

Canada's National Report

Climate Law Panel
XVIIIth International Congress
International Academy of Comparative Law
Washington, D.C. 2010

by

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July 2010

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Preface

Efforts to mitigate, and adapt to, climate change in Canada implicate rules and legal principles from many different domains of public and private law. In responding to the Questionnaire of the Climate Law General Reporter, we survey a very broad legal landscape. In Part VII of the paper, the analysis is focused on urban land use and planning law, which in Canada is a domain of municipal government primarily. We do this in part because a large portion of greenhouse gas (GHG) emissions in Canada can be directly linked to land use practices within cities. Cities are also loci of vulnerability to climate change and adaptation activity. As such, we believe that action at the municipal level of government and particularly in the area of land use law must be an essential component of any effective Canadian response to the climate crisis. Focusing on a specific area of the law also allows us to provide deeper insight on a key challenge for climate change law: integrating climate action within existing legal structures.

We have organized the responses to the questionnaire (within each part of the paper) according to our own conceptual framework while following the general topical structure indicated. The question numbers are shown throughout the text in bold red lettering.

Research for this report was completed on December 31, 2009. Policies, laws, rulings and other relevant data, including reports of greenhouse gas emissions, published after that date are not incorporated into the report.

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Part I Canada and Kyoto

Introduction

Canada's national climate policy can be characterized as a major failure³. The national inventory for 2007 indicates GHG emissions are 26.2% above 1990 levels. That is **33.8% higher** than the level Canada promised to reach when it signed the Kyoto Protocol in 1997 (Appendix 1). Since 1990, at least six major climate initiatives have been announced by the federal government, yet all have failed to stem the generally steady growth of GHG emissions (Jaccard & Rivers 2008)⁴. Today, Canada ranks amongst the worst GHG emitters in the world, not only in absolute terms but also on a per capita and per GDP basis (Appendices 2 & 3). The current government has essentially repudiated Canada's Kyoto target, which it believes is too costly⁵.

In this part of the paper we answer two questions regarding Canada's Kyoto commitment and post-Kyoto performance. First, did the Canadian negotiators at Kyoto promise more than could reasonably be achieved and, if so, why? Second, what are the major socio-economic and political factors that seem to be constraining action on climate change at the national level?

³ In this part of the paper, we focus on the policies and programs of the federal government. Some sub-national governments in Canada have shown global leadership in climate policy, as discussed in Parts IV and VII.

⁴ In 2007, total domestic emissions were 747 megatons (Mt) of carbon dioxide equivalents (COE). This is the highest level ever recorded in Canada, a four percent increase from the prior year. Since 1990, the average annual change in GHG emissions has been an increase of 1.5 percent. (Environment Canada 2009). Canada's emissions grew faster in the period from 1990 to 2006 than in the prior decade when no climate change policies were enacted at the national level (Jaccard & Rivers 2008, p. 1).

⁵ In the lead up to the Copenhagen Conference of December 2009, Canada proposed to reduce emissions by 2020 to a level 3% below 1990. That is only half of the reduction Canada was supposed to achieve under Kyoto by 2012! While the target is similar to that set by the U.S, Ottawa has been criticized for a lack of clarity regarding the set of domestic actions it intends to pursue to reach the stated target.

Canada's promise at Kyoto

Canada has formally supported and participated in many international efforts to protect the climate during the last two decades⁶. Canada signed and ratified both the United Nations Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol⁷. At Kyoto, Canada promised to reduce national emissions to **6% below 1990** levels by the end of the four year commitment period in 2012⁸.

Canada's Kyoto reduction target is considered one of the most difficult and expensive of any Annex I country (Simpson et al. 2007). Compared to other UNFCCC participants, Canada has seen faster economic and population growth in recent years (Appendix 4). By the time Kyoto was ratified by Parliament in 2002, Canada had already experienced a stark increase in emissions since 1990 (the baseline year). Further, Canada did not enjoy so-called 'windfall reductions' such as those arguably available to Russia and Germany (due to the economic restructuring following the collapse of the Soviet bloc) and the United Kingdom (with its on-going fuel switching program⁹). Finally, Canada is, and likely will remain, a net energy exporter, one of the

⁶ Canada has never officially rejected the UNFCCC regime or refused to participate in UNFCCC conferences [Q3]. The Canadian Government sponsored one of the earliest world scientific conferences on the topic of climate change, the Toronto Conference on the Changing Atmosphere, held in 1988. Participants called for development of a worldwide climate change convention and support for continued scientific study of the climate. In 2005, the Conference of the Parties to the UNFCCC as well as the Meeting of the Parties to the Kyoto Protocol were held in Montreal, led by Canada's Environment Minister at the time, Stéphane Dion. That conference marked the entry into force of the protocol and helped to set the path for the post-2012 regime.

⁷ Canada signed the UNFCCC on the 12th of June, 1992 and ratified it on December 4, 1992. It entered into force on 21 March 1994. Source: (UNFCCC 2009). Canada signed the Kyoto Protocol on the 29th of April, 1998. However, ratification was delayed more than four years. It was ratified, following a majority vote in the Federal Parliament, on December 17, 2002. The Kyoto Protocol came into effect on the 16th of February, 2005. [Q29]

⁸ Canada's national government also has participated from time to time in other climate related diplomacy outside the UNFCCC. For example, the Asia-Pacific Partnership on Clean Development and Climate is a public-private partnership of seven countries -- Australia, Canada, China, India, Japan, South Korea, and the United States -- that seeks to accelerate the development, deployment and diffusion of clean energy technologies. Member countries have not committed to any binding targets (Asia-Pacific Partnership 2006).

⁹ During Kyoto and other UNFCCC meetings, Canada's negotiators generally sided with the so-called 'umbrella group' of countries which advocated liberal treatment of carbon sinks such as forests, relaxed rules for the use of alternatives to domestic abatement and lax enforcement mechanisms. This negotiation posture reflects

very few such countries in the developed world. Emissions associated with producing oil, natural gas and other energy exports count against Canada, not its trading partners who consume the energy. Under those conditions, curbing emissions to meet Kyoto targets presents a difficult challenge for Canada.

For some analysts, Canada's acceptance of a relatively tough, 6% target at Kyoto was a triumph of 'moral volunteerism' over self interest or even rational analysis (Courchene 2008; Simpson et al. 2007). This has been explained by reference to the particular political circumstances at the time. [Q4] When Kyoto was signed, the federal government was led by a powerful Liberal Party prime minister, Jean Chrétien. He is said to have been looking to establish a legacy after a long run in power. There was a strong desire by many in government and civil society to take the lead in this issue and to 'outdo the U.S.' Some also believe Canada's position was influenced by direct appeals from American negotiators to accept more stringent commitments than Canada initially contemplated.

Much of the Canadian public also supported deep reductions. Most Canadians, ordinary citizens as well as political leaders, generally like to think of themselves as progressive both in matters of international cooperation and environmental protection¹⁰. There is a very active community of NGOs, consultancies and research institutes in Canada which are world leaders on climate change research and policy development. For years, public opinion polls have shown that the great majority of Canadians believe climate change is a serious problem, with a solid majority naming it a 'very serious' problem (Pew Research Center 2007). The fact that large parts of Canada lie in the Arctic zone (where early climate impacts have been most pronounced,

Canada's status as a rich, energy-intensive economy expected to rely heavily on credits from Russia and other economies in transition, as well as Kyoto's 'flexibility mechanisms.' [Q2 & Q3]

¹⁰ Canada has a long history of international cooperation in the area of environmental protection. Beginning in 1909, Canada entered into a number of bilateral agreements with the U.S. respecting the management of trans-boundary watersheds. These include agreements to protect air and water quality and establishing an international joint commission (IJC) and other enforcement mechanisms. Related agreements include the International Boundary Waters Treaty, the Great Lakes Water Quality Agreement of 1978 and the Air Quality Agreement. Canada is also a party to international treaties on conservation of nature and natural resources, protection of the ozone layer (Vienna convention and Montreal protocol), convention on biological diversity of the UN conference on the environment and development and the UN Convention to combat desertification.

affecting highly vulnerable Inuit settlements and iconic symbols of Canadian wildlife) has galvanised the public's concern. Indeed, it is fitting that the plight of the polar bear has become emblematic of the climate change threat worldwide.

Whatever their motivation, Canadian negotiators did accept a relatively tough 6% reduction target at Kyoto. This set the stage for strong opposition to ratification and implementation from some business leaders and provincial leaders. In fact, the conduct of Canadian negotiators at Kyoto was seen by some as a 'federal betrayal' of the domestic consensus on the eve of the Kyoto conference¹¹.

Constraints on domestic climate policy to date [Q5]

Considering the urgency and difficulty of the Kyoto challenge, aggressive and immediate domestic action was essential. Yet, Canada's implementation efforts to date have been remarkably weak, long delayed and poorly coordinated. It was only in 2007, ten years after Kyoto, that the first national regulatory framework for a cap and trade system was proposed. Disparate provincial and federal approaches are emerging, with potential for unnecessary complexity and duplication¹². Also, there has been a failure to address key structural factors which underlie the high demand for fossil fuel production and use (e.g., urban settlement patterns (see Part VII)).

Several political and socio-economic conditions, some deeply embedded within Canadian society, help to explain the weak response of Canada's national government to the climate crisis. We focus here on three key constraints:

¹¹ As explained in Part III of this paper, cooperation between the federal and provincial governments is essential for domestic implementation of international climate commitments. Prior to signing the Kyoto Protocol, federal and provincial leaders had met to discuss what should be Canada's reduction target. The discussions were at times heated (Robinson 2000). All but one of the provinces agreed to GHG emissions targets of no more than 3% below 1990 levels (only Quebec called for more aggressive targets). When federal negotiators at Kyoto agreed to 6% (twice as much as discussed with the provinces), some provincial politicians are said to have been shocked.

¹² A detailed description of climate policy and programs presently in force or proposed by the federal government is included in Part IV of this paper.

1. Canada is heavily and *increasingly* dependent on energy intensive, trade exposed industries. Climate policy has taken a backseat to economic development and to the protection and promotion of trade. Of particular relevance in this regard is Alberta's fast growing tar sands¹³ industry;
2. There are large disparities in energy mix and emission trends from province to province. In light of this and the considerable power of provincial governments under Canada's Constitution regarding management of natural resources, development of a national climate policy has proven politically difficult.
3. A large portion of Canadian households have adopted high-consumption, wasteful and car-dependent lifestyles. This is in part a consequence of patterns of urban development in which low density, detached, single-use buildings predominate.

Each of these constraints is discussed in some detail below¹⁴.

Prioritizing economic growth [Q5 and Q8]

The federal government believes that the sort of aggressive measures needed to meet Kyoto targets would exact too heavy a price in terms of jobs and economic growth. Soon after its ascent to power in 2006, the Conservative Party, led by Prime Minister Harper, published a report entitled 'Cost of Bill C-288 to Canadian Families and Businesses,' (Environment Canada 2006). The report was intended to explain the new government's opposition to more aggressive climate policies. In that report, the government set out what it believed would be the economic consequences of Kyoto implementation. Specifically, the report examines the impact of an economy-wide, relatively high carbon tax (approximately \$195/tonne of GHG), with a supporting cap and trade regulation and aggressive use of international emission trading mechanisms under the UNFCCC.

¹³ The tar sands are a layer of bitumen (or extra heavy oil)-laden sand deposits which are spread across more than 140,000 square kilometres of Alberta's northern reaches. Tar sands can be mined using surface or strip mining techniques or, if more deeply buried, using 'in situ' wells (Energy Alberta 2009). Processing plants near the mines or wells separate the sand from the bitumen and produce synthetic crude oil.

¹⁴ Geographic factors also are frequently cited to explain Canada's high GHG emissions per capita. Specifically, Canada's large geographic size and relatively dispersed centres of population are said to generate greater transportation demands. The climate, with hot summers and extremely cold winters throughout much of the country, is said to contribute to high energy demand for heating and cooling (Environment Canada 2008).

