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Chair

Mr. Bob Mills

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● (0905)

[*English*]

The Chair (Mr. Bob Mills (Red Deer, CPC)): I would like to start by thanking our witnesses.

I know it was difficult for some of you to make it. Some of you made the trip just for this meeting; Mr. Jaccard flew in on the red-eye. We really appreciate you making the effort to be here to testify.

Please keep your comments to about ten minutes. We do have a magic box that tells us how long you've gone. When you see me fidgeting, you'll know you've done your ten minutes and we'll go to questions.

We'll start with Mr. Page.

Dr. Bob Page (Vice-President, Sustainable Development, TransAlta Corporation): Thank you very much, Mr. Chairman.

My name is Bob Page. I am vice-president of sustainable development for the TransAlta Corporation in Calgary.

We're Canada's largest private sector electrical utility. We have assets in Canada, seven U.S. states, Mexico, and Australia. We're a Canadian success story of internationalization. In terms of power generation, we use coal, natural gas, hydro, wind, and geothermal. We have been a pioneer in offsets and emissions trading.

Before we get into the substance of the bill, I want to emphasize that our climate change strategy has been to have continuous improvement. We are currently at 8.8% in terms of greenhouse gas emissions, which is intensely below our 1990 levels—and that's with our capacity being up 77%. We've had a very important growth phase in Alberta and also into the international market.

In connection with it, we've been a pioneer in Canada on offset projects and credits—by that I mean CO_2 capture. We are the largest investor in wind power in Canada. We are also a major player in geothermal in California.

Along with several of the other witnesses here this morning, we're strongly into the bioenergy area. I currently chair BIOCAP Canada, which this committee has heard from before.

On technology change, as quickly as the public policy framework is in place, we're very committed to developing clean coal. By clean coal, I mean the gasification of coal, the capture of all emissions and impurities, and the underground sequestration of that total package. In terms of this, our company's overall policy goal is for no net emissions of greenhouse gases by 2024. This is a commitment our company made in 2000. We hope the public policy framework will be such that we'll be able to keep to that time schedule.

We were invited to testify about our Canadian policy to the U.S. Senate environment committee because of its interest internationally.

In terms of where we're going today, I just want to take a couple of moments to talk about the cost of the Kyoto target. This is background to your bill, and it's something where I may differ from my learned colleagues on the panel this morning.

Under the 2005 Martin plan, the target was 270 megatonnes, which has grown since then. Currently, we are approximately 35% short of that target of minus 6% of 1990 levels. Canada is a tougher target than any of the other countries. The 2005 plan included companies such as my own under the large final emitters program. This program was to deliver about 15% of the Canadian target.

Other parts of the plan involved soft estimates. We were supportive of those, but nonetheless they were soft in terms of being able to ensure delivery.

The remaining 190 megatonnes would come from international purchases, which the Auditor General estimated could be $20 a tonne. The basic economics with 190 megatonnes, times $20 a tonne, times five years, is $19 billion for Canada. This is a significant hit for the Canadian taxpayer.

There would be no environmental benefits from some of the international credits such as Russian hot air. The bureaucracy and the corruption involved with securing some of those credits would make the delivery difficult. I have spent significant time in Russia on credits issues, so I am very aware of what I'm saying here.

I am just trying to lay this out in terms of background to what I'll be saying.

The next area I want to talk about very quickly is thermal electricity. Most of the electricity sector in Canada is owned by the province; all of it is regulated by the provinces. It's something we have to keep in mind as we go forward. Thermal electricity involves Nova Scotia, New Brunswick, Ontario, Saskatchewan, and Alberta.

For our company and our PPA partners—these are the wholesalers of electricity for our generation—the economic cost of the Martin LFE plan would be about $37 million a year. The total over five years for our company and our electricity partners would be $185 million. This is our estimate, given some uncertainties in terms of the market.

The hit for the Alberta electricity system as a whole has been estimated at about $1.4 billion over the same period. Under Canada's Clean Air Act, we would face equal or even larger costs, especially involving mercury. These have to be added to the climate change costs that we're dealing with as a company.

Clean coal is just around the corner. It is a solution, but there can be no commercial-scale development before 2012. That is the difficulty for the bill in terms of delivering in the Kyoto period. Secondly, we have a 25% capital cost and a 25% operating cost premium that we would have to meet.

On the targets, in our opinion, the scale of the Canadian target is not achievable at this late date. The committee must look seriously both at the timing issues and at the cost issues in connection with it and the equity issues across Canada. The point I want to make is that the issue is not the target per se. The issue is the timing in terms of the delivery. Our company has no hesitation with the targets if they can be integrated in the technology sense.

The policy tools are not available to the government today on climate change. I co-chaired one of the sector tables in connection with this several years ago, and we've gone through this in great detail in other formats. In trying to look at the targets, we have to look at the fact that, domestically, the Martin LFE program would have covered 25% or 30% of our Kyoto target. If your focus is domestic policy, what are the new measures you're proposing that would increase that up to 100% of those targets, changing it from 30%? In our opinion—and I say this very respectfully to the committee—the bill is useless without an implementation plan with the costs attached.

I understand the frustration that all members of the committee are facing in terms of the issues of Kyoto. At the same time, I have to say, on behalf of our customers and our shareholders, that this has to be put into a doable, viable program.

On other matters, just very quickly, most of the Kyoto countries will not meet their targets, in our opinion. I've been in Europe twice in the last month, at the International Energy Agency meetings and at other meetings in connection with it. The offsets in credit system and emission trading will take five years to establish. So, please, when we're looking at that, understand the time delay in delivering for a Kyoto target, given its timeframe.

The greatest emphasis today needs to be post-2012, when I think we're all facing real challenges in terms of going forward. Our investors need certainty if we're to invest in coal plants or if we're to invest in offset projects.

Lastly, I do want to emphasize that if we can move quickly to develop a policy framework, Canada has the real opportunity to be a world leader on clean coal and sequestration and other climate....

In conclusion, Mr. Chairman, in my view, the issue here is a very serious one, in that we're proposing a timeframe under Kyoto that is not doable for industry, especially large final emitters like us. The only way this issue can be addressed is with the purchase of very large quantities of international credits. Given my own experience in terms of the international market, I'm not sure this would deliver very much, certainly in terms of Russia or the Ukraine, in terms of environmental advantages.

● (0910)

Secondly, in connection with it, our company does not have the resources needed both to do the large purchase of credits for immediate compliance purposes under Kyoto and also to fund the technology change that is essential for our long-term future in terms of the deep cuts in the post-Kyoto period.

Thirdly, we really want to emphasize the importance of the longer-term technology change that is the real solution and will keep the money in Canada, on something that will be of benefit to our country later on.

Fourthly, this will allow our company to go way beyond Kyoto by taking this longer-term approach with deep cuts. As I mentioned, our commitment is carbon neutrality by 2024, which is a major commitment for a thermal utility.

Lastly, in connection with this, by trying to meet the immediate short-term Kyoto targets, we will in fact impede the kind of investment pattern for technology change that, for Canada and globally, is so important in terms of trying to address those long-range targets.

Mr. Chairman, thank you.

● (0915)

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

Mr. Jaccard.

Prof. Mark Jaccard (Professor, School of Resource and Environmental Management, Simon Fraser University): Thank you.

I've been a professor at Simon Fraser University, in Vancouver, since 1986. My specialty is sustainable energy systems and energy system modelling, especially energy economy models that try to assess the costs of mitigating or reducing various externalities or other damages from energy systems, be they greenhouse gases or other kinds of emissions, even land use impacts, and so on.

I've been a professor for twenty years at the school, but I did take a five-year leave of absence in the mid-1990s to be chair and CEO of the British Columbia Utilities Commission. Also, I've been involved in various international organizations. In the 1990s, I spent time as a member of the Intergovernmental Panel on Climate Change, which produced the second assessment report. For a long time I was a member of the China Council, which is a group of seven international experts who advise senior levels of the Chinese government on sustainable energy systems. All those kinds of experiences of an applied nature and energy system modelling are what back up the research and work that I've done.

In the period from 1998 to 2000, my energy research group and consulting arm were commissioned by the national climate change process to be one of the few teams that were doing energy economic system modelling in an effort to see how we could reach the Kyoto targets. The analysis we did looked at all different kinds of actions, like technology choices, behavioural change, and so on. We looked at capital stock turnover, or how long it takes for new technologies to penetrate the marketplace. We ran the targets for Kyoto in our models and produced the information that then went into the national report that accompanied all of that process.

What our research found was that for Canada to achieve its Kyoto target, you would need immediately a carbon tax of $150 per tonne of CO_2. In fact, initially we said $120, but that was because we had been given some information that was not reliable about transportation behaviour. When we adjusted within half a year of the model, it came out at $150 per tonne. That would be a tax implemented immediately. We've also calculated the different effects on energy costs and so on.

What was frustrating to me as a researcher and consultant was that the government, from there, took our results about the reductions in greenhouse gases, but didn't take the policies required to make that happen. Instead, it opted primarily for voluntary policies of information programs and subsidies, which, according to our analysis, simply will not provide or motivate the technological and behavioural change required for significant reductions in greenhouse gas emissions. Here, we are talking about significant reductions, because Canada is on a trajectory with drivers like population and economic growth that exceed most OECD countries. We're a rich energy country, and that also is very different from most of our OECD partners.

So you have these drivers going up, and we had them in our model. We said right away that this was a signal that you're going to have to have very strong policy immediately if you're serious about this, but that simply was not what happened. The policies that followed were ones that would have very little effect, according to independent experts basically anywhere among the top researchers that I know—people from Harvard, Stanford, Cambridge, and so on, with whom I've worked a lot on these kinds of issues.

That policy was not implemented, and that motivated me to go away and write my own book about this. It's called *The Cost of Climate Policy*. So at least I have it down for posterity that I basically predicted that Canadian emissions would continue to rise even with the policies we were putting in place.

