't know if it would be reasonable to say we can do that in five years, or that we can do it by 2012. Could we go to the climate convention and say, we can't reduce our emissions, but by 2012 we will not increase them anymore, we will be on a track to stabilize them? That would be a clear target; it would give a message to the Canadian economy. It may help us in our international negotiations and with our international image.

I don't think we can answer that question, but it is a good question to ask.

Dr. David Sauchyn: I agree that this morning we simply can't cook up a target for the 2020s, or any target. We will need to do much more research to determine what is achievable. But in setting those targets, we also have to analyze the cost of delaying emissions until a certain date, because as I said in my presentation, the increase in temperature lags decades behind the emission of greenhouse gases. Today we are determining the climate of the 2040s and 2050s, and we have to take into account the damage that is being caused as we delay efforts to reduce greenhouse gases.

● (1055)

The Chair: We will move on to Mr. Cullen, please.

Mr. Nathan Cullen: Thanks, Mr. Chair.

I have a question for Mr. Burton. It seems adaptation has become the poor cousin of this debate, receiving little attention. Is that not partially because it's so much more expensive for a country, and it's unpredictable? It's difficult for a government to take cost accounting for adaptation seriously when there are so many unknowns in the future, compounded with how much more expensive it is to do something rather than prevent the thing from happening in the first place. Is that not why this conversation gets left to the end and receives so much less attention?

Mr. Burton.

Dr. Ian Burton: We don't really know very much about the cost of adaptation. It hasn't been studied or assessed very much. Economists have been singularly uninterested in adaptation, compared with mitigation. That's been the flavour of the whole debate for 15 years now.

One thing is clear. If we begin to adapt now and take precautionary measures in the adaptation file, the cost will be less than if we delay adapting until we are absolutely forced.

Mr. Nathan Cullen: So along that line, do we know what actions would be the most intelligent to take right now? I'm wondering if it's building retaining walls in the Lower Mainland of British Columbia. Where would the money best be spent?

Dr. Ian Burton: It's difficult to say. Part of the problem is that the list of potential adaptation measures is, frankly, enormous. Perhaps it's best not to do that in a very top-down sort of way: to facilitate, to encourage, and to enable, and where the poorest and most vulnerable sectors of the economy or the society are at risk, to provide some help—but generally speaking, to facilitate rather than to financially support adaptation.

The corollary, of course, is that failure to mitigate is going to increase the cost of adaptation in the long run enormously.

Mr. Nathan Cullen: Our record to this point on mitigation has been—

Dr. Ian Burton: It speaks for itself.

Mr. Nathan Cullen: I have a question for Mr. Cleland with respect to full cost accounting, and this is outside of just the narrow interests of your particular sector, but as an economy, because we've been speaking about the economy quite a bit.

We've watched the pine beetle devastation and we've watched the mines in the far north not being able to operate, certainly, like they used to. Does it not come to a certain point—and this is the role of government again—to take in that full cost accounting of the expense of meeting something like Bill C-288, with the various tools and mechanisms available, versus the expenses that get accrued by all members of that society? Does it not come to some point where, as committee members have mentioned, this constant debate and discussion needs to end and you simply have to act? And it may be expensive.

Mr. Michael Cleland: I would agree with you at a level, in principle. I would distinguish my answer from anything to do with Bill C-288, for reasons that are obvious in my testimony.

I agree with you. Governments deal with that. Governments look at environmental externalities. It's one of their jobs to make estimates of what the costs of those externalities are and to ensure that they're effectively priced into economic decisions, usually by regulation.

Are we going to have to push harder on that? Absolutely. Will we ever be able to measure what that externality is? No. It's a political judgment as to whether it is as big as a house or as big as a bread box. We know this one's at least as big as a house and we'd better get going.

Mr. Nathan Cullen: To abandon even the hope or prospect of meeting the 2012 targets...because China, India, the U.S., and all the other countries are thrown into this conversation.... From what we're seen at the international level, Canada's reputation is what enforces our ability to negotiate and include those other countries. If we simply abandon it, walk away and say, look, we can't meet 2012, and we're not necessarily even really going to try, what authority do we have at the table?

Mr. Michael Cleland: That's a tough one, there's no question about that. Canada is placed in a very difficult situation by virtue of, frankly, the mistakes we've made over the past several years. I guess the question is this. Do you compound the mistake by trying to stay in something that you clearly cannot achieve, or do you say, well, that didn't work, let's get on with something, but let's get on with something realistic?

I think in the end our credibility will be considerably enhanced if we do the latter.

● (1100)

Mr. Nathan Cullen: Does your industry not look to other examples of nation states that are energy exporters, that have been able to achieve substantial emission reductions under Kyoto?

Mr. Michael Cleland: Well, I don't know what examples you'd have in mind. If you look at Russia, for example, we—

Mr. Nathan Cullen: It wouldn't be my first example to bring up.

Mr. Michael Cleland: No. Well, if we look at the Middle East, their emissions have gone up—

Mr. Nathan Cullen: It wouldn't be my second choice, either.

Mr. Michael Cleland: Australia's emissions have gone up. Norway would be one that I think has made a lot of progress. They have a very heavily hydro-based electricity system and a political culture, frankly, that helps to drive some of this.

Mr. Nathan Cullen: So for examples like the Norways and the Swedens, the places that have been able to achieve significant results, do they not hold a light out to Canada to say that perhaps following this direction might be something worthwhile?

Mr. Michael Cleland: In some measure, but you have to look at the particular circumstances. An example that's of interest to my industry is that Sweden leads the world in district heating systems. District heating systems have a lot of merit, but it also has a lot to do with the way the Swedes go about building, designing, and managing their cities. It's very different from the way we do it in Canada. If we can move in that direction, then, yes, good. There are some examples we can take.

The Chair: Mr. Cullen, your time is up.

On behalf of all the members, I'd like to thank the witnesses. I think it's been a great discussion with a lot of good information, so thank you very much for joining us.

The meeting is adjourned.

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