Based on its economic modeling, the government asserted that such policies would cause an economic contraction in GDP of -4.2% for 2008 and a further -2.2% in 2009. Employment would shrink by 1.4% in 2008 and by another 0.3% in 2009. In short, meeting Kyoto targets would plunge Canada into a "severe recession" according to the federal government, with a \$51 billion reduction in national economic activity and 276,000 jobs lost. Per capita income would be reduced by 2.9 per cent in 2009 alone (Environment Canada 2006).

Other analyses by independent economists have reached different conclusions regarding the costs and benefits associated with implementing various climate policies in Canada (Jaccard & Rivers 2007). Yet, one thing is clear: for the current government, Kyoto compliance is too costly economically, and thus unacceptable. Prime Minister Harper believes that national climate policy must be carefully limited so as not to interfere with economic growth, presumably along the current model. This is a very significant constraint considering the characteristics of Canada's economy and its fastest growing sectors. Indeed, it is very difficult to imagine how Canada can even curb, let alone reduce, its emissions, while continuing present economic policies.

The Canadian economy is highly and increasingly dependent on energy intensive, trade exposed (EITE) industries. EITE industries include oil and gas extraction and processing, aluminum, cement, chemicals, iron and steel, lime, gas transmission, base metal smelting, iron ore pelletizing, pulp and paper and potash companies. The EITE industries are core areas of the Canadian export economy. There is also a high degree of economic integration with the US, a country outside the Kyoto regime. More than 54% of all imports come from the U.S. and more than 80% of exports go to the U.S. (NRTEE 2009).

A significant portion of Canadian emissions and of the increase in emissions since 1990 are directly associated with extraction of resources for export¹⁵. The oil, gas and coal industry alone

¹⁵ Between 1990 and 2007, the net increase in Canada's annual greenhouse gas emissions totaled about 155 Mt. Over the same period, emissions from the energy industries (fossil fuel production and electric power) and transportation areas increased by about 143 Mt, accounting for most of the overall increase. Much of the increase in fossil fuel production is attributable to the rapid growth in crude oil and natural gas exports to the United States over the period.

accounts for 21% of the national emissions. Since 1990, emissions from this sector grew by 50%, a rate of growth far greater than that of any other sector of the economy. Emissions associated with mining and oil and gas extraction increased by 56.7% (8.4 Mt) between 2004 and 2007. From 1990 to 2006, crude oil production rose 58% while natural gas production rose 73%. Exports of these commodities also rose significantly. Canada is a trading nation, and in 2003 almost half (45%) of industrial GHG emissions arose from the production of goods and services (mostly oil and natural gas) for sale to other countries (Environment Canada 2008).

This growth has accelerated in recent years largely because of activity at the Alberta tar sands¹⁶. The economic, political and fiscal impacts of the tar sands industry in Canada and particularly in the province of Alberta are potentially enormous¹⁷. The environmental impact of tar sands development is severe. It is estimated that oil produced from tar sands is at least 2 or 3 times more GHG intensive than conventional oil. Tar sands make up about 5% of Canada's overall greenhouse gas emissions. Of the total GHG emissions in Alberta for 2007, 114.4 megatons in carbon dioxide equivalents, tar sands represented 26.5 megatons or 23.3%, with in situ well sites accounting for an additional 8.9 megatons or 7.6% of total GHG emissions in Alberta¹⁸.

¹⁶ Mining emissions have risen 17.1 Mt or 276% since 1990. While this subsector does include emissions for non-energy related mining, an increasing proportion is represented by those emissions from the activities associated with Canada's tar sands, which saw four new projects commence operations in 2007.

¹⁷ The province ranks second, only after Saudi Arabia, in terms of proven global crude oil reserves (171.8 billion barrels, or about 13% of total global oil reserves), the vast majority in the form of tar sands deposits. In 2008, Alberta exported 1.51 million barrels per day (bbl/d) of crude oil to the U.S., supplying 15% of U.S. crude oil imports, or 8% of U.S. oil demand. In the fiscal year 2008/09, the Alberta government collected \$3 billion in royalties from oil sands projects. Provincial revenue from this and other non-renewal resources represented more than 18% of the province's 2009 budget, while direct transfers from the government of Canada were only about 15%. In 2008, about 6.4 billion barrels of oil were produced in Alberta, mostly from tar sands. Production is expected to double by 2018. In part because of the oil industry, nearly half of all jobs associated with natural resource extraction and processing in Canada are found within the province of Alberta.

¹⁸ Alberta's tar sands underlie 140,200 km² (54,132 square miles) of land in the Athabasca, Cold Lake and Peace River areas in northern Alberta. As of March 31, 2009, 602 km² are disturbed by oil sands mining. It takes about two tonnes of oil sand to produce a barrel of oil. In mining operations, between 2.2 and 5 barrels of river water are withdrawn to produce each barrel of synthetic crude. In surface operations, up to half a barrel of fresh water is required to produce each barrel of bitumen.

For some policy analysts, these economic realities and the associated political structures are more apt to explain the relative lack of innovation in Canadian environmental policy than any ideological orientation¹⁹. According to Winfield (2008):

The influence of traditional resource extraction, processing, and export industries remains very strong in Canada. The "old" economy continues to be very effective at shaping the public policy agenda around itself. Indeed, it is important to consider that over the past decade, outside of places like southern Ontario, the Lower Mainland of British Columbia, and some urban areas of the Maritimes and Quebec, where there have been very distinct shifts from resource and manufacturing to service and knowledge-based economic activity, Canada's economic reliance on resource extraction and exports has actually increased substantially in the context of globalization.

Canada, more than most industrialized nations, depends on land for its economic well-being, with one in three workers employed directly or indirectly in agriculture, forestry, mining, energy generation, and other land-based activities.

The prospect of loss of export markets for emissions-intense Canadian products has greatly influenced climate policy. In fact, it can be said that Canada's climate policy has been shaped in large part by a desire not to regulate too much or too little so as to hurt exports of certain exports, particularly oil and natural gas. There is a fear that burdensome regulation would lead to the loss of competitive advantage against competitors in un-regulated markets. The abandonment by the U.S. of the Kyoto regime seemed to give credence to such fears.

Yet, at the same time, the push by trading partners (including the U.S. and some U.S. state governments) to regulate high emission fuel imports has motivated action within Canada.

¹⁹ The federal government's position on Kyoto shifted after the federal election in 2006. For the first time since 1993, the Conservative Party assumed power, forming a minority government under the leadership of Prime Minister Stephen Harper. It is fair to say that Mr. Harper is wary of climate change regulation for ideological and economic reasons. In a 2002 fundraising letter, Mr. Harper clearly expressed his distaste for the Kyoto regime, calling it "a socialist scheme to suck money out of the wealth producing nations" (Paehlke 2008). Soon after coming to power, albeit as a minority, his government scrapped much of the prior climate change plans. When the parliament proposed a private member's bill requiring federal action to implement Kyoto commitments, the government opposed it, warning of severe economic consequences for Canada should Kyoto targets be implemented. At about the same time, the government announced it would not buy international credits under the Kyoto flexibility mechanism. A new climate change action plan, rejecting Kyoto targets, was announced in 2007.

Specifically, California's proposal to disallow the importation of fossil energy whose production releases emissions above a certain level is believed to have triggered measures by the provincial government of Alberta to regulate emissions intensity for new tar sands development in 2007²⁰. Alberta's regime in turn has helped to shape the current national government's policy approach (Courchene 2008). More details are included in Part IV.

Provincial disparity and discord

Kyoto implementation also has the potential to create or exacerbate political conflicts between the provinces and the federal government²¹. Several provinces are rich in oil, carbon and natural gas resources, including British Columbia, Alberta²², Saskatchewan and Newfoundland and Labrador. Others are not. In Canada, it is the provincial government which owns much of the natural and mineral resources. Yet, both levels of government have constitutional authority to exact a tax or royalty on oil production. Further, some provinces can generate large amounts of hydro-electricity; others cannot. Consequently, GHG emissions per capita vary greatly per province²³. At one opposite extreme lies Quebec, a province lucky in having large hydro-electric

²⁰ Similarly, the U.S.'s Energy Independence and Security Act of 2007 at Section 526 precluded U.S. federal agencies from purchasing vehicle fuel derived from 'non-conventional sources' (e.g., tar sands) unless its carbon footprint is less than that of conventional petroleum.

²¹ Prior to Kyoto, the federal government had engaged in discussions with provincial governments and other domestic stakeholders at which discussions 3% had been agreed to be the maximum reasonable target. Yet, at Kyoto, Canadian negotiators agreed to twice that amount, a change which was considered by many a 'federal betrayal'. The stage was thus set for considerable political opposition to ratification. Indeed, at one point, the province of Alberta threatened to bring suit against a prior government's Kyoto implementation plan.

²² The economic implications of the tar sands are enormous for Alberta (Lucas 2007). The reserve of 175 billion barrels of proven oil equivalent place Canada in the same league as Saudi Arabia. A frenzy of development has occurred in the last few years, largely driven by US demand and the relative security of North American land based delivery. At mid decade, the projects planned were valued at more than \$100 billion. While the decreased in volatility of oil prices has dampened development somewhat, the long term prospects remain very large.

²³ National per capita emissions in 2006 were 22.09 tones of carbon dioxide equivalents. The highest emitting provinces, Alberta and Saskatchewan, emitted 73.1 and 69.3 tonnes per capita respectively (Appendix 9). That's more than six times than the lowest emitting province, Quebec, at 11.1 tones per inhabitant. Saskatchewan, Alberta and Ontario along accounted for more than two thirds of the rise in emissions since 1990. See Appendix 8. The very largest GHG emitters are also heavily concentrated in certain provinces. Appendix 10 contains a map showing the location of the country's largest GHG emitting facilities.

resources, including unexploited new sources of hydro-power. Provinces that are more likely to meet Kyoto targets, such as Quebec, are in a strong position to push policies that other provinces find too costly (Courchene 2008).

The Canadian high-energy way of life [Q8]

Another major culprit is the form of the urban environment where most Canadians live and work, which is characterised by low-density, single use zoning, large, detached, single family housing, high levels of waste, and heavy dependence on private cars for urban transportation. A more detailed analysis of urban land use practices is included in Part VII of this paper.

Conclusion [Q6, Q7]

In 2007, total domestic emissions were 747 megatons (Mt) of carbon dioxide equivalents (Environment Canada 2009). This is the highest level ever recorded in Canada, a four percent increase from the prior year, 26% above 1990 levels and 33.8% above Canada's Kyoto target of 558.4 Mt COE (Appendix 1). Since 1990, the average annual change in GHG emissions has been an *increase* of 1.5%. More detailed information regarding trends in emissions and emission intensity since 1990 can be found in Appendices 1 to 9.

Amongst Annex 1 countries, Canada ranks fifth in total annual emissions, behind only the US, the European Community, Japan and Germany and ahead of the United Kingdom, Italy, France and several other developed countries with similar or larger population size. Although Canadians make up less than 1% of the world population, Canada contributes about 2% of global GHG emissions. Canada also has one of the most GHG-intensive economies in the industrialized world. It ranked fifth in GHG emission intensity among OECD countries in 2005. Its GHG emissions per person and its emissions intensity are second highest among the G8 economies (Environment Canada 2008). More detail on Canada's standing relative to other developed countries is found in Appendices 2, 3 and 4.

Part II

Essence of climate law

Climate law can be defined as the set of rules and legal principles which operate to regulate human activity as it interacts with the climate system with three principal objectives: prevent dangerous human interference with the climate, facilitate adaptation, and provide legal redress to those injured.