I believe you were going to distribute.... Does everyone have that? Basically, there's your listing of the various policies that have been implemented over time. They are strongly characterized by information and a little bit of subsidies. Those are not the kinds of policies that will turn the ship around when it comes to reducing greenhouse gas emissions.

● (0920)

I have only a couple more comments here in my introduction. From early on I've been astounded sometimes at the people who say we should do nothing about climate change because we're not 100% certain that we're affecting the climate. That's not how we make decisions in our society and it never has been. There is a risk there. The experts are telling us there's a risk there. We can do a proper analysis that tells us the actions we can take immediately and over a longer timeframe.

My conclusion in 1995, 1998, and today is that we should have strong policies implemented immediately that are modest at first but provide a signal over time of a graduated intensity. The only policies that will work to reduce greenhouse gas emissions are ones that put a financial penalty or a regulatory constraint on the use of the atmosphere as a free waste receptacle. There is no way to worm yourself around that obligation. The evidence of the past ten years in policies implemented and experiences in Europe and elsewhere, not just Canada, are bearing this out very clearly. When I talk to experts around the world who are independent of political parties and so on, they're unanimous on the kinds of policies that are needed.

We spend more time talking about, if you used a carbon tax, how would it be—very small initially. But it would give the kind of signal Bob says his company needs for investments that they know will provide a fair playing field for them and their competitors. Then they can communicate to their customers what that cost effect will be. You spoke in millions of dollars, but I always want to talk in cents per kilowatt hour; the number is a lot smaller then. When I do surveys of people, they're kind of interested in a quarter of a cent a kilowatt hour over ten or fifteen years. They're willing to pay that for these gradual reductions.

That's the policy framework there. We know policies are available to us. People have done a lot of work on these. The United Kingdom is implementing a lot of these policies. They have a carbon levy, although it's not uniform. They're part of the cap-and-trade system in Europe now. They have tightening efficiency regulations, and they have some subsidies in the case of low-income housing and so on. So all of the policy is starting to come into place.

The general message I want to close with is first of all in terms of the costs of Canada trying to achieve Kyoto, and I have some numbers here. They're very similar to the ones Bob was just talking about. But if we have three or perhaps four parties in Parliament today that really want to do something about the climate change issue, this is the time right now to put together some kind of legislation that sets a regulatory constraint or a financial penalty that starts tomorrow and is graduated to climb over time. I think we're quite desperate for something like that.

Thank you.

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

Mr. Bruce.

Mr. James Bruce (As an Individual): Thank you, sir.

As an introduction, I was an assistant deputy minister in Environment Canada for many years. Then I worked as the deputy secretary general of the World Meteorological Organization in Geneva, where I helped establish the Intergovernmental Panel on Climate Change.

I'll be speaking about a few of the major impacts of climate change in Canada and try to drive home the costs of inaction on this issue.

While it has been clearly demonstrated that up to about the mid-1960s, natural factors such as changes in the sun's energy, the earth's orbit, and so on had a significant influence on the rise and fall of the global mean temperature and climate, since 1970 the rapid warming we've seen is almost entirely due to greenhouse gases. It is the only reasonable explanation. The climate changes in the coming decades will also be driven overwhelmingly by increasing greenhouse gases in the world's atmosphere.

It is not just air temperatures that signal the changing climate. With a warmer atmosphere comes warming oceans in the upper layers of the atmosphere. The ocean warming has two unfortunate or even devastating effects.

First, as the water warms, it expands and the sea level rises. The second effect is more intense hurricanes and tropical storms, such as Hurricane Katrina, and Hurricane Juan, which hit Halifax. Their intensity increases, since the source of their energy is the warmer surface temperatures of the oceans.

How do these changes affect Canada? They do so in many ways, most of which are negative, but not all. Sea level rise has already resulted in increased shore erosion, forced relocation of buildings in the north, in Inuvik, and of roads on Quebec's north shore. Charlottetown and Delta, B.C., are particularly vulnerable to sea level rise, especially when you get a storm.

The changes are also manifest in the declining flow of most rivers in southern Canada where people live, because of increased evaporation, with higher temperatures overwhelming the small changes in precipitation. Most of the rivers and lakes, which we share with the United States, are showing declining flows, and that's increasing the stresses in trying to deal with the sharing of those waters and dealing with water pollution.

The Prairies are being particularly hard hit with the retreat of glaciers, and the headwaters of rivers are rising in the Rocky Mountains—in addition to the increased evaporation.

For example, the flow of the Athabasca River at Fort McMurray, the main source of water for the tar sands projects, has been declining rather steeply and will continue to do so. The tar sands projects use large amounts of water, about 2 to 4.5 litres for every litre of oil produced.

The $125 million estimated investment in the tar sands projects will produce a situation, ten or twelve years from now, when there will not be enough water in the Athabasca River's low flow periods to support both the oil sands needs and the requirements that Alberta has specified for protecting aquatic ecosystems and the people downstream on the river's system.

On the Great Lakes, levels have been falling, with more evaporation in autumn and winter when the lakes are warmer and more ice free. As a result, flows of the Niagara have been declining since 1970, with about a 17% projected loss of hydro power by 2050, both in Ontario and Quebec along the St. Lawrence.

An estimated value of the lost hydro power is somewhere between $350 million and $500 million per year.

Climate-related disaster losses have been on the rise in Canada, with heavier rains causing floods—especially in urban areas—water back-up, intense droughts, and more severe autumn and winter storms, especially in Atlantic Canada.

Forests are increasingly attacked by insects and diseases, such as the mountain pine beetle in B.C. and now in Alberta, and by forest fires. The area burned in Canada has increased in an average year by 800,000 square kilometres since the 1970s, as temperatures rose.

Arctic sea ice is rapidly disappearing, a threat to the way of life of indigenous people and wildlife as well as a challenge to Canadian sovereignty.

Permafrost is melting, particularly up the Mackenzie Valley, and usable winter ice roads are available for a much shorter period than they were twenty, thirty years ago. These will make the proposed Arctic gas pipeline $12 billion investment much more costly and much more difficult to construct safely.

● (0925)

Agriculture is a mixed story. With the longer growing season there are some positives; however, recent research suggests higher nighttime temperatures, and that's a hallmark of climate change; the nighttime temperatures go up more than the daytime temperatures, and higher nighttime temperatures will reduce wheat yields.

Health issues are a serious threat worldwide due to heat stress and the spread of tropical diseases like malaria, dengue fever, and increases in diarrheal diseases. These are currently estimated to be causing 150,000 deaths worldwide per year—this is the climate change component of these—and five million additional illnesses.

I think Quentin Chiotti, if he gets a chance, can tell you a lot more about the health impacts in Canada.

While many of these and other negative impacts can be reduced with suitable measures to adapt, and some of these measures are already under way in some of our larger cities and across Canada—cities are ahead of almost every other level of government, I might say, on this matter—adaptation will be much less costly if the rate of change can be slowed by slowing the input of greenhouse gases into the earth's atmosphere.

This has to be an international enterprise. Canada's climate will be very strongly influenced by the decisions taken in countries like India and China, and even the United States. North Americans currently contribute the most per capita per person in the world, but Canada cannot expect developing countries like India and China to help reduce the greenhouse gas burden if we are not ourselves, if we do not even try to live up to our international commitments under Kyoto and the 1992 Framework Convention on Climate Change.

Thank you.

● (0930)

The Chair: Thank you very much.

Now, finally, from Pollution Probe, Mr. Chiotti...or Mr. Ogilvie first.

Mr. Ken Ogilvie (Executive Director, Pollution Probe): I'll say a couple of words first.

I was going to be the presenter, and then I realized to my horror that I was to talk about impacts and adaptation and Jim Bruce was going to be sitting next to me. So Quentin got packed onto an airplane this morning in a panic, so he could maybe add some supplemental comments to this rather great gentleman next to me.

My first comment is that you should believe everything you just heard. You're into this issue of how do you weigh the costs of action against inaction. It's a question of how much, when, and it's a dilemma, a "damned if you do and damned if you don't" situation that we've got ourselves into. Had we started twenty years ago, we might not be in such a bad predicament, but we're in it.

Part of my background...I have been in government most of my career, twenty years out of my thirty-some-odd years of being around, and I have been the manager of policy for the Ontario ministries of Environment and Energy. I've been an executive director of a round table in Ontario. I was on the Canadian Environmental Advisory Council when Bob Page was the chair many years ago. Pollution Probe's position on a whole bunch of policy or relevant areas.... So we're on the board of BIOCAP Canada, which Bob chairs; we're on the board of Sustainable Development Technology Canada; we're on advisory panels to commissioners of environment, both Ontario and federally; we're on the ADM steering committee on energy efficiency under the Council of Energy Ministers; we're at the energy sector sustainability table; and so on.

I'm trying to illustrate that we are very much engaged in a multi-stakeholder way with industry, governments, NGOs, health groups, and others. We're quite happy to talk about policy and litigation, although we understood that the primary emphasis of what we're going to talk about, and Quentin will talk about, is on the impact side and some of the costs of inaction.

I won't go any further than that, other than to pass to Quentin to supplement, if he can, some of the interesting stuff we just heard from Jim.

The Chair: Thank you.

Dr. Quentin Chiotti (Air Program Director and Senior Scientist, Pollution Probe): I'm Quentin Chiotti, the air program director and senior scientist at Pollution Probe. I always like to point out that I have a PhD in geography, not medicine.

That said, Pollution Probe has actually been actively involved in the whole issue of impacts and adaptation for quite a while. This month in fact is the tenth anniversary of the Pollution Probe, Environment Canada, and York University national conference on climate change and human health that took place in November of 1996.

Speaking for myself, I've been working in the area of climate change impacts and adaptations since 1993, primarily in the areas of energy, health, and agriculture, and more recently in terms of the linkages between air quality and climate change. I was employed with Environment Canada, in their climate change adaptation impacts research group, from 1995 to 2002. During that period I was the science adviser for a multi-stakeholder study on the atmospheric change in the Toronto-Niagara region.