Climate law can be classified as a branch of environmental law in that it is intended to protect human beings and other life from a type of environmental degradation (i.e. a de-stabilised climate system). Climate law, however, purports to reach human activities well beyond those normally associated with end-of-pipeline, polluter-pays type regulations typical of environmental laws. In practice, efforts to mitigate climate change and adapt to it generate legal activity in many different domains of public and private law.

A number of concepts and fundamental concerns recur within this broad legal landscape, revealing the contours of what may be viewed as a distinctive (if not entirely distinct) area of the law.

Below we offer some generalised observations about key themes in this emerging field of law.

1. Much of the legal action to date in Canada respecting climate change has involved the issue of the government's authority to act. Effective adaptation and mitigation requires integration of activities across several levels of government, from international bodies to local government, with interventions potentially affecting a very broad range of sectors of the economy, public policy and even private life. Legal issues would include the 'domestication' of the global climate regime and the 'localisation' of international climate norms, the competency of particular government agencies under current international law, constitutional and legislative regimes, or in a context of shared legal competence, the establishment of inter-governmental linkages to ensure the most

effective action. As is true in Canada, there may be considerable barriers to action due to overly fractured or inadequate legal authority²⁴.

2. As climate change policy may encompass many different kinds of interventions, another key concern in climate change law is the selection and design of policy instruments. Implementation of the Kyoto Protocol at the domestic level has been attempted with many different kinds of policy instruments: financial incentives, pilot projects and other voluntary programs using the spending power of the state, command and control regulation to limiting emissions or prescribe technological standards, market instruments to price carbon such as cap and trade or emission taxes, public awareness and education campaigns, seed funding for technology research and development. Each of these approaches in turn has many different variations.
3. Successful mitigation may require compromising economic growth. Unlike the effort to control CFCs with the Montreal Protocol, virtually all human activity affects the carbon cycle. Many believe that technology alone will not deliver emission reductions sufficient to avoid 'dangerous' (even catastrophic) impacts. Some form of strong demand-side control may be required (i.e. population control or evolution to 'steady-state' or 'no-growth' economy)²⁵. If so, a reconsideration of the sustainability principle, along with a new conservation ethic, may be necessary (Boyle 2008).
4. Climate justice requires an equitable apportionment of responsibility for taking action to combat climate change and associated costs. International climate change law has popularized the concept of 'common but differentiated responsibility.' On what basis should such differentiation be made? Under the Kyoto Protocol, parties were allowed to voluntarily commit to a GHG reduction target of their own choosing. Alternative approaches to apportioning responsibility include allocations based on degree of

²⁴ Legal constraints might include the constitutional division of powers between federal and provincial governments, potentially limited authority to regulate GHG emissions under existing environmental laws, lack of authority of the executive to implement treaties and lack of independent legal authority of local governments. Several of these issues are addressed in the pages that follow.

²⁵ Others believe de-coupling growth and pollution fast enough to avoid the worst climate change impacts is possible.

perceived responsibility for the problem (i.e., those who benefit most from GHG emissions should sacrifice more), potential for reduction (i.e., high per capita emitters should be able to generate greater reductions), or capacity for reduction (i.e., individuals and organizations with more resources should abate first) (Doelle 2005).

5. Climate policy must also incorporate decision making approaches suitable to *high uncertainty and rapid scientific change*. Considering the complexity of the climate system and the limits of human resources, uncertainty will remain irreducible and even unquantifiable to some extent. Thus, the precautionary principle may be often applicable. Other decision-making principles, such as 'win/win' and 'no regrets', may also be invoked by law makers and planners.
6. Climate change regimes often struggle to provide *regulatory flexibility*. This is evident for example in the design of carbon offset systems associated with emissions trading systems whether under the Kyoto mechanism or domestic regimes. The integrity and effectiveness of any regulatory control requires that credits be generated only for real, verifiable and incremental reductions. The greater the extent of coverage of the regulation, the fewer the opportunity to generate such credits. Also, as other governments regulate sectors outside the cap and trade framework, it becomes more and more difficult to disentangle associated reductions from those taking place due to the cap and trade regulation (Partington, P. J. 2009).
7. A major challenge for all professionals involved in climate change policy, including lawyers, is how to *integrate climate change within existing policy and planning structures*, especially in light of limited resources and competencies. With regard to process, a major area of concern is the legitimacy, credibility and relevance of climate knowledge and the integration of climate knowledge from traditional communities while also broadening the scope of stakeholders. As the time and geographic horizons of climate change policy extend for decades into the future, the law must consider ways to bring distant voices into the decision making process. In this regard, legal techniques such as guardianships may offer practical solutions.

Sources of climate change law

Most commentators agree that, in Canada, both federal and provincial governments have jurisdiction to legislate in the area of GHG emission control (Hogg 2009; Bankes & Lucas 2004). Climate change mitigation efforts have led to enactment of some federal and provincial legislation, including the federal *Kyoto Protocol Implementation Act*, S.C. 2007, c. 30, and *Canada Emissions Reduction Incentives Agency Act*, S.C. 2005, c. 30. Provincial legislation includes British Columbia's *Greenhouse Gas Reduction Targets Act*, S.B.C. 2007, c. 42, and Nova Scotia's *Environmental Goals and Sustainable Prosperity Act*, S.N.S. 2007, c. 7. These legislative enactments typically set out government structures, authorities and general targets for climate change mitigation efforts.

Many climate change action plans have been prepared and published by Canadian governments at all levels. These non-binding plans generally describe public policy approaches to climate change mitigation and adaptation. See, for example, Ontario's Go Green Climate Change Action Plan, the City of Toronto's Ahead of the Storm – Preparing Toronto for Climate Change.

Regulation to control GHG emissions have also been enacted or are expected to be enacted in the very near future. Alberta's *Specified Gas Emitters Regulation*, Alta. Reg. 139/2007, adopted under the *Climate Change and Emissions Management Act*, S.A. 2003, c. C-16.7, set the first regulatory limits on greenhouse gas emissions in Canada (Doelle & Mahoney 2008). As part of its *Turning the Corner* plan, the Federal government announced it would phase in a series of regulations sometime in 2010 as part of its Regulatory Framework for Industrial Greenhouse Gas Emissions, to include also programs for a domestic offset system and credit for early action.

Regional associations of sub-national governments have featured prominently in North American climate change law. WCI and RGGI are especially active in emerging carbon market regulations. Although Canada not as active at this level as US, note the recent accord by premiers of Quebec and Ontario in setting up a joint carbon market.

Climate change case law is still in its infancy, with one case reported by the federal court on the justiciability of federal legislation implementing the Kyoto Protocol. The case is discussed in the section entitled "Judicial review of climate policy" beginning at page 30 below.

Environmental principle versus economic reasoning [Q11]

It seems clear that for Canadian governments, the approach to climate policy and law is framed largely in terms of its economic cost (e.g., loss of jobs) versus potential benefits (e.g., gaining competitive advantage in emerging “green industries”). The underlying principle driving many law makers seems to be: how much GHG reductions can Canada afford without sacrificing too many jobs and trading opportunities. This is also evident by the following:

- the last federal emission regulation proposal was based on INTENSITY based reductions, thus giving a license to fast growing firms to continue their economic growth despite increasing emissions;
- choice of market based instruments rather than prescription of specific abatement requirements. The choice of cap and trade as opposed to a tax may be explainable in terms of political realities (antagonism to any explicit mention of a tax increase);
- the strong focus on supply-side technological solutions, rather than stressing deeper socio-economic and physical conditions that drive consumption. In fact, many of the energy-sector regulations like Ontario's feed in tariff are often described as job-creating, economy-boosting measures rather than environmental laws;
- the choice of flexibility mechanisms in the proposed offsets and emissions trading systems indicate a willingness to give considerable latitude to regulated firms. Thus, the payment of \$15/tonne to the technology fund to satisfy part of the requirement in the early years;
- the federal climate change action plan clearly is focused on reducing emissions through technology improvement (especially with significant funding of carbon capture and storage technologies) while protecting, indeed promoting new consumption and trade. Conservation does not appear to be a strong priority. As such, the thrust of the plan reflects economic reasoning rather than ecological ethics or environmental principles.

Political play of enterprises [Q13-Q16]

At the global scale, regional differences in climate policy are appropriate and required considering the very different socio-economic conditions, levels of risk and vulnerability. The UNFCCC's recognition of a 'common but differentiated' responsibility is ethical as well as wise policy. Canada like other Annex I countries has been a primary beneficiary of the industrial revolution, has considerable capacity and resources to reduce emissions. It must do more. A 'contract and converge' approach seems the fairest, one that allows the poorest countries to increase emission thus easing human suffering and vulnerability, while other countries (and especially the richest) reduce their emissions most.

At the same time, climate stability and the health of the biosphere depends on a stringent reduction pathway that encompasses all or most world emissions, with minimal 'carbon leakage.' A major challenge lies in crafting a set of policies that achieve global objectives, is flexible in means but stringent in outcomes. A multi-tier approach, with globally harmonized carbon pricing for the tradable sector and a set of regulations for domestic industry has been proposed by some Canadian scholars (Courchene and Allan 2008).

The free rider problems

It is said that 'export/import' neutrality in climate policy is essential for maintaining competitiveness. For Courchene and Allan (2008), there are at least two sorts of potential free rider problems as climate policy and international trade interact. The first is that firms in non-signatory countries, or non-complying countries, will have an advantage in terms of exporting to complying countries, and to international markets generally. The second is that firms in complying countries will have enhanced incentives to outsource from, or offshore to, non-complying countries, and then re-export back to their home countries, thereby avoiding the domestic environmental regime. A global, harmonized carbon tariff imposed on all international trade may be a way to remedy the problem (Courchene 2008).

Many argue that by using a production based emissions accounting, Kyoto punishes Canada as an export dependent economy (Courchene 2008). This 'carbon leakage' effect has been used to

explain why the U.S. has actually achieved higher reductions in emissions intensity than Canada. Economic growth in high emissions industries intended for export to the US are counted against Canadian producers, rather than American consumers.

The problem of multiple domestic regimes

The problem of regional disparity is evident not only internationally but also in terms of inter-provincial commerce. Due to constitutional and political circumstances, provinces are developing different GHG reduction regimes. The provinces have the authority to regulate GHG emissions by firms operating within provincial borders under the civil rights and property clauses of the Constitution (Hogg 2009; Bankes & Lucas 2004).

This presents a compliance challenge for regulated firms (Hogg 2009). Alberta has already instituted a cap and trade system for large final emitters (LFEs) and other provinces have announced plans to do the same. A similar federal regulation has been proposed. While the various systems could operate side by side the two layers of regulation would be, according to some, intolerably complicated for regulated firms (Hogg 2009). Hogg calls for the federal government to negotiate agreements with the provinces to harmonize the requirements as far as possible (2009, p. 9).

The potential for inter-provincial disputes is also high (an environmental version of the process used in Canada for fiscal stabilization across provinces). This is another reason for federal leadership on climate policy development. Only the federal government can levy tariffs on imports (should there ever be the need to implement a harmonized global carbon tariff on imports). Similarly, the provinces cannot levy import duties on goods from other provinces so they would be unable to compensate for different regional carbon prices. Of course, federal involvement in this area would add another dimension of potential interprovincial and federal/provincial conflict. Notably, Ottawa would prefer to stand by the sidelines and much of the emerging scheme is said to be intended as 'regionally-neutral.' While this may be politically necessary, it allows for carbon leakage and compromises the integrity and certainty of the regulatory framework.