I was also a contributor to the Canada country study, the first national assessment of climate change impact in Canada, in the late nineties. I was a contributing author to the chapter on the costs of inaction. That probably, more than anything, is why I decided to fly to Ottawa early this morning.

I'm currently a member of the advisory committee to the Climate Impacts and Adaptation Research Network of Ontario, as part of the national C-CIARN network. I'm also the co-lead for the Ontario chapter of the 2007 national assessment on climate change impacts and adaptation.

I did circulate earlier a letter that was sent to Prime Minister Harper in April of this year, signed by 90 climate change scientists, emphasizing the significance of climate change, the confidence that there is in science, and the urgency of taking action. That letter was in part initiated because of the urgency to take action that was more or less discussed at COP 11 in Montreal in November. I had circulated as well a diagram that outlines the fact that if we wait five years, ten years, or twenty years before we take significant action to reduce emissions of greenhouse gases, we'll be looking at very substantial reductions in the future for every five years or ten years that we wait.

I think the people at this table will agree that there's broad consensus that we need to reduce global emissions of greenhouse gases between 60% to 80% by the year 2050. I want to remind everyone that the European Union is very much talking about a 25% commitment of reducing greenhouse gases by 2020 in order to avoid what the UN Framework Convention on Climate Change has described as "dangerous" interference with the earth's climate.

I'd like to also point out that in terms of the impacts research, and anything you've heard this morning, it's largely based on a two-time CO_2 scenario. If in fact we go beyond the dangerous level and look at higher concentrations of CO_2, then the impacts are likely going to be much greater.

Jim Bruce mentioned some of the impacts for Canada. I'd just like to reiterate the significance for the far north and its vulnerability to climate change, the vulnerability of our coastal regions, particularly to floods and storm surges, and in the Prairies, as mentioned, in terms of water shortages, especially for agriculture and oil sands development.

I would point out that in Quebec, the concern on water resources is so great, particularly in hydro capacity, that Quebec has actually taken the lead of all provinces in Canada, looking at climate change impacts and adaptation through their Ouranos consortium of industry, government, and academia to tackle the problem.

Similarly, the Province of Ontario has just embarked on a series of round tables to deal with climate change and air quality, of which impacts and adaptation will be a significant component. In terms of Ontario, the impact on the Great Lakes water quality and quantity were mentioned. There are very significant implications, based on historical experience, in terms of critical infrastructure—storm sewers, electricity, as well as communications—and significance for our forestry and agriculture, including, in the case of forestry, the resource communities dependent on it. In particular there's the significance on human health.

● (0935)

Unfortunately, when I got the call last night to attend this morning, I had only one copy at home. It is a primer on climate change and health that we released in 2004, based on a three-year study we had done on human health in the Toronto-Niagara region. I would like to table that for the committee, for your interest.

Just going back to the overall costs of inaction, in the Canada country study we estimated, based on international experience, that the costs of climate change would be somewhere in the neighbourhood of 2% to 4% of GDP, which at the time, in 1988 dollars, was in the neighbourhood of $10 billion to $12 billion a year. A broader range would likely have been a low of $3 billion to a high of $24 billion annually.

I would say that although the 2007 assessment is unlikely to present economic impacts in a dollar value, I think we can be pretty confident that the impacts of climate change, based upon what we know now, will be higher than that amount.

Thank you.

The Chair: Thank you very much.

We'll go to Mr. Godfrey.

Hon. John Godfrey (Don Valley West, Lib.): Thank you very much to all the witnesses. Those were very interesting presentations.

If I were to try to summarize the purposes of the bill we're looking at today, I think, first of all, it is attempting to focus on short-term targets, and it also focuses on the issue of...if your first targets don't work, that doesn't mean you throw out the targets; you try to establish another target.

Secondly, it deals, again in the spirit of the Commissioner of the Environment's recommendations, with accountability. How do you link what your efforts are with what the results are?

Thirdly, it recognizes that we have to be part of an international solution. Unless we're talking to each other about what we mean and working on common solutions.... We can't go it alone.

I was very much struck by Professor Jaccard's unmistakable message that very strong policies have to start immediately.

In fact, if I may quote Professor Jaccard from an article that appeared in the *Calgary Herald* on October 7, I think you said, sir:

> You have to start immediately, and then over four or five decades we might make it. If Stephen Harper says 'I'm going to start a two-year dialogue process to discuss policy,' then he is a traitor to this issue.

I guess what I'd like to know—I hope it's true—in terms of starting tomorrow with a regulatory regime, is what is the connection between starting tomorrow and issues of short-term target setting, accountability when we start tomorrow, and playing our part in an international process?

● (0940)

The Chair: Mr. Jaccard, please.

Prof. Mark Jaccard: First of all, just for the record, I think I was misquoted on that one. I guess you must be used to being misquoted by the press sometimes too—I don't know.

But I would have used strong language in the sense of what I've already said, that if we're serious about this issue we have enough information to start immediately.

I understand your question to be on how we link short-term targets, long-term targets, and international responsibility. Is that fair?

Hon. John Godfrey: And accountability.

In other words, if you put a target off, as Bill C-30 does, until 2020, 2025, 2050, and you neglect the bits between now and then—known as phase 1 under Kyoto, for example—is that helpful, if you don't start with immediate accountability, immediate targets?

Prof. Mark Jaccard: So in terms of the year 2010 or 2012, from the view of an energy economy modeller who feels he understands the inertia in these systems, today, in 2006, a year like 2010 or 2012 is meaningless to me in terms of targets. The uncertainty in trying to do anything between now and then seems incredible to me, that one would even do that. That's why after about 1999 I really stopped talking about Kyoto, except when the media would ask me and I would say, “Well, it's getting more expensive every day, and even then I don't see how you would actually do it.”

So you're maybe raising issues of how Canada would approach the challenge of the short term with the long term. But what I can say in terms of the long term—

Hon. John Godfrey: You mean keeping the long term in mind.

Prof. Mark Jaccard: Yes. In terms of policy, I laid this out fairly carefully in a C.D. Howe study I did two years ago called *The Morning After*, and again in another work I just did for the national round table. If I hear you correctly, it's not good enough to say, “Here's what we're going to have achieved by the year 2050.” That would be a travesty, in my view. What you'd have to do is say, “Here's where the forceful policy instrument, the compulsory policy instrument that I'm talking about, is set in the year 2015, here's where it's set in the year 2025”, and so on and so forth.

If you believe that your policy instrument is something like a carbon tax—that would be one of my two options, something that puts a financial penalty on using the atmosphere as a free waste receptacle—you would literally have to have a graduated schedule so everybody knew what that tax would be five years from now, ten years from now, and so on.

So that's my answer to your question about the link between the long and the short term, and likewise, that would have to be the same if you had a cap on emissions. That schedule would say, “Here's the level of the cap in 2010, 2015”, and so on and so forth. The policy I'm particularly interested in now is something close to what some people call an upstream cap and trade. That means going back to the fossil fuel industries and allowing electricity generators to sell into them.

I call it a carbon management standard, and it's been getting some coverage internationally by researchers and policy designers. It simply involves saying to the fossil fuel industry, "We know that if we're going to get the deep reductions that scientists are telling us we need to get over this multi-decade period, you're going to have to be responsible for the fate of the carbon you extract from the earth's crust." That responsibility will be small in the first ten or fifteen years—2% of the carbon that you extract from the earth's crust must not end up in the atmosphere—and ultimately it has to graduate on a schedule toward 50%, 80%, or whatever we think we can achieve.

The benefit of that kind of approach is that as you move into the future, though, you may adjust that. The scientists may give you new information that you need to accelerate this or they may give you information that you don't need to accelerate it. You might even slow it down. You may learn more about the costs and find that it's easier to go faster or that you want to go slower. So these kinds of schedules have some flexibility built into them.

● (0945)

The Chair: Mr. Page, I think you wanted to jump in as well.

Dr. Bob Page: Yes.

Mr. Godfrey, I dealt with some of this in my presentation, so I will repeat this. I understand the pressure of this, so I'm in no way conflicting.

First of all, in connection with it, one of the points I try to make is that under this bill our company would have no option to just buy domestic and international credits when our purpose is long-term technology change. Under the Kyoto rules we cannot be given credit for technology investments until the emissions are actually being cut with the commissioning of the new plant. It's a five- or six-year process to go through all the regulatory hurdles and this kind of thing.

Our clean coal sequestration technology, which will virtually eliminate all the emissions from our coal-fired plants, could only come in about 2012.

Our difficulty with your bill is, then, how do we meet the heavy costs of the credits that we would have to be purchasing? I gave figures in my statement to document all of that. The difficulty is that we would have to then use the money that otherwise we'd be investing in that new technology change, which Mark was talking about as well.

So we're in this dilemma that if we focus exclusively, as the bill is, on the short term, then we're in fact interfering with the achievement of the long term, which is the fundamental technology change that Canada needs. I think you'd agree that our really deep cuts beyond Kyoto are only going to come from fundamental technology change.

So this is the kind of dilemma we're in here, which this bill imposes on us. I think it's really sad that we're being put into that kind of either/or situation, but for our company it's very clear that we need long-term targets, we need long-term goals, and we need to start tomorrow on that.

I think all of the panellists here are agreed about the urgency. Our company is committed to regulation. Our company is committed to the science that is behind climate change.

The Chair: I think Mr. Ogilvie wants to jump in quickly.

Mr. Ken Ogilvie: If I had talked at the policy level today I would have said there is an absolute related to Kyoto. I think Mark was sort of heading into this territory when he spoke, but I don't know if he totally got there. The first absolute is to have a full, robust policy infrastructure around climate change by the end of the Kyoto commitment period. We need to have emissions trading systems, updated building codes, and energy efficiency standards. We need to have the entire architecture, technology drivers, in place.