A recent report by the National Roundtable on the Environment and the Economy modeled the impact of a proposed carbon pricing schemes on the competitiveness of the Canadian economy [Q15]. First, the report's authors recognize that it is highly unlikely that Canada would face a scenario in which it acted entirely independently from its trading partners. Even assuming such independent action (the 'worst case' scenario for trade interests), the net impacts to the overall economy were deemed likely to be small, with small structural changes in the economy. The economy still would grow and is forecasted to be roughly twice as large in 2050. The risk of competitive losses tends to be larger in the medium term as the carbon price increases but before international linkages harmonize prices with major trading partners. Some sectors are likely to be better off such as electricity generation, office machinery and equipment. Notably, the sectors likely to be worse off are natural gas, refined petroleum, and crude oil. However, the worsening is relative to business as usual. All sectors are forecast to be larger in 2050 than they are today, even under fast and deep carbon pricing policy. The relevant portion of the report can be accessed here: <http://nrtee-trnee.ca/eng/publications/carbon-pricing/carbon-pricing-tech/chapter8-3-carbon-pricing-tech-eng.php>.

Canada as a victim or beneficiary [Q16]

As a relative laggard in implementing Kyoto, it is hard to conceive of Canada as having suffered in any significant way to date from imbalances caused by emerging climate norms. The federal government's climate policy at least since 2006 has been clear about wishing to avoid undue harm to energy intensive trade-exposed industries. The current government official statement of policy indicates that "Canada will only adopt a cap-and-trade regime if the U.S. signals that it will do the same." Environment Canada (2010).

Part III

Legal structures essential to climate change law in Canada

Introduction

Various legal principles and practices regarding the political structures of the national government have had a profound effect on the development of climate policy in Canada²⁶. In this part of the paper, we discuss first the requirements for domestication of international treaties, to give them legal effect within Canada. Next, we analyze the workings of the national legislature, the Parliament, and the potential role of the federal courts in shaping climate law. The interplay of those legal and political structures is most clearly evident in the struggle to enact legislation to implement the Kyoto Protocol, ultimately leading to the passage of the *Kyoto Protocol Implementation Act*, S.C. 2007, c.30, as well as in the subsequent attempts to enforce that legislation against the federal government in the case of *Friends of the Earth v. Canada (Governor-in-Council)*, discussed below.

We then focus on the considerable challenge of federal-provincial relations. Under Canada's Constitution, the provincial and federal governments have jurisdiction (sometimes shared) over those subject matters commonly implicated in legislative responses to the climate crisis (i.e., management of natural resources, taxation, criminal law, the regulation of businesses) (Hogg 2009; Lucas & Bankes 2004). Inter-governmental cooperation is essential in developing a coherent national policy. A number of legal instruments may be used to enable inter-provincial and federal / provincial cooperation. Such collaboration is particularly challenging (and necessary) considering the diversity of ideologies and economic and environmental conditions in the various regions of Canada²⁷.

²⁶ Throughout this paper, we refer to the Government of Canada as the "federal", "central" or "national" government. Its legislative body is referred to as the Parliament of Canada, comprised of the House of Commons, an Upper House styled the Senate, and the British monarch (Constitution Act (1867), Section IV).

²⁷ Differences in GHG emissions and energy mix between provinces are discussed in Part I of this paper. Legal structures that constrain and drive climate change activity at the municipal level of government are discussed in Part VII of this paper.

Rules for domestication of international treaties²⁸

It is trite law that treaties signed by competent Canadian officials, even if ratified by Parliament, have no direct legal effect within Canada. To the extent legislation is needed to carry out or comply with the treaty, it must be enacted by a domestic legislature²⁹ (Bankes & Lucas 2004). That is because treaty-making and law-making are deemed distinct and separate powers and are held by different political entities under the Canadian system of government³⁰. Essentially, treaty-making power derives from the ancient 'royal prerogative' and is the domain of the sovereign, or more precisely the Governor General, the representative in Canada of the British monarch. In practice, the Governor General acts on the recommendation and advice of the Governor-General in Council (i.e., the federal cabinet of ministers, led by the Prime Minister). The law-making power, by contrast, is reserved under the Constitution to provincial legislatures or to Parliament (Constitution Act (1867), Sections IV and VI).

Further, neither the negotiation of a treaty nor its formal ratification by Parliament extends the legislative competence of the national government vis-a-vis the provinces (Bankes & Lucas 2004). Under the Constitution, the provinces may have considerable and exclusive legal jurisdiction regarding key aspects of treaty implementation. *A.G. Canada v. A.G. Ont.* [1937] A.C. 326 (P.C.) (commonly known as the *Labour Conventions* case).

²⁸ The analysis here is limited to the domestic effect of treaties. Canada potentially could be liable internationally under enforcement mechanisms and forums of international law. Other than Kyoto itself, trade and human rights treaties have been cited as potential vehicles for climate change related claims against Canada. With regard to trade laws, some commentators assert that Canada would have good defenses to claims under NAFTA and WTO rules. Failure to enact an effective climate regime to achieve Kyoto targets also may provide the basis for a claim against Canada under international human rights regimes [Q1]. The use of those mechanisms against states and the potential consequences for Canada are explored in Part V of this paper.

²⁹ The courts have developed a number of rules to harmonize international treaties and domestic enactments. In *Baker v. Canada*, Justice Claire L'Heureux-Dube writing for the majority, noted that 'the values reflected in international human rights law may help inform the contextual approach to statutory interpretation and judicial review.' *Baker v. Canada*, [1999] 2 S.C.R. 817. In such cases, treaties may be considered by the court not quo obligations but rather as evidence of principles of fundamental justice, with implications for how courts interpret existing domestic laws. Yet, the legislatures possess the power to reject Canada's treaty obligations even if executed by a competent federal official.

³⁰ This was established by *A.G. Canada v. A.G. Ont. (Labour Conventions)* [1937] A.C. 326 (P.C.). In that case, the Privy Council explicitly rejected the argument that treaty power could be read into the peace, order and good government power reserved to the federal Parliament in the Constitution (Hogg 2007).

In the case of the Kyoto Protocol, this bifurcated structure for treaty negotiation and legislative implementation appears to have contributed to the delay in the development of a federal climate policy. As mentioned in Part I, discussions were held between federal and provincial officials prior to Kyoto regarding the appropriate level of GHG reduction to which Canada should commit itself. The federal government's acceptance of a stricter emissions reduction target at Kyoto (6% below 1990 levels) was seen by some provincial leaders as a federal betrayal (Robinson 2000). After Kyoto, in a move to diffuse provincial anger, the federal government agreed to initiate a joint study process, involving the provinces and major stakeholders, to examine the consequences of implementation. This would be followed by a Parliamentary vote prior to ratification and implementation. More than four years passed before Kyoto was ratified after a vote of Parliament, in 2002³¹.

This raises a number of concerns. Should the 'royal prerogative' power of the Governor-General-in-Council be reigned in? Should some level of formal Parliamentary or even provincial assent be required prior to execution of important treaties? Would that have resulted in a more realistic, politically acceptable Kyoto commitment? Arguably, a lower target, more palatable to the legislatures would have been conducive to more timely ratification, more robust implementation and better outcomes.

³¹ The Canadian process for treaty ratification is not settled as a matter of law and remains a largely informal practice. There have been calls for reform to formalize the process and strengthen Parliament's role with some legal scholars also criticizing the Supreme Court for its reluctance to give some effect to treaty obligations even in the absence of parliamentary enactment (Provost 2008). In Canada, the last treaty to receive formal parliamentary approbation was the Auto Pact between Canada and the United States in 1966. Even at the level of informal consultation, Parliament has seen its role eroded in recent decades. Parliamentary consultation for treaty was informally sought only twice recently, for the ratification of the North American Free Trade Agreement (NAFTA) in 1987 and the Kyoto Protocol in 2002. Recently, the government has announced it will table proposed treaties in Parliament at least 21 days prior to ratification. However, the government maintains it may ratify treaties on its own authority without Parliament's input.

Unified political structures at the national level

In Canada, the Parliament is organized along the Westminster model, meaning that the political party or coalition of parties with the most seats in the House of Commons forms the government³². The government is run by a cabinet of ministers (led by the Prime Minister) who are also Members of Parliament (MPs). In short, a single party or coalition of parties controls both the legislative and executive / administrative functions of government.

This unified structure of political power may have helped to constrain action on climate change since the federal election of 2006. It was then that the Conservative Party of Canada gained a plurality, but not a majority, of the seats of the House of Commons. A new government was formed in January of 2006, led by Prime Minister Harper. As discussed in Part I, the Conservative minority oppose aggressive climate change measures which they believe are too costly. The other parties, while highly critical of the government's climate plans, and together representing a majority of Canadians, are nevertheless relegated to opposition status. They have very limited ability to influence the legislative agenda and have no direct control of ministerial dossiers.

At present, the Conservatives have only 46% of the 308 seats in the House of Commons and are thus a 'minority' government. This restricts to some extent their ability to pass legislation. A minority government must take care that its legislative proposals can secure the support of MPs from other parties in sufficient numbers to avoid losing any important parliamentary vote and thus the confidence of the House. A loss would require the appointment of a new government, most likely preceded by an election. The minority status of the present government has not improved the prospect for aggressive Kyoto implementation. On the contrary, it has been a recipe for legislative inaction, as was clearly evident in the struggles during 2006 and 2007 to enact a domestic law implementing Canada's Kyoto obligations.

³² The appointed, upper chamber of parliament, the Senate, is a weak institution, with little ability to influence legislation.

Parliament struggles to enact a Kyoto Protocol law

In October 2006, not long after its ascent to power, the Conservative government proposed a new "Clean Air Act" (Bill C-30³³) which was said to represent a 'made in Canada' approach to reducing GHG emissions. Among other things, the bill would have amended the *Canadian Environmental Protection Act 1999* (CEPA), S.C. 1999, c. 33. CEPA, which was first enacted in 1988, permits the federal government to demand pollution prevention measures and to regulate the emission of various substances, including those that are "toxic" (listed under Schedule A of CEPA) and those deemed to contribute to "international air or water pollution" (Doelle 2006). This latter provision has made CEPA a key implementation mechanism for many international obligations³⁴ (Doelle 2006). However, as of 2006, no regulation respecting GHGs had been promulgated under its authority.

The government's bill generated immediate and intense opposition for several reasons. First, the opposition argued that no amendment to CEPA was necessary at all. The prior Liberal government had classified GHGs as toxic substances already, something which arguably triggered all authority necessary for implementation of Kyoto under CEPA³⁵. The language of Bill C-30 removed GHGs from the list of toxic substances and recast GHGs as a separate concern which would be grouped with air pollution controls under a new section of a revised CEPA. This potentially would have reopened debate regarding the constitutionality of any resulting GHG regulation³⁶. Opponents of the bill also worried that it would reopen scientific debate regarding

³³ The bill, which received its first reading on the 19th of October, 2006, was officially entitled "An Act to amend the Canadian Environmental Protection Act, 1999, the Energy Efficiency Act and the Motor Vehicle Fuel Consumption Standards Act."

³⁴ For example, international agreements on control of ozone depleting substances have been implemented through CEPA regulation.

³⁵ Part 11 of CEPA permits establishment of tradable units system, including testing and monitoring, description and the nature of the tradable units, including baselines and maximum limits, conditions for participation in the system, conditions for creation, sale and cancellation of tradable units, reporting requirements, etc. (Lucas 2007).

³⁶ The Supreme Court has upheld CEPA as a proper exercise of federal power in at least three decisions (Doelle 2006). In the case of *R. v. Crown Zellerbach*, [1988] 1 S.C.R. 401, the policy regarding ocean dumping was approved as an area of federal power under the peace, order and good government (POGG) provision of the

the nature of GHGs and whether they could be defined a pollutants threatening public health under the CEPA framework (Demarco 2006). Finally, and perhaps most significantly, the bill ignored Kyoto targets entirely. In fact, it did not even mention the Kyoto Protocol.

Two days after Bill C-30 was tabled, the government published a *Notice of intent to develop and implement regulations and other measures to reduce air emissions*. The Notice set out the government's intention to develop and implement a number of regulations under CEPA 1999 and to address air pollutants and greenhouse gases using the amendments put forward in Bill C-30. It became clear that the new government's plan envisioned intensity-based caps and GHG emission reduction targets much weaker than Kyoto's.