Aside from the reductions, we should have a commitment that if nothing else, Kyoto means we are completely ready with these. We should have auto fuel efficiency standards and they should be designed to be robust, meaning they could be pressed down over time in sensible ways as the urgency of the issue and the cost of inaction ups the premium and the value of pushing harder, which I think it's going to do.

Second, we've accepted a target and we should measure ourselves against that target. If we fail, we fail. Ontario just released its first conservation report by the chief conservation officer yesterday. They had a C minus last year, but they rose to a B plus this year because they've invested in energy efficiency, they've added up the peak reductions in kilowatt hour usage, and so on.

We need to measure ourselves against the target. Even if we're failing, there's nothing wrong with measuring against that target and using it as pressure to do better. So I would leave it in that context.

● (0950)

The Chair: Thank you.

Mr. Lussier.

[*Translation*]

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

Mr. Page, in your presentation, which was very dense, you provided a lot of figures. One of them very much struck me. You said that 15 percent of Canada's greenhouse gas reduction objective is attributed or attributable to power companies.

[*English*]

Dr. Bob Page: No. The electrical utilities would be delivering one-third of the LFE totals. My apologies if I wasn't clear, but the LFE targets when rolled together—oil and gas, electricity, and industry—would total about 15% of the total Canadian target of 270 megatonnes.

I was just trying to say there was a huge gap between what industry was being asked to do here and the overall Canadian target.

[*Translation*]

Mr. Marcel Lussier: That's well understood.

Mr. Jaccard, you talked about taxes and you said that the carbon tax could be between $120 and $150 a tonne. If you consider that every Canadian has a reduction objective of 10 tonnes per person, we'd be sending a bill for $1,500 to everyone in Canada starting tomorrow.

Prof. Mark Jaccard: I don't understand your calculation.

Mr. Marcel Lussier: The carbon tax would be $150 a tonne, and every Canadian has to achieve a reduction of approximately 10 tonnes a year. As there are 30 million Canadians, that means a greenhouse gas reduction of 300 tonnes. If every Canadian has to reduce GHGs by 10 tonnes and you're levying a tax of $150 a tonne, you'd then be sending every Canadian a bill for $1,500 starting tomorrow.

Prof. Mark Jaccard: I didn't do the calculation, but, in the book, I calculated the change in energy prices. That's often easier for people to understand. In the calculations that we did for the national process, we saw that the price of gasoline had virtually doubled and that the price of electricity had risen sharply, especially in Alberta and Saskatchewan.

Mr. Marcel Lussier: Going back to taxes, you talked about carbon taxes that should be levied on businesses or individuals.

Prof. Mark Jaccard: I didn't propose that.

Mr. Marcel Lussier: You didn't propose that solution?

Prof. Mark Jaccard: No. I said that if a change had to be made over a 10-year period, then a high tax would be necessary as well. Over a period of 50 years, the maximum tax would perhaps be, within 40 years, $75 or $100 a tonne. Every Canadian's emissions would then be reduced considerably because of technological progress in anticipation of tax increases. The cost to Canadians would be much lower than that, having regard to technological progress and the threat of attacks that might increase. I'd even say that, in my view, energy consumption won't decline. It will cost Canadians less to make technological changes and to use forms of energy without greenhouse gas emissions, thanks to technologies such as emissions capture, than to reduce their energy consumption.

● (0955)

Mr. Marcel Lussier: Mr. Chiotti, you mentioned that inaction could cause a two percent to four percent decline in GDP. How do those figures compare to those of the Stern Report?

[*English*]

Dr. Quentin Chiotti: That's a very good question. In reference to the Stern report, I think the global estimate was $7 trillion. I'm not sure how that compares because I haven't really done that kind of comparison, but the numbers for the Canada country study that recognizes our ten years—we're ten years later—were based upon U. S. and EU-type estimates.

So I assume the Stern report is very consistent with that, although my sense is that as soon as you start getting into more ecosystem, quality of life issues—non-market estimates—it's very difficult to put a dollar value on that.

[*Translation*]

Mr. Marcel Lussier: Thank you.

Mr. Bruce, you talked about the Great Lakes and the reduction in hydroelectric power production. You're starting point was Niagara Falls.

Does the 17 percent reduction you refer to include the Moses-Saunders and Beauharnois dam chain?

[*English*]

Mr. James Bruce: The 17% estimated reduction by mid-century in hydroelectric production in the Great Lakes-St. Lawrence system includes not just Niagara, but St. Mary's, at Niagara, at Cornwall, at Beauharnois, and the other plants on the St. Lawrence River. So it's something that affects both Quebec and Ontario.

[*Translation*]

Mr. Marcel Lussier: Where does this 17 percent come from? I took part in the studies of the International Joint Commission, and we developed drought and increased precipitation scenarios for the Great Lakes. This is the first time I've heard about this 17 percent. What study does that come from?

[*English*]

Mr. James Bruce: It's in the study that's coming out on Monday next week. It's based on the studies you referred to, done for the International Joint Commission on Ouranos and the studies that were done on the impact of climate change on Great Lakes water quality.

They also estimated the changes in water quantity, levels of the lakes, and flow of the interconnecting channels and the St. Lawrence.

[*Translation*]

Mr. Marcel Lussier: In your analysis of the infrastructure costs caused by melting permafrost, do you have any figures on the CO2 emissions that the permafrost melt will cause?

[*English*]

Mr. James Bruce: The present state of research on that issue is that we would see a lot more methane coming out of the permafrost, which is a very powerful greenhouse gas, about thirty times as powerful as CO_2, molecule for molecule. That would be what we call a positive feedback and would increase warming. For CO_2, or carbon emissions, other than in methane, it looks like it would be a wash; it would not be a big change.

The other worrisome thing is that there is a lot of mercury in those permafrost areas, and as the permafrost melts, that mercury is going to come out into the Arctic Ocean and into the northern rivers and have a very serious additional impact on the native people who live in those areas.

● (1000)

The Chair: Thank you.

We'll go to Mr. Warawa.

Mr. Mark Warawa (Langley, CPC): Thank you. I'll be sharing my time with Mr. Watson.

Again, I appreciate each of the witnesses being here, particularly Mr. Jaccard. I found each presentation interesting, but particularly yours.

I'm from British Columbia, from Langley. I like Simon Fraser University and I was up there a couple of weeks ago presenting the big cheque, so to speak, for the magnetic resonance spectrometer in the chemistry lab. So it was nice to be up at Simon Fraser again.

Having only five minutes, I'll try to make this short, and I would appreciate some short answers. We've heard from the environment minister that she believes we cannot meet the Kyoto targets. We've heard from the environment commissioner, who was here at the committee, who also believes that we will not meet the Kyoto targets. We heard from witnesses on Tuesday, particularly Mr. Villeneuve, from Quebec, who said that the Kyoto plan, actually Bill C-288, would have been a very good bill in 1998, but that it's too late, to which the Liberals and the Bloc laughed. We take this situation very seriously.

The government has introduced a bill, the Clean Air Act, which we believe is heading in the direction that will address everything that has been said today. Yet we are here talking about Bill C-288, a bill that should have been introduced when the Liberals were in government.

This is my first question to each of you, and if I could, I would like a simple yes or no answer. Considering the situation that Canada finds itself in, is it realistic? Do you think that we realistically could meet that Kyoto target that's being proposed in Bill C-288?

Dr. Bob Page: I would say no.

Prof. Mark Jaccard: Before saying no, I just want to say that the next time you come to Simon Fraser University with a cheque, let me know and I'll meet you.

That wouldn't influence my answer to this question, which is no.

Mr. James Bruce: I'd like to side with Ken Ogilvie. If I think of our goal here, to get the developing countries on board, to get them reducing emissions, I think if we go into the negotiations come 2012 and don't show any progress towards the Kyoto targets, don't show any regulations or a plan in place to move towards emission reductions, we will never be able to persuade the developing countries to do it.

Mr. Mark Warawa: Mr. Bruce, that's not my question. We're talking about Bill C-288. Do you think we can meet that target? This is what Bill C-288 is asking us to do.

Mr. James Bruce: I tend to agree with my colleagues, but I'm saying that unless we have something positive to lay on the table, we are in serious trouble in terms of future impacts on Canada.

Mr. Mark Warawa: So your answer is no.

The Chair: It's your turn to vote.

Mr. Ken Ogilvie: No, but we can benchmark against it. It's an important number.

Mr. Mark Warawa: Mr. Jaccard, you said that if we were serious about reducing greenhouse gas—and I look forward to reading your book, and you've already answered regarding the carbon tax in clarification. You're recommending strongly that we have a graduated scheme.

My background is in local government. I was a city councillor for almost fourteen years, and whenever you made an adjustment, you did it gradually. Otherwise you would have a huge outcry.

It just realistically cannot be done unless you do things gradually, because the infrastructure has to be built. You have to adjust, and you can't ask everybody to drive hybrid vehicles or low-emission vehicles tomorrow, because they're not available. I think sequestration is the direction in which we need to go, but you have to have enough time to build that.

Regarding your comment that if we're serious about reducing greenhouse gases...I think you were indicating that to this point—and I don't want to get political—you have not seen a seriousness about reducing greenhouse gas emissions. Is that a fair comment?

● (1005)

Prof. Mark Jaccard: Yes, it is. That's because there was a lot of very good expert advice around, and it was being used by other countries, about the kinds of policies that you actually needed. When someone said, “This is a good bill for 1999”, I would say, “No, it still doesn't give you enough timeframe.” That was what I tried to say in my opening comments. The final point, though, is yes, graduated, we need time, but I believe the policy can be immediate.

We have talked about the details of these enough. We have countries that implemented carbon taxes fifteen years ago. So when I heard Ken saying—I thought I heard him say—by the end of the Kyoto period we should have the policies in place, I disagree with him completely. The policies can all be in place by next year. I would be greatly dismayed.... I was just meeting with someone from EPCOR the other day, who was telling me, “We're thinking of putting in a conventional coal-burning plant without capture”, and I'm thinking, my goodness, at the margin we can start to pay for some of these new kinds of technologies. We have to have the policy in place now.