The opposition parties uniformly condemned Bill C-30 as inadequate to realise Kyoto targets and were able to force its removal to a special committee where significant revisions were made (May 2007)³⁷. Once revised, the government withdrew its support of the bill, and allowed the bill to languish. It never reached a second reading in the House. Ultimately, Bill C-30 expired ('died on the order paper' in Canadian parlance) when that session of Parliament ended and an election was held in October of 2008. The election did not change the composition of Parliament dramatically, and the Conservatives returned to power but still as a minority government. After the election, the Conservatives gave up trying to pass their own bill and instead proceeded with their regulatory approach under the existing CEPA law, which they now agreed needed no amendment³⁸.

Constitution. In *Friends of the Oldman River Society v. Canada (Minister of Transport)*, [1992] 1 S.C.R. 3, the Court confirmed federal jurisdiction to conduct environmental assessments under CEPA for projects requiring federal approval. Finally, in *R. v. Hydro-Quebec*, [1997] 3 S.C.R. 213, the Court approved the process under CEPA for identifying toxic substances and controlling their use through regulation and other measures. GHG regulation as a toxic substance is arguably the most constitutionally sound approach.

³⁷ Among other things, the committee added provisions mandating the establishment of carbon budgets for various economic sectors and facilities, consistent with overall reductions equivalent to those in the Kyoto Protocol.

³⁸ The federal regulation of large final emitters, including a cap and trade and offsets system is described in Part IV of this paper.

Meanwhile in 2007, the opposition parties succeeded in passing a Kyoto law of their own. However, under Canada's parliamentary practice, their ability to pass meaningful legislation is quite limited. Any bill not supported by the government, or involving the expenditure of funds, is or may be made the subject of a 'confidence vote.' Success by the opposition in such a vote could precipitate the fall of the government. Opposition parties typically avoid this drastic option unless they are confident they can defeat the current government in a new election³⁹.

Working under such constraints, in May of 2006, the Liberal Party introduced Bill C-288 as a private member's bill⁴⁰. It did not mandate any specific spending measures. It did not prescribe any specific mitigation measures, carbon tax, cap and trade or other. Instead, it simply required the government to develop a climate action plan which would 'ensure Canada meets its global climate change obligations under the Kyoto Protocol.' The specifics of the plan were left to the discretion of the government. With the support of other opposition parties, the Liberals succeeded in passing the bill through Parliament, avoiding any confidence motion. On June 22, 2007, Bill C-288 received royal assent and became law, as the *Kyoto Protocol Implementation Act (KPIA)*, S.C. 2007, c.30.

The central provision of KPIA, Section 5, provides in part:

(1) Within 60 days after this Act comes into force and ... every year thereafter until 2013, the Minister [of the Environment] shall prepare a Climate Change Plan that includes

(a) a description of the measures to be taken to ensure that Canada meets its obligations under Article 3, paragraph 1, of the Kyoto Protocol, including measures respecting

(i) regulated emission limits and performance standards,

³⁹ In recent years, the parties of the centre-left with Parliamentary representation (i.e., the Bloc Quebecois, the New Democratic Party and the Liberal Party of Canada) have found it difficult to form coalitions. This is complicated by the fact that the Bloc Quebecois, a regional party with support only in the province of Quebec, is committed to separation from Canada. It holds a considerable number of House seats (15% currently). Accordingly any coalition seeking to displace the current Conservative minority faces significant political hurdles. Notably, the Green Party of Canada secured nearly 7% of the popular vote in the election of 2008 (compared to 10% for the Bloc) but as its support is geographically dispersed, it did not win any seats in Parliament under the 'first past the post' electoral system.

⁴⁰ Private member's bills are those introduced by MPs who are not members of the cabinet of ministers.

- (ii) market-based mechanisms such as emissions trading or offsets,
 - (iii) spending or fiscal measures or incentives,
 - (iv) a just transition for workers affected by greenhouse gas emission reductions, and
 - (v) cooperative measures or agreements with provinces, territories or other governments.
- (b) for each measure referred to in paragraph (a),
- ...
- (ii) the amount of greenhouse gas emission reductions that have resulted or are expected to result for each year up to and including 2012, compared to the levels in the most recently available emission inventory for Canada;
- (c) the projected greenhouse gas emission level in Canada for each year from 2008 to 2012, ... and a comparison of those levels with Canada's obligations under Article 3, paragraph 1, of the Kyoto Protocol;
- (d) an equitable distribution of greenhouse gas emission reduction levels among the sectors of the economy ...; [and]
-
- (f) a statement indicating whether each measure proposed in the Climate Change Plan for the previous calendar year has been implemented by the date projected in the Plan and, if not, an explanation of the reason why the measure was not implemented and how that failure has been or will be redressed.

KPIA also requires that the government obtain assessments of the adequacy of its climate plan and the likelihood of it meeting Kyoto targets from the National Roundtable on the Environment and the Economy (NRTEE), an entity established by the government after Rio to study and offer advice to the government on environmental matters, and by the Commissioner of the Environment and Sustainable Development, KPIA, Sections 10 and 10.1.

In response to the new law, the government took steps to comply with its *procedural* requirements. However, the government has refused KPIA's mandate to ensure Kyoto compliance. Indeed, prior to enactment of KPIA, the government produced an analysis of the costs of Bill C-288 which warned Canadians of the severe economic, income and job losses

which, in the government's view, would result if Kyoto targets were followed⁴¹. The climate plan which the government produced rejects the Kyoto targets and is clearly neither intended nor capable of meeting them.

Opposition parties and climate protection advocates argue the government has violated KPIA. The government replies that the KPIA gives it flexibility to choose those policies which it views as the most reasonable and appropriate for Canada, considering economic conditions as well as the terms of Kyoto. Thus, the stage was set for the battle over Kyoto implementation to shift to the courts.

Judicial review of climate policy

The Canadian court system is unified under a Supreme Court of Canada, which has jurisdiction to hear any and all kinds of cases and whose pronouncements are binding on all court hierarchies (e.g., trial and appeal courts in each province)⁴² (see Appendix 15). Further, Canadian courts have considerable authority to review and set aside legislation, to strike down regulations and other administrative action and to declare the action of a government official contrary to law and therefore invalid. This power of judicial review has been vigorously exercised in recent years, in part as a result of the enactment of the Canadian Charter of Rights and Freedoms, Constitution Act (1982), Part I.

However, Canadian courts generally will not involve themselves in the review of the actions or decisions of the executive or legislative branches which are deemed to be 'non-justiciable.' The principle of justiciability may be invoked in two different circumstances: where the subject matter of the dispute is inappropriate for judicial involvement (e.g., it is an inherently political question and court involvement would not be legitimate) or where the court lacks the capacity to properly resolve it (e.g., the court cannot find those facts which are key to deciding the matter). Thus, the principle of 'justiciability' preserves the boundary between questions of

⁴¹ The content of the government's report, entitled "Cost of Bill C-288 to Canadian Families and Businesses," is described in further detail in Part I of this paper.

⁴² According to Hogg (2007), the Supreme Court is "the final authority on the interpretation of the entire body of Canadian law, whatever its source" and unites the ten provincial court hierarchies into what is essentially a single, national system (Hogg 2007, 247).

policy and law. In deciding whether a matter is justiciable, the courts look to the intent of parliament (or other law maker) as expressed in the law itself. While this is nominally a straightforward matter of legislative interpretation, undoubtedly the political context and nature of the issue weighs heavily.

In *Friends of the Earth v. Governor in Council and the Minister of the Environment*, (2008) 299 D.L.R. (4th) 583 (Fed. Ct., Trial Div.), *aff'd* (2009) 93 Admin. L.R. (4th) 72 (Fed. C.A.), *leave to appeal dismissed* 2010 CanLII 14720 (S.C.C.), a number of environmental groups filed suit against the federal executive in federal court for failure to produce a climate plan consistent with Kyoto targets, arguably in violation of KPIA. The court found that the matter was not justiciable and dismissed the petition. In reaching his decision, the judge noted the following:

- Rather than being a simple statement requiring compliance with Kyoto, the KPIA contains as well several 'policy-laden considerations' such as the requirement for a 'just transition' of workers affected by GHG emission reductions and the 'equitable distribution' of the obligation to reduce emissions. In the courts view, these are not matters appropriate for judicial review as they are 'no objective legal criteria which can be applied and no facts to be determined' to measure whether compliance had been achieved;
- Further, the court viewed the KPIA law as contemplating a climate change plan which is to be reviewed and revised 'within a continuously evolving scientific and political environment', including review by entities outside the control of the federal government and rounds of public consultation;
- The KPIA itself anticipates that the government may fail to achieve Kyoto reduction targets and requires an explanation in such an event;
- Any attempt to dictate the substance of regulation would be a usurpation of executive prerogative and simply requiring some regulation of any sort, however insignificant, had 'little appeal' for the court.

Notably, the Court in its decision repeatedly indicates that Parliament could have made the matter justiciable with a simple and clear statement to that effect. However, considering the court's analysis, it is difficult to conceive how Parliament could have produced a more definite, and thus justiciable, mandate without forcing a confidence vote and potentially triggering a fall

of the government and an election for which the opposition parties were ill-prepared. For instance, KPIA may have mandated a particular national carbon budget scheme (using Kyoto reduction targets), similar to that proposed in Bill C-30 as revised by the opposition. Such a bill likely would have suffered a similar fate. Alternatively, KPIA may have required the government to establish worker retraining programs in certain sectors most affected by a carbon tax.

The court also indicates that even if the matter could be said to be justiciable, as a matter of discretion, it would decline to produce a mandatory order against the government dictating any meaningful content regarding the climate change action plan.

This decision was appealed to the Federal Court of Appeal and a hearing was held on the 15th of October, 2009. The appellate court dismissed the appeal from the bench, indicating its agreement with the decision and opinion of the lower court judge. The Supreme Court of Canada has dismissed an application for leave to appeal.

Shared competence of federal and provincial governments [Q21-23]

The Canadian Constitution grants legislative authority to both the federal Parliament and the provincial legislatures (subject to territorial limitations and sovereign immunities), *Constitution Act* (1867), Parts IV and VI. Specifically, Sections 91 and 92 of the *Constitution Act* (1867) identify various classes of subjects (or heads of power) assigned *exclusively* to each level of government. This division of powers must be respected even in the case of laws implementing international treaty obligations⁴³. If a proposed law fits within at least one class from either list, then the two levels of government share jurisdiction.

This strict division of powers is in part a reflection of the age of these constitutional provisions, which date from 1867, and the political and economic conditions of the time. Generally, the 'fathers of Confederation' sought to create a strong central government and appeared to do so by granting the residual legislative powers to Parliament. The preamble to Section 91 of the

⁴³ The Privy Council in the *Labour Conventions* case [1937] A.C. 326 (P.C.) held that it was *ultra vires* the federal parliament to implement an international treaty through domestic legislation clearly falling within a head of power enumerated to the provinces under the Constitution.

Constitution Act (1867) authorizes the Parliament to enact laws for the 'peace, order and good government' (or POGG). However, over the decades the courts have limited the POGG power considerably. It applies today to very narrow classes of subject including jurisdiction over ocean dumping, nuclear power generation among a few others.

By contrast, many of the matters reserved to the provinces under Section 92 of the Constitution (e.g., the regulation of business, local works, property rights and the management of natural resources) which in 1867 could reasonably be seen as 'merely local', have a much wider impact. This is in part the result of the significant expansion of economic activity since 1868 and its integration across scales. Today, environmental degradation is often a multi-scalar problem and in particular climate change seems the quintessential global issue with a local dimension. Indeed, one may say that anthropogenic climate change makes a mockery of the notion of a 'merely local' act.