Mr. Mark Warawa: The parting comment—

The Chair: You are at six minutes.

Mr. Mark Warawa: The parting comment is that Bill C-30, the Clean Air Act, I believe is the direction in which the government needs to go. We need the support of all parties. Hopefully you can come back as witnesses when we deal with it.

The Chair: Mr. Watson.

Mr. Jeff Watson (Essex, CPC): Thank you, Mr. Chair, and thank you to our panellists for appearing today.

Mr. Godfrey said clearly we can't go it alone. I think the government agrees with that perspective. That's why we're participating in the Kyoto dialogue and what the future looks like.

One of our panellists said we have to clean up our house first. I guess this is where I want to focus on something specific. Bill C-288, of course, the idea of enshrining Kyoto's target and timeline in law, I would submit—since we've all agreed that we can't really meet that target and timeline—makes it difficult for us to clean up our house first, at least in the short term.

I want to turn for a moment here specifically to emissions trading. I'd like some comments on the concept of emissions trading. It seems to me that in the short term, with the types of quantities, to trade emissions would lead to an exodus of capital that would be necessary for long-term investment in this country—in other words, cleaning up our house first. It would lead to sending that to other jurisdictions, including international jurisdictions, with no measurable immediate environmental impact. It's just a transfer of capital, in the short term. I'm not talking about the medium to long term.

What are your thoughts on that? Am I on the right track with that?

The Chair: Mr. Page.

Dr. Bob Page: Yes, as a company we've been a strong supporter of emissions trading for a long time as the least cost means of addressing that regulatory need. So in principle we're in agreement. We are totally opposed to things like Russian hot air, which is not emissions trading but a transfer of AAUs or credits between Russia and Canada, or Russia and some other country.

A domestic emissions trading system keeps the money within the country and would spur the development of new bioenergy, wind, and a variety of other renewable sources right now. An emissions trading system can be carefully calculated to provide benefits for Canadian consumers, even in instances where we have some recourse to the international market as a safety valve in terms of a price rise.

I'd just like to give you one very hard example of that. Our company has in fact invested in a CDM project in Chile. We did that because from January 1, 2005, our company had to meet CO_2 regulatory requirements in Alberta for new power plants. There was no Canadian policy in place and no way we could get appropriate Canadian credits in order to meet those regulatory obligations, so we had to go to the international market.

So we like to use the words “safety valve” in terms of the international market, and we're totally opposed to the kinds of credits from Russian hot air.

● (1010)

Mr. Jeff Watson: Did the product in Chile improve your emissions?

Dr. Bob Page: The product in Chile lowered global emissions. That's the concept that I think we have to deal with, because CO_2 is a global problem, not just domestic.

Prof. Mark Jaccard: Very briefly, I often hear this point that any kind of constraint on your domestic economy, a carbon tax or a cap-and-trade system—and I don't say tradeable, it has to be a cap, otherwise nothing is going on—will lead to flight of capital. I think it's too late now to be making that argument any more. There's lots of evidence of how you can design these policies I've just been talking about, so that they're happening gradually. If ten or fifteen years down the road our costs of production are rising significantly and the rest of the world is not going along with us, then we can stop our policy and have a party with everyone else while the earth burns, or whatever else is going to happen. But for now, incurring those costs will lead to little, if any, flight of capital.

You've got the Europeans incurring costs right now with cap-and-trade systems, so Canada can't even talk about our going first any more. We've dithered around; other people have already put the policies in place.

Mr. Ken Ogilvie: I'm of the opinion that you can design a good trading system for Canada and that the uncertainty created by not having a system will cost us much more than having one.

Mr. Jeff Watson: How long would it take to establish such a system?

Mr. Ken Ogilvie: Bob was saying it could be by 2012 or so. I don't think it can be a year.

Mr. James Bruce: Mark said next year.

Mr. Ken Ogilvie: Mark said next year. I'm not in agreement with Mark, but I think we could have a really robust system by 2010.

I don't know; Bob might be a little more knowledgeable.

Dr. Bob Page: Well, we have proposals in to the Government of Canada today, and my estimate is that the federal, provincial, and other cooperation needed would take about a year and a half to two years.

The Chair: Mr. Rodriguez.

[*Translation*]

Mr. Pablo Rodriguez (Honoré-Mercier, Lib.): Thank you, Mr. Chair. Thanks to everyone of you for being here today.

I simply want to mention to Mr. Page that no mention is made here anywhere of purchases of credits in Russia, what you call hot air, or whatever it may be. And there's definitely no desire to do so. Through this project, there is a way of investing in green credits outside Canada. There are good green credits outside Canada. I agree with you that we shouldn't turn to Russia, and that's not the intention, not at all.

It's possible not to agree on the possibility of not meeting the first stage objectives of the Kyoto Protocol on time. First, we have to clarify what we're talking about.

If that seems difficult and even, for some of you, impossible, is that a reason to abandon the project or even not to test it in the short term? Does anyone have a comment on that subject?

[*English*]

The Chair: Mr. Page.

Dr. Bob Page: This is a very good point. It's really central to what we're doing.

I think all of us said we can't wait; I know Mark was very explicit on this. We need to move quickly on it. My investors are looking at a new $1.8 billion power plant for Alberta. We want to know what the conditions are going to be for the 40-year life of that pipeline. So the time issues are important.

I just want to say why I focused on Russian hot air. I worked very closely with the Martin government on the international credits issue. I was chairman of the International Emissions Trading Association out of Geneva. I participated in Moscow and Ottawa, where discussions took place in connection with this. So my comments are not abstract comments; they are comments on the attempt to define a bilateral trade agreement between Russia and Canada that would allow those to take place.

The issue I want to come back to is that we really want to do something. I mean, in the year 2000, we put forward a 25-year plan for our company. We've never had any response to that.

We're looking, from this committee, for what I hope will be a bipartisan effort to put this in a focus that is manageable.

The only point I was trying to make in my presentation was not that we shouldn't do anything, but, please, consult with industry so that it is manageable for our customers, managers, and our shareholders. That's the only thing I'm trying to say.

[*Translation*]

Mr. Pablo Rodriguez: All right. Thank you.

I agree with you. I also want to hail all the efforts your own company has made over the years to reduce your emissions.

Now I'd like to speak to Mr. Ogilvie. A little earlier I was talking about the importance of not giving up and of trying, even if the challenge is a big one.

If, on the other hand, we decided to give up and to do nothing in the short term, do you think it's realistic or responsible to have objectives, just for 2050, for example, and nothing in the short term?

● (1015)

[*English*]

Mr. Ken Ogilvie: Absolutely not. In fact, when I'm talking about a full policy infrastructure, I mean systems up and running and working. You need the interim targets along the way. You absolutely need targets.

We should have renewable energy and energy efficiency strategies with targets for reductions. That's how these things happen. That's why Ontario is now making progress with its energy efficiency mandate. This was a tough one in the past for people to really make progress on.

So we absolutely need targets; we absolutely need systems and standards that are up and running and that work.

But how do you weigh how much you're going to invest in these things? Without the targets and the clear goals, I think it's very, very hard to quantify the level of investment that's needed to get there and to report to the public and the world about how you're doing.

So absolutely, yes.

[*Translation*]

Mr. Pablo Rodriguez: We're talking about investing, but you also have to consider the impact of a lack of investment, which would be considerable. It's being said; there's the Stern study; you had your own studies. I was listening to some of the remarks made here. For example, the pine beetle in the west, forest fires, the melting polar ice cap, the impact on agriculture and health. There's an obligation to act. When you observe this, you can't just say that it will cost so much money to act. If I understand correctly, we don't have a choice whether to act in the short, medium and long term. More than a moral obligation, this is a political obligation, for us, to shoulder our responsibilities as parliamentarians.

[*English*]

The Chair: You're at five minutes, Mr. Rodriguez. Get to your question.

[*Translation*]

Mr. Pablo Rodriguez: Mr. Bruce, could you simply tell us about the costs as regards the health sector?

[*English*]

Mr. James Bruce: One estimate is that there are 5,900 premature deaths across Canada due to heat waves and smog episodes. It's the combination of smog-producing chemicals and climate change that makes them much more effective in causing health problems. That's getting gradually worse. I'm reluctant to put the value of a human life into dollar terms, but I think the health issue is very serious.

The Chair: Mr. Harvey.

[*Translation*]

Mr. Luc Harvey (Louis-Hébert, CPC): Everyone agrees that global warming will have consequences. Do we have the means, with respect to the objectives you're giving us, to reduce CO2 emissions? That's an important question, if we don't have the technology to do it. I've met with people from the hydrogen battery industry. For the moment, we use more energy to produce them than we ultimately produce. That doesn't mean we should stop conducting research on the subject.

Today do we have the necessary technology to move forward, Mr. Page?

[*English*]

The Chair: Mr. Page.

Dr. Bob Page: We are very close to having the clean coal and sequestration technology available.

Mr. Luc Harvey: “Close” means what?

Dr. Bob Page: That means 18 months.

Now, understand that there would be the regulatory and other things. So I don't meant that in 18 months we would be producing power. I mean that in 18 months we would have a project to go forward for regulatory approval, which would be another two years probably.

● (1020)

[*Translation*]

Prof. Mark Jaccard: May I add something?