Yet, the constitutional strictures remain and must be observed under the law. As Banks & Lucas (2004) have asserted, 'because of this division of powers, [federal] legislation must be carefully designed and drafted to support a characterisation that will most likely lead to the conclusion that it comes within an enumerated head of federal jurisdiction or the POGG power.' Governments jealously guard their jurisdictional turf, especially regarding matters which potentially affect key economic, fiscal and proprietary interests. Any action on climate change by either the federal or a provincial government, if not carefully limited, could be challenged in court as *ultra vires*, an unconstitutional intrusion on another government's jurisdiction.

This has profound implications for climate change policy and environmental law generally. It explains why CEPA is framed as a criminal law. Jurisdiction over criminal law is reserved to the federal government under the Constitution, Constitution Act (1867), Section 91(27). It also explains why the government relies on CEPA for its proposed climate plan rather than KPIA.

The Supreme Court of Canada has interpreted the scope of criminal law liberally and specifically approved CEPA's scheme for regulating toxic substances as a proper exercise of federal power. According to the court, the criminal law head of power under Section 91(27) of the Constitution

Act (1867) can encompass a wide variety of laws so long as they include three elements: (1) a prohibition, (2) a penalty and (3) a typically criminal purpose. *R. v. Hydro-Quebec*, [1997] 3 S.C.R. 213. The law or regulation may include an elaborate administrative process atypical in criminal law and flexible enforcement mechanisms. Thus, the federal government was well advised to proceed with its cap and trade regulation under CEPA. Had the federal government relied on KPIA it would raise the question of whether the federal government is merely attempting to implement a treaty, a class of subjects not mentioned in Section 91 (Hogg 2009).

Yet, the need to fit within a criminal legal scheme may constrain the scope and content of federal climate policy. Certain climate measures seem difficult to characterise as typical of criminal law. For instance, only a fraction of GHG emitters may be covered by a cap and trade regime or carbon tax. Alternative compliance mechanisms such as payments to a technology fund may provide a windfall to the most 'culpable' firms. Some may question whether the underlying obligation is truly penal in nature, as opposed to simply being a business regulation, which may be *ultra vires* the federal government. Note that the Court's decision in *Hydro-Quebec* was supported by only five of nine judges of the Supreme Court. Thus, a change in the composition of the Court or a more expansive climate change regulation could sway the court to reverse, limit or distinguish its opinion in *Hydro-Quebec*.

Similarly, any federal carbon tax that may be enacted in the future would need to be careful not to infringe on provincial ownership of natural resources and land. Any federal scheme to create or regulate property rights may also be constitutionally suspect.

Provincial control of natural resources and mechanisms for inter-governmental collaboration

Some commentators have considered whether provinces may have a stronger jurisdictional standing under the Constitution with regard to climate policy. This is in part due to their ownership of most natural resources. Under the Constitution and traditional land grant practices, provincial governments own and control the vast majority of natural resources in Canada. The Constitution assigns the responsibility for granting land rights to the provincial governments (Pearse 1988). Notably, since the early days of the nation, most of the

assignments of natural resources have been in the form of leases, licenses and permits (usufructory rights), rather than outright grant of ownership (freehold rights). As a result, the provincial governments today own the vast majority of Canada's natural resources, subject only to any agreement with the private sector for exploitation of the resources⁴⁴. As noted in Part I, royalties from extraction of oil and natural gas represent a large and growing part of some provincial budgets, especially in Alberta⁴⁵.

Of course, provinces also face important constitutional limitations. Their climate policies must be careful not to exceed their territorial jurisdiction. An attempt to interfere beyond their borders could lead to striking down of the regulation⁴⁶.

In many ways, this constitutional straight jacket seems inimical to the very essence of policy making for climate change mitigation. While action at the local level is clearly an important component of any effective response, national and global coordination is essential as well. The problem cannot reasonably be interpreted as a merely local or provincial matter. Its characterisation as a criminal matter also may be inappropriate and limiting, at least within a Canadian domestic context. The legal and political dominance of the provinces and a relatively weak central government in regard to natural resources and land use tends toward a 'race to the bottom' or 'lowest common denominator' approach to policy making. Only those measures that do not offend any provincial interest have good prospect for enactment. The federal government, conscious of the legal and political power of the provinces is likely to follow 'prevailing winds' when establishing national guidelines rather than demanding more robust climate protection measures.

⁴⁴ There exists a broad spectrum of property rights under such agreements, ranging in duration, comprehensiveness, exclusivity and transferability (Pearse 1988). The resources become the property of the licensee only when they are recovered from the land and (usually) paid for (Pearse 1988).

⁴⁵ Earlier conflicts regarding energy policy demonstrate how provinces are able to use their jurisdictional dominance in this area to good political effect. See Part IV of this paper.

⁴⁶ They do have limited authority to establish inter-jurisdictional cooperation mechanism reasonably necessary to address local problems, so long as they can be characterized as incidental extra-provincial aspects of a provincial law. *Global Securities*.

Resolving inter-governmental conflicts

Another consequence of shared competence is the potential for duplicative and conflicting policies. This may be likely considering the patchwork of disparate climate regimes emerging at the federal, provincial and municipal levels (see Part IV of this paper). Several legal doctrines and tools may be used to resolve those conflicts. Under the doctrine of federal paramountcy, if a provincial law or regulation conflicts with a federal law, the provincial law must yield. The provincial law is said to be rendered inoperative to the extent it conflicts (Hogg 2007). However, the courts have held that a conflict exists only when the laws expressly contradict one another (compliance with both is operationally impossible) or when the presence of the provincial law would frustrate a federal purpose (Hogg 2009). This has only rarely been the case.

A related but distinct doctrine is the doctrine of intergovernmental immunity. It holds that the law or regulation of a government, whether federal or provincial, may not interfere with a vital or essential part of a matter outside that government's jurisdiction. In *GTAA v. Mississauga* (2000) 50 O.R. (3d) 641 (Ont. C.A.), the Ontario Court of Appeal found that a local municipality could not exact development charges under the building code at Toronto's airport as that land was subject to the federal jurisdiction.

In practice, conflict is generally avoided through agreements between governments. There are several different legal mechanisms used in Canada to harmonize federal and provincial policies. They include:

- Interjurisdictional agreement delegating administrative oversight to another level of government (Section 9 of CEPA allows this and it has been used for example regarding oversight of fisheries which some provinces oversee. Note the delegation must be limited to administrative functions. Legislative functions may not be delegated as it would contradict Constitutional mandates);
- Federal – provincial memoranda of understandings have been used to set out broad agreement on policy objectives and methods. One example is the 1998 Accord on Environmental Harmonization. However, these instruments are generally too vague to have legal force;

- Equivalency agreements may be negotiated⁴⁷. Under this type of agreement, the federal and provincial ministers determine jointly that the province has in place a regulatory regime which is equivalent to the federal policy and thus compliance with the provincial scheme satisfies federal requirements. One area of controversy is the standard to determine equivalency, with environmental advocates arguing that equivalency of results not merely procedure should be the criteria.
- Incorporation by reference of one jurisdiction's laws into another;
- 'Mirror' legislation in multiple jurisdictions have been used to establish joint regulatory bodies. One example are the enabling acts establishing offshore petroleum boards in the Maritimes region.

Anyone or more of these mechanisms may be useful in establishing a comprehensive national climate regime. Of course, political barriers would have to be overcome and agreement would be needed regarding the scope of CEPA authority, the essential elements of a GHG reduction regime and the contents and process for the equivalency agreements for provincial exemption. The federal government as well as the relevant provincial assemblies would of course have to approve the substance of the policy.

Conclusion

While it is difficult to generalize regarding these various legal and political structures, one fruitful inquiry may be to contrast legal structures that enable strong, independent action by a central political force as opposed to those that promote decentralization of power. Does the nature of the climate change challenge (widespread responsibility, vulnerability far into the future) call for a strong independent leader who may stand up to considerable political opposition, or should climate advocates favour decentralized power structures that may allow differentiated and at times more aggressive action within a narrower range of sectors or sub-national jurisdictions?

⁴⁷ CEPA is deemed a good basis for cap and trade regulation in part because it explicitly provides a mechanism for negotiation of 'equivalency agreements' with provinces. Where provincial laws are equivalent in terms of effect and include a mechanism for citizen petitions for investigation of alleged non-compliance, the federal and provincial ministers can enter into an equivalency agreement which is the basis for an order by the federal Cabinet that effectively withdraws operation of the equivalent CEPA regulations in the province or provinces (Lucas 2007).

It may be argued that Canada's legal structure and recent history have featured the worst of both conceptions. The strong and independent power of the Prime Minister in treaty making was very evident at Kyoto. He was able to commit Canada to do more than may have been politically feasible in the short or even medium term.

The structure of Kyoto itself may have exacerbated the potential for domestic conflict. It is a target-focused agreement which imposes an obligation of result while admitting a broad range of options for their fulfillment (Bankes & Lucas 2004). This effectively shifted the difficult burden of policy design and implementation downward within the structures of political power, to the federal and provincial legislatures and ultimately, within provinces, to the municipal governments. Unlike the royal prerogative power for treaty making, the legislative power is fractured in Canada. Thus, these became the conduit for deep regional divisions, ambivalence and conflicting values. The resulting political impasse persists to this day.

Some commentators have contrasted the US and Canada in this regard, noting that the rejection of the Kyoto Protocol by the Bush administration may have served to energize sub-national governments in the US toward more aggressive climate policies. Yet, Canada, which relative to the US has more powerful provincial governments, saw until recently less forceful sub-national action on climate (Rabe 2009).

Considering the above legal structures governing political power in Canada, a number of key questions can be raised. Did the Prime Minister's acceptance of a stringent Kyoto target energize anti-Kyoto forces and lull Kyoto advocates? Does Canada's Westminster-style parliamentary structure and practice serve to stifle policy development by consolidating federal political power in the federal cabinet? Do Parliamentary rules regarding 'spending bills' and the high political barriers to coalition governments create an anti-democratic effect constraining climate policy? (An interesting parallel may be the role of the U.S. Senate, where a few anti-Kyoto legislators may be able to hold back a progressive agenda).

This convoluted legislative history suggests that the content of Canada's climate change policies may depend as much on the interplay of some very particular domestic structures of political

power as on environmental principle. Has Canada's federal climate regulation been shoe horned under a law (CEPA 1999) for political reasons, sacrificing its efficacy? The legislative impasse also exposes anti-democratic effects of Parliamentary rules that favour minority party control⁴⁸.

⁴⁸ A leading Green Party politician has noted that sixty-four percent of Canadians voting in the 2006 federal election chose parties that supported the implementation of Kyoto reduction targets (May 2007). Yet it was the Conservative minority which formed the government, setting a new climate policy which repudiated Kyoto.

Part IV

Instruments of energy and climate policies in Canada

Introduction

Public policies related to the extraction and processing of fossil fuels, the development of renewable energy and the production of electricity can be some of the most effective tools for climate change mitigation. This is especially true in Canada, a country that is very rich in fossil fuels and alternative sources of energy and a net exporter of energy products (Paehlke 2008). A wide range of policy tools are available to governments, including restrictions of various kinds on the production, distribution and transmission of energy, incentives and other controls on the demand for energy, rules for internal trade or export, price controls and fiscal measures.

In the recent past, Canada's federal government has yielded to provincial governments in key aspects of energy policy. This is due in part to the strong position of provinces within the jurisdictional framework in the Constitution and political factors. Federal policy regarding the fossil fuel industry is the subject of politically-sensitive negotiations with provincial governments pursuant to federal / provincial energy accords in place since the mid 1980s. It is evident that climate policy takes a backseat to energy policy. In fact, the prospect of carbon pricing regulation under Kyoto prompted Federal officials to assure provincial leaders that any federal carbon price would not exceed a certain amount.

Today, with the exception of nuclear energy, the federal role in energy policy seems fairly limited, focusing regulatory elements on health and safety issues and joint oversight with provincial government of certain facilities (e.g. offshore drilling platforms). The primary orientations of federal policy seem to be promoting private markets, increasing exploitation of Canadian energy resources and preserving jurisdictional harmony with provincial governments.

Provincial governments seem focused in large part on enlarging production of whatever source of energy is commercially viable in order to maximize job creation and provincial revenues and to protect and expand energy supplies. Royalties and profits from energy generation activities are key sources of income for several provinces. Where the type of energy is climate-friendly (e.g., in Quebec with its extensive hydro electricity capacity, some still untapped), this exploitation of natural resources, including new large scale projects, is lauded as virtuous climate policy. By contrast, oil rich provinces such as Alberta, just as determined to exploit their own resources, are the bane of climate advocates. Unquestionably, the environmental harm caused by tar sand mines is of a more serious, and global, scale compared to a large hydro project. And, as discussed in Part I of this paper, the activities in Alberta and other oil rich provinces have had a direct, strong and negative impact in GHG emission profile since Kyoto. Yet, it may be argued that it is the type of natural resources available and economic prospects, rather than any ecological or conservation ethic, which is the true driver of policy. In that sense, one may question whether there is indeed a climate policy regime rather than merely a recasting of standard natural resource and energy practices in the most climate-friendly terms possible.

With regard to laws and policies directly related to climate change, there is not a single regime in Canada. Rather, what is emerging is a patchwork of discrete measures and policy initiatives in different jurisdictions and levels of government, with considerable disparity not only in instrument choice and design but also in policy orientation (Boyle 2008). Several aspects of this policy patchwork are of particular interest to lawyers.

- Many governments seem reluctant to employ their regulatory power, preferring instead to use the spending power or proprietary and service functions (e.g., public building projects, incentives to increase home energy efficiency). In Ottawa, the Liberal Party governments in power from 1993 until 2006 favoured emission reductions based on voluntary, 'negotiated' agreements with industry. Regulatory regimes, generally using 'market-based' tools (e.g. cap and trade), have only very recently been implemented or proposed at the federal level and in some provinces.

- Many Canadian governments, including the federal government, seem to view climate change primarily as an 'end-of-pipe', pollution control problem to be addressed primarily through new technologies and supply-side fixes using a mix of 'polluter pays' and market-based approaches. More innovative environmental policies such as ecological fiscal reform or demand management and conservation measures are much less prevalent in Canada. Generally, recent environmental policy in Canada has been characterized as lacking innovation (Winfield 2008);
- Development and implementation of new carbon capture technologies, such as injection into aquifers and other subterranean strata, is already a potential liability of concern to corporate counsel (Lucas 2004). Similarly, new or more intensive practices in electricity generation and distribution (for example new wind farms) may give rise to claims in nuisance and other causes of action;
- There is a strong anti-international current in Ottawa's climate policy orientation. Thus, the federal government has announced it will not buy out-of-country credits under the Kyoto mechanisms. The national offsets system proposed is intended to credit only domestic projects. Regulated firms may use Kyoto credits only for 10% of their targets. Foreign influences on provincial policies are primarily continental rather than international;
- Collaboration between sub-national governments within Canada and across the continent has accelerated significantly in the last few years. Several associations of governments have been established, which have begun to negotiate their own accords on reduction targets and to design cap and trade and offsets systems. The composition of these networks seems to strongly reflect political, economic and cultural affinities of members, shared trading and investment interests, common ideological values, economic prospects and pre-existing institutional linkages (Boyle 2008)⁴⁹.

Below, we outline the general structure of energy policy in Canada, highlighting the roles of the provinces. We then describe the national policy framework for promoting renewable energy generation. In this regard, on-going policy reforms in Ontario under its *Green Energy Act* are especially noteworthy. Next, the paper focuses on climate policies, describing the federal cap and trade system originally proposed for implementation sometime in 2010. We contrast some

⁴⁹ For example, Alberta's program is similar to the federal government's proposed framework, focuses on carbon capture and storage technology and is permissive of exploding oil production. British Columbia's policy is strongly associated with the Western Climate Initiative, which may permit liberal use of forest management practices. The Midwest climate initiative, of which Manitoba is a member, highlights bio-fuel capability and potential carbon storage sites in the region. Quebec pursues development of large scale hydro-electricity while Ontario focuses on developing 'green industries' in the province to shore up a threatened manufacturing base.

key element of the federal system with the existing cap and trade system in Alberta and the systems under development or contemplated in other provinces⁵⁰.

Canada's energy policy

In matters related to the production and use of fossil fuels, renewable energy and electricity, jurisdictional competence is shared between the federal and provincial governments. The provinces control the vast majority of crown lands (i.e., public land) within their borders⁵¹. Thus, they have ample power to issue licenses, leases and permits for extraction of natural resources on crown land and collect taxes and royalties thereon. The provinces also can regulate business activity within their borders (Constitution Act (1867), Section 92(13)). For its part, the federal government can tax fossil fuels once extracted and transferred to private entities. As we have seen, the national government also may regulate toxic substances and pollutants under CEPA and may also regulate certain key energy infrastructure such as inter-provincial electricity transmission lines and oil and gas pipelines.

Two main principles are said to animate federal energy policy today: a 'respect for jurisdictional authority and the role of the provinces' and a belief that 'markets are the most efficient means of determining supply, demand, prices and trade' in energy products (NRCan 2009)⁵². With regard to oil and gas pricing and taxation, the federal government adheres to agreements it has negotiated with the energy rich provinces in the West and in Atlantic Canada. Under these accords, the federal and provincial tax and royalty schemes are coordinated.

⁵⁰ There are myriad other laws and practices of government at all levels in Canada which, although not explicitly characterized as 'climate laws,' can be used to reduce GHG emissions. In Part VII of this paper we discuss laws and policies in the realm of land use and planning which although not considered (or intended to be) climate laws could reduce the transportation demand and energy use in buildings and cut GHG emissions considerably.

⁵¹ Most land outside urban areas in Canada is held by the crown. In the provinces (as distinct from the northern territories) only about 4% of that land is federally controlled largely in the form of national parks, armed forces bases or Indian land. The rest is controlled by the provincial government.

⁵² Another important area of federal/ provincial agreement relates to the establishment of joint commissions to regulate offshore oil exploration and recovery activities in the provinces of Nova Scotia and Newfoundland.

This state of affairs is the result of a de-regulation of the energy industry which began in the mid 1980s in response to a marked drop in world oil prices and a strong political backlash against the previous federal energy policy. In 1980, under the leadership of Liberal Prime Minister Trudeau, the federal government had implemented a *National Energy Plan* (NEP) which included strong pricing controls and new federal fuel taxes. The objectives of the plan were to ensure stable supplies and low fuel prices throughout Canada, more equal sharing of oil profits across the various regions and a larger federal take of oil profits at the expense of industry and provincial governments.

The NEP was fiercely opposed by Western, oil rich provinces, which viewed it as an unfair attempt to favour the Eastern provinces at their expense. The plan was abolished by the next, Conservative, Prime Minister, Brian Mulroney, whose government negotiated the so-called '*Western Accord*' (1985) with British Columbia, Alberta and Saskatchewan. With that agreement, the governments agreed to harmonise oil and gas tax policies with a view to promoting economic growth and trade and respecting provincial dominance and control in this area⁵³.

By 1996, a new Liberal Prime Minister, Jean Chrétien, stood side-by-side with Alberta's Premier to announce generous federal tax subsidies for new tar sands projects. At the same time, Alberta agreed to reduce royalty rates it charged oil field developers (Paehlke 2008). Such market-friendly federal and provincial subsidies led to a new wave of investment into tar sands exploration and production followed inevitably and predictably by significant increases in GHG emissions.

In 1997, only a year after the announcement, the UNFCCC signatories met at Kyoto. As part of the negotiation with the provinces during the lead up to Kyoto ratification, the federal

⁵³ Other political and economic conditions at the time weakened considerably the federal government's position. Winfield (2008) refers to the 1990s as the 'lost decade' for the Canadian environmental movement, when a perfect storm conspired to weaken environmental policy. A federalism crisis, particularly after the 1995 Quebec secession referendum led to a federal retreat from leadership on environmental matters and appeasement of Alberta and Albertan oil industry interests. At the same time, a fiscal crisis at both federal and provincial governments led to 30 to 60% budget cuts in environmental and natural resources agencies. Finally, the election of provincial premiers in Ontario (Harris), British Columbia (Campbell) and especially Alberta (Klein) saw the rise of neo-classical economic views calling for more limited government and less regulation.

government promised it would not impose new climate taxes and that any emissions reduction mandate would allow mechanism for compliance at a backstop price of no more than \$15/tonne of carbon.

It should also be noted that concerns for energy security, particularly in the U.S. after the events of September 11, 2001, and Canada's commitment under the North America Free Trade Agreement (NAFTA), seems to motivate Canadian energy policy. The federal government calls NAFTA 'a cornerstone of our energy policy with regard to trade' useful in attracting investment in the energy sector and supporting 'competitive market behaviour.' (NRCan 2009).

Clearly, political and legal constraints and the potential for inter-governmental dispute has stifled the development of climate change policy at the federal level. Not surprisingly, the proposed federal cap and trade regime is remarkably similar to the system implemented by Alberta, the province most aligned with oil industry interests and a primary beneficiary of wealth from increased oil extraction.

Policies to promote renewable energy [Q25]

Canada already makes extensive use of renewable energy sources to generate electricity. Hydro electric generation, mostly large scale, was by far the largest source of the electricity in 2007, 59% of all production. Hydro power, an efficient, dependable source, is considered a good backup source to complement renewable sources prone to intermittency, such as wind or solar. Unfortunately, other than in Quebec and Newfoundland and Labrador, few sites for additional large scale hydro-generation remain. Currently, other forms of renewable energy represent only a miniscule portion of total electricity generation⁵⁴. Yet, Canada is believed to have vast untapped potential for generating electricity using wind, solar power and tidal force (Paehlke 2008).

⁵⁴ Nuclear energy provided about 14%. Electricity generated using fossil fuels accounted for 26%. Although electricity generation from wind, solar and tidal sources is rising, total generation from these sources represented less than 0.5%. Wind generation has been rising fast, with capacity rising 28.5% to 1,876 megawatts in 2007, up from 137 megawatts in 2000. <http://www.statcan.gc.ca/pub/57-003-x/2007000/part-partie1-eng.htm>.

Recognizing this potential, the federal climate action plan has as one of its goals the generation of 90 percent of Canada's electricity demand by 'non-emitting' sources such as hydro, nuclear, 'clean coal'⁵⁵ or wind power by 2020 (IEA 2010). That would represent a substantial rise from 2007, when only about 74% of electricity was produced from non-fossil fuel sources.

To promote renewable energy generation and use, the federal government relies primarily on incentives and voluntary programs. The table below describes some of the energy efficiency and renewable energy programs included in the current federal climate action plan. Many provincial governments have similar and complementary strategies of financial incentives, direct development and demonstration projects. Quebec has announced significant new public investments in large scale hydro-electric projects. And many provinces, especially those in the prairies, promote residential and commercial use of geo-thermal electricity and heat generation.

⁵⁵ We assume 'clean coal' as used here refers to coal-fuelled thermal generation using carbon capture and storage technologies to be deployed.