At the international level, based on the technological changes already made by other governments, we can say — and virtually everyone agrees — that we have the technology. We wonder whether we'll be using nuclear energy, renewable energy or fossil fuels to capture emissions. I wrote a book in which I looked at the opinions of the experts from World Energy Assessment, the International Energy Agency and the Intergovernmental Panel on Climate Change. All those organizations and their experts agreed that, yes, we could do a lot with nuclear energy and with renewable energies, as well as with fossil fuels, to clean up emissions. The most interesting question is who will make more money than everyone else during the transition to a clean energy system. When you talk about greenhouse gas emissions capture, about the clean use of fossil fuels, as Mr. Page has just said, we don't yet have a power station that can use those technologies. All those technologies,

[*English*]

gasification of fossil fuels, the burying of CO_2, the transport of CO_2 by pipeline—all of these technologies

[*Translation*]

were used for decades in other activities, chemicals, etc. We have a lot of trust in those technologies; the point is simply to bring them together in a different way.

Mr. Luc Harvey: How much time would that take?

Prof. Mark Jaccard: As Mr. Page said, it would take two years. We're currently making the investments.

Mr. Luc Harvey: Mr. Bruce.

[*English*]

Mr. James Bruce: I would add to Mark's comments that energy efficiency measures are readily available, and they can do a great deal.

Ken Ogilvie chaired a group that looked at energy efficiency in the motor vehicle industry, and maybe he should say something about that, because there's some place where we could make some real progress gradually over the next ten to fifteen years.

Mr. Ken Ogilvie: It's really about choices we want to make. If you look at the auto sector between 1975 and 1985, after the oil shocks and with the fuel economy standards, the vehicle fuel efficiency doubled in ten years' time. We could have doubled it again by today with the technology improvements, but we chose to put those into heavier vehicles, more powerful vehicles, faster vehicles, more luxurious vehicles, and so on.

So these are choices we can make. These are illustrations, and we can go much further than that with technology. It's really a question of what choices we want to make, where we deploy these technologies, and what the business case is for industry to put these in motion.

I'm on the board of Sustainable Development Technology Canada. There are some marvellous technologies coming through there, but the question always is what it takes to get somebody to deploy these. If you're in business, you need a high level of certainty that you're going to get a return on your investment.

There are waves and waves of technology. It's not a total solution to everything. There are some areas like carbon sequestration with uncertainties that need to be resolved. We do have many pathways—not just one—to get to the kinds of deep reductions we're talking about by 2050. Doing that by 2008 would be a problem, but we can be on the pathway.

The technologies are not really the issue at the end of the day, and there will be new technologies coming out in the future. There are some great developments that will happen, I'm sure, twenty years out.

The Chair: Mr. Lussier.

[*Translation*]

Mr. Marcel Lussier: Thank you, Mr. Chair. I'm no doubt going to suggest to the clerk that, in future, he send us the witness list together with their biographies and a list of their publications and, with that, perhaps as well a list of awards...

Let's get serious. I think Quebec currently has a plan called the oil dependence reduction plan. Quebec is often cited as an example with its greenhouse gas emissions control plan.

Among the people invited to this committee, we've seen people from the industrial sector, chemicals, the automotive sector and energy tell us they've considerably reduced greenhouse gas emissions since 1990. However, the total, overall result is 28 percent. A 28 percent reduction, plus a six percent reduction objective relative to 1990 brings us to 34 percent.

My question for our guests is as follows: if we have oil dependence reduction plans and we invest considerable amounts to develop the oil industry in western Canada, isn't that contradictory, in terms of Canadian policies?

Mr. Bruce, you seem to want to answer me.

● (1025)

[*English*]

Mr. James Bruce: Yes, as I understand it, the tar sands in particular are the single biggest source of increased emissions in Canada.

[*Translation*]

Mr. Marcel Lussier: By how much?

[*English*]

Mr. James Bruce: I think there are ways of producing energy that would be much more efficient in reducing greenhouse gas emissions. But without government policies in place, there is very little chance that those more efficient techniques will be put in place.

[*Translation*]

Prof. Mark Jaccard: Once again, it's linked to the growth curve.

When we look back, 20 or 40 years ago, we see that, since energy has a cost, businesses and even household appliances should become increasingly efficient. That's a natural phenomenon. But at the same time, with economic growth and growth in new energy services, we have an increase in energy demand.

So we're starting to ask industrial interests what actions they can take to reduce energy use and greenhouse gas emissions. It's normal for them to be able to produce a list of all the actions they've taken, in any case. This is somewhat the problem when you implement a voluntary policy, a grants and information policy. It doesn't stop the introduction of new technologies that use the atmosphere like a garbage can. And it's continuing.

Mr. Marcel Lussier: It's not consistent.

[*English*]

The Chair: Mr. Malo, do you have a brief question?

[*Translation*]

Mr. Luc Malo (Verchères—Les Patriotes): Thank you, Mr. Chair. You won't be surprised by my question.

Mr. Jaccard, in your introduction, you mentioned that you had worked jointly with Chinese partners some time ago.

Mr. Bruce, you had already started to answer the question I'm going to ask.

What action should our committee take to lead China and other developing countries to adopt more favourable attitudes toward greenhouse gas reductions?

Prof. Mark Jaccard: Briefly, the experience I've had was when I was part of an expert panel that was asked to advise the Chinese government in 1990. During the first seven years, we suggested a reduction in subsidies to coal-fired plants, a renewable electricity policy and a greenhouse gas emissions capture policy. The Chinese weren't interested in that, but, as soon as we signed the Kyoto Protocol, they changed their mind because they realized they had to predict the direction the industrialized countries would take in terms of technologies. They figured that, one day or another, they would necessarily pay financial penalties if they continued to produce dirty energy.

For that reason, I'm in favour of the idea that we industrialized countries can now move forward. That's why I'm saying, when we talk about the dangers of proceeding with technological change, that I don't believe those dangers are that great.

● (1030)

[*English*]

The Chair: Mr. Jaccard, in regard to Mr. Malo's question, he and I were in China a couple of weeks ago, and we couldn't see the buildings across the street. We were told that there was an 800-megawatt coal-fired power plant coming on stream every week, with over 500 on the drawing board. So obviously I know where his question came from. We literally could chew the air by the end of the week. We're choking from what they're producing.

Our time is up. We'll go to Mr. Vellacott.

Mr. Maurice Vellacott (Saskatoon—Wanuskewin, CPC): My question follows up on that, because I know what the gentlemen speak of with respect to China. I remember the first time a brother-in-law of mine, who's provincially involved in Saskatchewan, with the department there, was over visiting China, and you could smell something like kerosene off the book when you opened those beautiful pages. When I was there, likewise, it was a pretty grey atmosphere.

On the issue of credibility, especially in regard to other countries—those that have signed on to Kyoto, those that have not—I framed this question the other day. I want to ask it again because I think it's important. It came up with respect to this issue of benchmarking. I don't want to be unfair, but the issue is that we don't have a hope of meeting the Kyoto targets. As long as we benchmark, that's the good thing, and then we can compare to how far we fall short of that.

I'd raise the other issue, in terms of our credibility and trust with other countries. My view is that in terms of human relations and country-to-country relations, we could bring the process into disrepute and then we won't have the goodwill at some point later, when we're serious and assertively moving on some targets and so on.

I liken it to relating to my four children, my five grandchildren. If I'm to make outlandish promises to the effect that I'm going to spend two hours individually with each of them every night, doing what they want to do, and there's not a hope of keeping that, you know, it's just not realistic. I'll be a laughingstock almost. I'll blow my credibility with my own children, and then when I need the goodwill and the trust and credibility in other crucial relationships, which of course one does in continuing to be a dad and grandfather over the years ahead....

I think we should be assertive. I think we need to act on both greenhouse gases and the Clean Air Act, the air pollution itself, and I think as a result of seriousness, we'll get the greater reductions in both air pollution and greenhouse gases. But as we set these goals and targets, what's the downside or the negative fallout? Yes, the benchmarking....

I think there's another possibility here of actually losing credibility, not having the trust of countries like China, India, and so on that might come into it later, if in fact we're just playing little games that are clearly unrealistic. That would be my question, in terms of the international community, when we just throw a figure up there, minus 6%, Kyoto commitment, and so on.

The environment commissioner has said there's no evidence of analysis supporting that. I guess I want to get at the philosophical question of the necessity of doing the hard work and making realistic targets to get the job done.

Dr. Bob Page: I think that's a very important question, because I think there is the issue of Canada's credibility internationally as well as Canada's credibility domestically in connection with this.

One of the points I would make is that in terms of being a corporate executive, I'm very concerned with attempting to spend a lot of money right now—as I was trying to say in my presentation—on credits purchase, not on long-term technology investment, and then having to turn around, say in 2010, and change the system completely.

I'd like to see us sit down and set a program with short-, medium-, and long-term goals, so that it's an integrated thing. If that took place I think we would maintain our credibility. But we also have to accept the fact that we've taken some knocks internationally in terms of the perception of what we've been doing thus far, and I think that has to be addressed in any program to try to keep that kind of credibility you're talking about.

Prof. Mark Jaccard: This is not something I think about as much, but I was at an international meeting in England just a couple of weeks ago in which a Japanese delegate referred to Canada's shame in terms of all of this.

And I end up coming...first of all, I really don't like the word “targets”, because targets are what we've had before. They have to be obligations, constraints, backed by penalties. Anybody can set targets. In fact, we're all great at doing that. But what you're really talking about is an obligation, a requirement of what you're going to achieve and why and how, and it has to be laid out right through the economy, rather than talking about targets.

I think from Canada's point of view, though, our only choice now is simply to say to the international community that we screwed up, that this has not worked, and now here are the policies we're putting in place as part of goodwill. We won't be a leader by putting those policies in place, but we want to be among the countries that are driving forward with this now, and we'll carry that with us into future negotiations.

● (1035)

The Chair: Go ahead, Mr. Bruce.

Mr. James Bruce: If we're going to avoid even more disastrous impacts on the Canadian economy and environment than what I outlined earlier, we do have to get the developing countries of the world on board post-Kyoto, and there are negotiations going on even now as we speak about what to do post-Kyoto. Canada will have absolutely no credibility in those negotiations if we don't have in place by 2012 some policies, some programs, that show that we are at least trying to meet the target or the obligations that we earlier accepted.

Mr. Ken Ogilvie: Just by way of illustration, I'm quite active on the ISO 14000 standards internationally and domestically, and Canada played a key role in moving the greenhouse gas standard to ISO 14064 and ISO 14065 internationally. And when I go to international plenaries, Canada plays a very important bridging role between developing and developed countries. There is a lot of trust in Canada, and it enables us to do things that we would otherwise not be able to do. It is really important that if we feel we can't meet an obligation internationally, we still acknowledge that we have it, we benchmark against it, and we try to show when we're going to meet it. That becomes a very important psychological point when we actually do meet the target.

Mr. Maurice Vellacott: Do we acknowledge that we—

The Chair: Mr. Vellacott, you're well over your time.

Could I go to Mr. Cullen, please?

Mr. Nathan Cullen (Skeena—Bulkley Valley, NDP): Thank you, Chair, and thank you to the witnesses.

I apologize for missing the first hour. I'll be looking at the blues.

There's a question I have. I suspect that we've had a broad conversation about the policy and implications. I'm trying to focus this back to this bill. This committee will be trusted with the effort of revising or changing and ultimately trying to pass this back into legislation.

As this bill stands right now, I wouldn't mind some comments on its capacity to do what the preamble claims to want to do within the legislation. I don't want to assume that the witnesses have all read through the legislation. I'm seeing various.... But I would like comments from those who have. I'll start with Mr. Page, because you acknowledged first that you had.

What do you see in this that's most worrisome, and what do you see in this as a most positive aspect of the bill?

Dr. Bob Page: I don't disagree with the motives behind the bill, so I'm not trying to come at it, but for me, in terms of running our business operations, I see no way in which you are trying to help me meet those obligations. I see the obligations with regard to the Kyoto period as being very onerous for our company. Five years ago, we put forward to the government a 25-year plan that was going to take us to carbon neutrality by 2024, and the point I tried to make in my presentation was that if we have to buy all the credits to meet the needs of the bill, because the technology won't be in place until at least 2012, then that money for the credits will then destroy our capability to make the technology—

Mr. Nathan Cullen: Let me stop you there for a moment. There is an assumption you've made in terms of how those targets will be achieved, in terms of the need to buy credits. Are you bringing the perspective, specifically, of your company when you say that you don't believe that the targets and emissions cuts described in this bill are possible otherwise? Or are you suggesting that this is a broader comment on the Canadian economy's ability to meet these targets without buying credits?

Dr. Bob Page: I was trying to be specific here, Mr. Cullen. I was trying to say what it meant in terms of the thermal electricity sector, and I was not trying to make a comment in terms of the overall Canadian economy.

Mr. Nathan Cullen: From your perspective, from your company's and perhaps your sector's perspective...in this bill—I want to hear other witnesses or I'm going to run out of time here—there's a mechanism for a trading system, one that a lot of people have put a lot of value towards on the international scene. Is that not something that would offer, outside of your—

Dr. Bob Page: It would, and you're very right to point to that. The point I made earlier was that it would take two years to put in place the rules for a trading system. It would take at least three years after that for the offset projects and others to be in place in terms of generating the credits for a trading system to then work.

My issue is not with the targets; it's with the timing.

● (1040)

Mr. Nathan Cullen: Okay, understood.

Mr. Bruce or Mr. Ogilvie, do you have a comment?

Mr. Ken Ogilvie: Yes, it's very important that we hold on and recognize the commitment we've made to Kyoto. It is also, from a pragmatic point of view, understood that we're not going to meet exactly the Kyoto target. We're going to fall very short of it. You have the elements in here that are driving us towards the policy framework idea that I suggested. If I had any modifications I'd look at them carefully so that at least the elements of the policy framework were wired into the bill. The idea of having plans, reporting against them, making projections, and having an independent assessment of them are all very good elements of public policy, in my opinion. There are a lot of good things in here.

Mr. Nathan Cullen: But there seems to be a “but” in your tone. What is the “but”? Is it the timeline or is it the—

Mr. Ken Ogilvie: We're not going to meet the commitment period target fully. I would still put something in there, though, that still held it as an important element of Canada's commitments we've made internationally. Reporting against it and striving to achieve it is still an important goal for Canada.

Mr. Nathan Cullen: Perhaps it's the language we're using here—and there was a comment from Mr. Jaccard on this. I think Canadians get confused by this. I've heard from various parliamentarians that we wish to stay within the framework of Kyoto, as the minister has said, but not to meet Kyoto. Canadians want to understand if emissions are going to hit a certain point—and I take your point, Mr. Jaccard, about obligations and the need to have a penalty, or something, ascribed so there's a serious tone to this.

Can you clarify the language a bit, because the idea of staying within the framework and the intentions of...? Kyoto is unique in its perspective in holding out real numbers. It wasn't an intention to do something about climate change; here are the numbers Canada signed on to and agreed to.

With this bill as is and the comments we've heard so far, what is your opinion on its efficacy in achieving the numbers—not the framework, the spirit, those grey words?

Prof. Mark Jaccard: I guess I can't comment on that because I haven't read the bill.

My only point will be—and these are the comments I made earlier—is that when people talk about moving towards achieving Kyoto or part of Kyoto, and so on, in the four- to six-year timeframe we're talking about, I would say we can do almost nothing. I think people don't understand the inertia of capital stock investment and human behaviour.

As a system modeller, the timeframe of four to six years is a flash to me. In fact, I'm now doing scenarios for the national round table on Canada getting to 2050 with a 50% reduction. It looks like it might be extremely difficult to make that. The technologies are in place or are there, but the capital stock turnover and the inertia in the system is incredible. If I can bring anything to this table for people who are not doing these kinds of models of the economy, it's to get them to understand how much inertia is in our system. Sure, a new computer can come into the system very quickly, but it's different when we're talking about major infrastructure, major industrial facilities, energy conversion plants, and so on.

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

Dr. Jaccard, my daughter does this modelling in Europe, where she's been doing a model for 2055 for the German government. Those are the kinds of timelines we look at in this modelling.

Mr. Warawa.

Mr. Mark Warawa: Thank you, Mr. Chair.

I have a question for each of you. Have you had a chance to look at Bill C-30, the Clean Air Act, and the notice of intent? Have you had a chance to read those?

Good. I'm seeing some nodding.

There were quite a few comments about policy. We believe that what we are hearing today is the direction in which the Clean Air Act will take us, and it provides good policy to address a plan that's well thought out.

The government is still committed to Kyoto; we are still involved with Kyoto. We've indicated that it's not likely we'll meet our targets. We said we will not meet our targets.

When I asked you in the first round, you each agreed that we will not meet our targets.

Mr. Jaccard mentioned that we were voluntary, and I think he recommended that we should be mandatory. This is exactly the direction that the government is hoping to take on the issue of greenhouse gas emissions and pollutants.

We will be setting targets for both pollution and greenhouse gas emissions in a few months from now. We've gone through years of consultation. We are now in the negotiating stage, setting those targets. We are now also in the 60-day period, since we've gazetted the notice of intent to invoke public input, and hopefully you will provide input on those notices of intent, so that we have good policy. The better the input, the better the policy, so I encourage you to do that.

Very soon, at the beginning of 2007, we will have those targets set—targets, not obligations, but I hear you very clearly—for greenhouse gas emissions and pollutants.

The environment commissioner, when she was here, challenged us to work together on this very important issue. Today we're talking about the impacts; on Tuesday it was the urgency. I can sense the urgency in each of your presentations. You're telling us to take those steps in the direction of acting, and I believe we are.

The commissioner did challenge us to work together on our Clean Air Act and lay aside what's happened in the past. I'm assuming that you are doing the same because of the urgency—that we lay aside the politics and work together on this very important issue. Is that a fair assumption?

The final question I have, and I have a couple of minutes, is for Mr. Jaccard, if you could just share the realistic situation that we're in.... I was at a town hall meeting in Crescent Beach—you know where that is—on Saturday. People were saying, “Do something now”, which is what we're hearing. We listed the renewable fuel content, and I introduced my plan.

If you've read the Clean Air Act and know its intent, you know where we are going, the actions we've already taken—to take mercury out of scrap vehicles and encourage use of public transit. Do you have any other specifics?

● (1045)

The Chair: Thank you, Mr. Warawa.

Mr. Cullen.

Mr. Nathan Cullen: I have a point of order, Mr. Chair. I made this mistake at the last committee meeting as well.

It is important that if we are doing Bill C-288 to be on the aspects of Bill C-288. It is with respect that I offer this. The questions are around the Clean Air Act. We have a whole legislative committee that is going to be struck for that. I think our duties right now are to look at this bill and its implications.

While I appreciate Mr. Warawa's enthusiasm for his government's bill, it is not actually before us. I waited for the question to be arrived at through the commentary, but it is more the questions of Bill C-288 that are of interest to the committee right now.

The Chair: Thank you, Mr. Cullen.

I would ask you, Mr. Warawa, to get to your question if you can. Your time is running.

Mr. Mark Warawa: Yes, I have a minute and ten seconds.

Some hon. members: Oh, oh!

Mr. Mark Warawa: The question concerns the suggestion of immediate impacts, in addition to what the government is already doing, concerning Bill C-288. We need specifics. Can you give any additional specific recommendations on what the government should be doing?

Prof. Mark Jaccard: Yes, and I've laid them out quite clearly, for example, in *The Morning After*. I believe you only need four or five policies. The policies I've seen so far seem wrong-headed to me. On the public transit subsidy, we're just simulating that right now. I may come out with something from the C.D. Howe Institute, but our guess is that it will have very little effect on people's use of transit. It will effectively be a transfer payment to people who already buy transit passes; therefore, its cost per tonne reduced would be exorbitant, at $500 or $1,000.

Likewise with ethanol content. If you don't put in the other policies that I'm talking about to constrain people's use of the atmosphere, it could very well be that the refiners that are built to help make ethanol would burn coal or whatever was the cheapest fuel available, as we've seen in the United States. We're also doing a simulation for the C.D. Howe Institute that we will probably come out with at some point, and it will show again a negative effect of that kind of policy.

Unless you're interested in moving very quickly on a strong message about use of the atmosphere in the way I've talked about, I don't think your policies will work.

● (1050)

The Chair: We're going to Mr. Godfrey and Mr. Silva.

Hon. John Godfrey: These are three questions to you, Mr. Jaccard. I know my colleague Mario wants to ask questions as well, but these are three interrelated questions.

If we took seriously your suggestion to get on with the four or five policies that you've proposed, by what date would you be comfortable in saying we would see predictable, measurable effects against the business as usual case if we hadn't gone that route? What's the earliest date we could see that? That's the first question.

Secondly, would I be right in assuming that part of the answer to the question is, of course, the price that you put on things? Whether it's a carbon tax or a cap-and-trade system, depending on what you put into the machine, you're going to get certain kinds of results. I guess that shows us the policy options and the choices we have to make.

The third question is, whatever route you go, whether it's a shallower or steeper rate of increase on the carbon tax or on the cap-and-trade system, isn't it possible to express what is going to happen by 20-whatever—you're going to tell me what the date is—as a target? In other words, that would tell us, as a society, that if we want to get somewhere in the vicinity of this, these four or five policies have to play out over this period of time and at this rate. In other words, that would suddenly be the target against which we would contrast the Kyoto benchmark or the Kyoto target. Forget about this achievability factor.

I just want to know the date by which we can find out the results if we took your advice. By when could we measure it? Give us some sense of the ratios. Can we express that as a target?

Mr. Mario Silva (Davenport, Lib.): Mr. Chairman, perhaps I could also pose my questions and he could answer them and save time.

The Chair: Yes, go ahead.

Mr. Mario Silva: Professor Jaccard, you mentioned the fact that you don't agree that there should be known targets. You said no to targets, but yes to obligations and constraints. You want to put on penalties, as you put it. But when you set targets, don't you also set obligations to meet those targets? I'd also put constraints when putting targets, so I'm a little confused by your statement. Maybe you want to clarify that as well.

Prof. Mark Jaccard: I'll do that first. It's a semantics issue.

I've gotten irritated over the years by governments talking about targets. In fact, politicians do that often. They get up and talk about a target, but there is no means of achieving it. I notice that in certain policies where people really mean business—let's say the U.S. Clean Air Act of 1990—they don't talk about it as a target; they talk about it as an obligation, a cap, a requirement.

If someone says that this is our target, a target to me implies some notion that you might not achieve it. I guess that's my idea. What we're saying is that if we listen to the scientists, we really need to have some firm requirements that we're going to achieve.

The question was when we would see change if the policies were implemented immediately. You'd see change immediately.

Hon. John Godfrey: Measurable change?

Prof. Mark Jaccard: Yes, because the way capital stock turns over, people are making decisions all the time, right now, on a new electricity generating plant, or a lot of other smaller decisions, such as what kind of vehicle they're going to buy. The government is doing advertisements with Rick Mercer, warning people that this is how much more expensive it's going to be to get fuel the next time they go out to buy a car and for them to look at what their options are. So that capital stock is turning over incrementally all the time.

When I say “measurable”, of course, there are bands of uncertainty, so it's probably not three years down the road, but I would say that's already going on. In our models and with the data that starts showing up from Statistics Canada and others, we would be able to detect that on a five- to ten-year timeframe. That's in the “Burning Our Money” C.D. Howe report that I think you've used before. It shows that you are already inflecting away from the growth path that you are already on. So that would happen immediately.

Hon. John Godfrey: In other words, we can find a way around this semantic difficulty. I mean, with that predictable effect, the effect is felt immediately, the measurability is over a five- to ten-year period, if I understand it, and the degree of the effect depends on how drastically you put in the price incentives. Is that right?

Prof. Mark Jaccard: Yes.

The distinction I need to always make, and this was even in the national climate change process, is that people confuse actions—the things individuals and businesses do to reduce greenhouse gases—with policies. The policies need to be immediate—there are some delays, which Bob has legitimately pointed out—and then the actions happen incrementally, over time.

Quite often I get frustrated. People will say, oh, the actions are going to happen over time, so we'll implement the policy later. The point is, no, the actions don't even start until the policy is there.

You also asked about the intensity. That's why you need that graduated signal, to say to people, look, it's going to get more expensive to keep using the atmosphere in this way. We want everyone to know that, because that really helps business in thinking about the research and development and the investment dollars as they head down the road.

● (1055)

The Chair: Mr. Ogilvie, I know you want to jump in. Could you do that briefly, please?

Mr. Ken Ogilvie: If I could, because we have a really interesting.... This is hot off the press, from about a week ago; it's primarily about acid rain.

Dr. Bob Page: Everybody is selling their publications.

Mr. Ken Ogilvie: That's right. I have more here.

There is a good dose of science and policy in here. It's a microcosm of climate change as a much bigger issue. We have used science and the convention protocol process marvellously well; we have used caps and targets and so on in the process. There is a meeting and a sequencing as to how policy gets done—and the interplay with the science. I would encourage you to read this, even the science parts, because they were written to convey that we have solved other problems by using these approaches.

There are specific meanings to this whole process of conventions and protocols, which Canada literally invented around the acid rain issue internationally. I think it is very important to understand how we have solved problems in the past.

Having worked in policy and written cabinet documents and all that sort of thing for a few years...you need something if you're the policy person who is writing for cabinet. You need a target. You need something to work against. It has to be specific. You can't go to cabinet with a goodwill list of ideas. You have to have something you're pushing back on. We do need to get targets or caps or whatever we call them—I don't really care. But you do need a policy framework; you do need some targets, some science, and a process on top of that.

The Chair: Thank you, Mr. Ogilvie.

Mr. Harvey.

[*Translation*]

Mr. Luc Harvey: In the Kyoto Protocol, it was understood that there would be foreign carbon credit purchases. Various amounts were put forward. Do you believe that Canada can move ahead by purchasing carbon credits overseas, Mr. Page?

Answer yes or no. We only have a few minutes left and I have other questions to ask.

[*English*]

Dr. Bob Page: Very quickly, I'll go back to the words I used earlier: a safety valve in terms of international credits, to try to cushion Canada against heavy price increases, and in instances such as I mentioned before, where we had to go international, because domestically we didn't have a policy regime in place.

The Chair: Anybody else want to jump in on that one?

Go ahead, Mr. Harvey.

[*Translation*]

Mr. Luc Harvey: Mr. Ogilvie?

[*English*]

Mr. Ken Ogilvie: This is a global issue, and it makes sense to have some capacity to work globally on it. So the answer is yes. From an environmentalist point of view, we'd like to see maximizing, capturing the benefits, and the co-benefits in Canada, as opposed to environmentally and economically. It is a question of balance. But this is a global issue. It would not be good policy to forego a flexibility tool, in my opinion.

[*Translation*]

Mr. Luc Harvey: No, I understand that we shouldn't deprive ourselves. CO2 can come from China or Russia; I understand that perfectly well, except that, in the short or medium term, we should perhaps solve the problem here before handing money over to other countries. Is that what I am to understand?

Mr. Bruce?

[*English*]

Mr. James Bruce: I think it's preferable to do the emission reductions at home, because we get a lot of co-benefits.

But the whole idea of emissions trading and credits abroad is that greenhouse gases don't respect borders; they're globally well mixed. Whatever people put out in Indonesia has as much effect on Canada as what we put out in Canada. If we can reduce emissions somewhere else, and we can do it at a much lower cost, there's benefit to the globe and to ourselves.

[*Translation*]

Prof. Mark Jaccard: The problem is that, as a modeller, I believe it's very hard to confirm that the emissions rate has really been changed in other countries. You can subsidize this or that gas-fired station, but you can never be sure a gas-fired station has been built, and not a coal-fired power station. It's hard to know for sure if the emissions trend has really been changed.

● (1100)

Mr. Luc Harvey: Mr. Jaccard, the next question is for you. As we know, there are major industrial sectors, including power production, that emit a lot of CO2. Earlier you talked about nuclear power stations.

Do you believe that should be one of the preferred options for power production?

Prof. Mark Jaccard: In fact, I have no preference between renewable energy, fossil fuels and nuclear energy. That in a way is what I tried to say earlier in giving my answer. I don't have any preference. It's more up to the people of the countries concerned to decide on the benefits that each...

Mr. Luc Harvey: But, in all three cases, whether it be fossil, renewable or nuclear energy, these are three viable technologies the production and operating costs of which will be appreciably the same within two years.

Prof. Mark Jaccard: Based on my calculations, within 50 years, fossil fuel clean-up will have the largest market share. That's what I'm talking about in the book I mentioned to you.

Mr. Luc Harvey: I understand perfectly well.

Mr. Page, you say we should anticipate a period of approximately 50 years to recycle an industry, that is to say that it takes about 50 years of use of a technology or a process from the moment it is put in place until it becomes obsolete. Is that correct? Would there be any way for that to be done more quickly?

[*English*]

Dr. Bob Page: We can do it more quickly by starting the incentives today. If we were to give technology credits, as opposed to buying international credits, for instance, the domestic technology credits would kick-start today our movement toward clean coal and CO_2 sequestration.

I like to look at the thing as short-term, medium-term, and long-term, but the signals have to be given today, so we can be ready for those long-term goals we're after. That's the main concern I have here.

Second, there has to be an investment context. It's the scale of investment we're talking about here, and the important thing to remember with CO_2 is that you cannot retrofit CO_2. You have to have fundamental new combustion systems, and that's why it's much more difficult and much more costly than SO_2 and NOx and mercury.

The Chair: Thank you, Mr. Harvey.

I want to particularly thank our witnesses. I know it was difficult for you to get here. We appreciate it a lot. Thank you very much.

The meeting is adjourned.

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