Name of initiative	Purpose and measures
ecoENERGY for Biofuels Initiative	provides operating incentives to producers of renewable alternatives to gasoline and diesel based on production levels and other factors
Retrofit incentives for existing homes, buildings and industry	property owners can qualify for a federal grant for improving the energy efficiency of their home, with maximum grant of \$5,000. It also helps home buyers choose an energy efficient new home, and provides information, modeling techniques to other levels of government and encourages voluntary energy efficiency improvements and update of building codes to improve energy efficiency. Other education and information sharing programs are focused on freight transport (responsible for up to 10% of Canada's overall emissions).
ecoENERGY Technology Initiative	Intended to promote energy technology research and development by providing financial and technical assistance to demonstration projects. A recent selection favoured projects in Western provinces in the areas of carbon capture and storage, most for use by the fuel extraction industry. Canada also is in collaboration with the U.S. under a U.S.-Canada 'clean energy dialogue', and plans improvements in energy transmission lines, especially east-west.
ecoENERGY for Renewable Heat	Incentives are offered to the industrial/commercial/institutional sector to install active energy-efficient solar air and/or water heating systems.
ecoENERGY for Renewable Power	\$1.48 billion to increase supply of electricity from renewable sources such as wind, biomass, low-impact hydro, geothermal, solar photovoltaic and ocean energy. Provides an incentive of one cent per kilowatt-hour for up to 10 years to eligible low-impact, renewable electricity projects. Goal is to encourage the production of 14.3 terrawatt hours of new electricity from renewable energy sources, enough electricity to power about one million homes.

Despite such programs, the generation of renewable energy has been slow compared to other countries and uneven. This may be due in part to the fact that most public incentives are one-time, or guaranteed only in the short or medium term. Advocates note that the most successful

renewable energy policies provide long term financial guarantees that overcome high capital costs and other competitive disadvantages faced by developers.

In this regard, perhaps the most ambitious and promising renewable energy initiative is Ontario's proposed feed in tariff. The province of Ontario has set an ambitious goal of phasing out all coal-fired electricity generation (about a quarter of its current supply) by 2014. The program appears to be on track. Ontario has already closed two of its four plants and plans to close the remainder by the end of 2010⁵⁶. To replace coal, Ontario proposes increase nuclear capacity (though reactor refurbishment), natural gas thermal generation and renewable sources.

On May 14, 2009, the province enacted its *Green Energy and Green Economy Act* (2009). Acting under this law, the provincial government announced an expanded and revised feed-in tariff (FIT) program, to go into effect by the end of the year. Essentially, Ontario will pay a relatively generous price (in cents per kWh) to anyone who feeds electricity back to the grid using a renewable energy source. Private or community based renewable energy projects, no matter how small (even single home owners) may receive FIT contracts. Approved sources include biomass, biogas, landfill gas, on-shore and off-shore wind, solar photovoltaic (PV) and waterpower (up to 50 MW). Twenty year or 40 year contracts (depending on energy source) will be offered. This is North America's first comprehensive, long term guaranteed pricing structure for renewable electricity production and is modeled after highly successful German, Danish and Spanish programs.

Some restrictions apply to projects on prime agricultural lands. Under the underlying legislation, the provincial cabinet is allowed to waive any local or regional restrictions, such as a municipal land use regulation, that would impede development of a renewable energy program permitted under the program. A separate companion project is designed for very small residential projects

⁵⁶ This alone would represent a significant reduction in GHG emissions as the province accounts for a full one third of the coal used for electricity generation in the entire country. Indeed, this initiative has been called the largest climate-change initiative in North America.

of less than 10kW of capacity. Projects developed by communities or aboriginal groups are to receive increased pricing under the program (Ontario Power Authority 2010).

Notably, the Energy Act requires a certain percentage of 'domestic [Ontario] content' in energy infrastructure. Thus, the province seeks to position itself as a continental hub of the 'green energy' industry. Considering its economic reliance on a weakening North American automobile industry, Ontario's program appears to be as much industrial policy as climate policy⁵⁷.

Of course, Ontario's program will cost the government a considerable amount. Public outlay is estimated at \$5 billion over the next 10 years. The government has stated that increased costs of electricity will be passed on to consumers. Such a rise in electricity prices would be expected to create positive feedback for suppliers, spurring even more participation in the program.

One criticism of the program of course is the high cost. Others have noted it fails to include co-generation (the capturing of heat generated during electricity production), district heating and other promising approaches to improving energy efficiency in buildings.

⁵⁷ Ontario also will be providing assistance to community groups looking to build new green generation and to municipalities that might face extra infrastructure costs as green energy facilities are built. Through the Community Energy Partnerships Program, community groups, including co-ops, non-profit groups and local partnerships would be eligible for one time, financial assistance of up to \$200,000 for project planning costs, as well as environmental and engineering studies. Community based projects are eligible to receive a graduated incentive, based on the percentage of local ownership, of up to 1 cent/kilowatt hour in addition to standard feed-in-tariff rates. The Municipal Renewable Energy Program will provide support to municipalities for costs associated with renewable energy projects, such as repairs to road and drainage infrastructure and traffic management. This funding is intended to cover costs over and above those that the project developers should bear.

In the transportation sector, Canada is heavily dependent on fossil fuels⁵⁸. Bio-fuel represents only a small portion of the total energy used in transport. With regard to heating uses, fossil fuels also account for the large majority of energy used (when not electrical)⁵⁹.

Canada's climate policies

Canada is a party to UNFCCC and Kyoto and is bound thereby to a specific GHG reduction target: 6% off 1990 levels for the first commitment period (2008 to 2012). [Q29, Q32] Considering the recent levels of emissions and current projections, Canada would need to implement stringent policy measures to achieve any reduction at all or even just to reverse the long term rising trend [Q32]. Canada's current Kyoto gap has been estimated at 33.8% or more.

Yet, other than concerns about promoting trade and protecting export markets (particularly the U.S.), international perspectives or commitments do not appear to have had a strong influence on the current federal climate plans, not even the Kyoto Protocol which Canada ratified. The current national climate action plan repudiates Kyoto targets as too costly [Q29]. Instead, the federal government's plan is to reduce emissions 20% *from 2006* levels by 2020 and 60-70% by 2050. Based on present GHG projections, it is estimated that even if this plan achieves its objectives, by 2020, or eight years after the close of the Kyoto commitment period, Canada will

⁵⁸ Another aspect of the federal plan involves energy efficiency improvements in transportation, including new regulations to limit emissions from the automotive sector beginning in the 2011 model year, harmonized with the new standards announced by the U.S. in March 2009, an 'ecotransport' strategy of financial incentives for freight transport technology improvements, funding for transit ridership and an 'ecoAUTO' rebate program (a new excise tax on highly inefficient vehicles was introduced in 2007, for a minimum of \$1000 per vehicle for vehicles with weighted average fuel consumption of at least 13 litres per 100 km.

⁵⁹ In the area of building energy efficiency, many policies exist at the federal, provincial and municipal levels of government. Most are voluntary, provide incentives to private sector activity or demonstrate high efficiency practices in pilot projects on public lands. The federal government does regulate to some extent, with established minimum efficiency standards for appliances and materials, under well publicized programs such as R-2000 for the building industry and EnergyStar for consumer goods. Legal support for the federal programs is found in the *Energy Efficiency Act*, S.C. 1992, c. 36, which permits the Minister of Natural Resources to establish energy efficiency standards for products, to establish and require compliance with energy efficiency standards of products to be traded across provinces and to engage in the research and development of products and equipment to promote 'efficient use of energy and the use of alternative energy sources.' [Q26]

have reduced its GHG emissions by only 3% off 1990 levels (half of Canada's commitment at Kyoto) (Bramley 2008).

At the federal level, climate policy remains very weak from an environmental perspective. The latest climate action plan was the *Turning the Corner* proposal of 2007⁶⁰ (Hsu & Eliot 2009). It set much lower overall targets for Canada than the Kyoto Protocol. With regard to specific measures, a cap and trade regulation for large final emitters is supposed to be implemented in 2010 (but it may now be on hold as well). It would utilize intensity rather than absolute targets and provide several alternatives to abatement. A key orientation of the federal cap and trade system seems to be funding new technologies to increase the carbon efficiency of industrial processes, especially carbon capture and storage (CCS) techniques. As intended, this would be particularly useful in oil and gas extraction and processing facilities.

The federal plan rejects not only Kyoto targets but also the global approach to compliance mechanisms developed under the UNFCCC. The federal government has announced its intention to design and implement a 'made in Canada' plan, focused on domestic emissions. Thus, Canada will not purchase international credits under the UNFCCC mechanisms. Further, Canada's own offsets system will only certify emission reduction projects located within Canada. Firms subject to the proposed emissions regulation will be allowed to purchase credits using the clean development mechanisms of the UNFCCC regime, but only for up to 10% of their emissions targets⁶¹. Similarly, Canada's membership in the North American Free Trade Association (NAFTA), with Mexico and the U.S., does not appear to have influenced climate policy directly.

⁶⁰ The plan has now been shelved and may be revised substantially depending in part on the plan adopted by the United States.

⁶¹ With regard to sinks, Canada's major interest regards its large boreal forest, which can act as a sink or a source depending on both human and natural conditions year to year. In UNFCCC negotiations, Canada has argued for a liberal definition of forest sinks and GHG estimation approaches that distinguish forest management activities from natural or climate change related events. Under the Marrakech accords, Canada was allowed to count up to 144 MT credit for forest management activities. However, Canada has only included agricultural activities, not forest management in its official inventory. This is due in part to the on-going pine beetle infestations and increasing forest fire threats which have turned the LULUCF sector into a consistent source (not sink) of emissions in recent years.

It is only at the sub-national level, in provincial and municipal governments, where international associations of sub-national governments are having an important impact in development of Canadian climate policy. [Q31, Q32]

The proposed (now on hold) federal cap and trade system⁶² [Q36-45]

The signature element of the federal regime is a proposed regulation to mandate a cap on the GHG emission *intensities* of large final emitters (LFEs). The LFEs comprise approximately 700 facilities and firms, primarily in the industrial and electricity sectors. They account for approximately half of all emissions in Canada (Environment Canada 2008a). The program also creates the first national offsets system that will issue credits for voluntary GHG reduction projects located in Canada. These credits may be purchased by regulated firms to meet their targets.

As a 'baseline and credit' type system, the federal scheme effectively allocates pollution rights based on current operations, thus 'grandfathering' polluters, rather than using auctions or subsidy approaches to pollution right allocations.

Two emissions intensity caps are proposed, one for existing firms, the other for new facilities. Because the firm's compliance will be measured relative to the value of productive output, firms experiencing growth in sales will be able to comply even if their total aggregate emissions continue to rise, so long as the emissions per value of goods sold is declining. Notably, a

⁶² Canada's current climate change action plan is called *Turning the Corner*, and was first announced by the newly empowered Conservative government in 2007. There were at least three different plans proposed by preceding governments: the "Action Plan 2000", the Climate Change Plan for Canada" of 2002 and "Project Green, Moving Forward on Climate Change" dated 2005. Those three plans were produced under a Liberal Party government. While the Liberal plans nominally adhered to Kyoto targets, none included any regulatory mandate for GHG emission reductions. Rather, the plans focused on negotiating agreements with industrial sectors to reduce emissions as well as incentives and campaigns to enlist corporate and individual commitments to emission reductions. They are deemed to have been largely ineffective (Stoett 2006) and were strongly criticized by environmental groups. Upon the ascent to power of a minority Conservative Party government in 2006, earlier climate change initiatives were scrapped or substantially revised, leading to the announcement in 2007 of the *Turning the Corner* plan. As noted above, key elements of the federal climate change regime are presently being 'fine-tuned' for implementation sometime next year, 2010. Accordingly, the final plan may differ in substantial ways from the descriptions below. More recent reports suggest the proposed regulation may be shelved pending legislative developments in the US Congress.

number of alternatives to abatement are provided to regulated firms in addition to the offsets system. Most important at first will be the ability to pay \$15 / excess tonne into a government technology development fund. This may be used to meet up to 70% of a non-compliance in the first year, with declining opportunities until the mechanism closes in 2018. The technology fund will finance research and development projects, especially carbon capture and sequestration and a CO₂ pipeline in Alberta, as well as the development of an east-west electricity grid linking electricity markets from Manitoba to Newfoundland (Boyle 2008).

Key elements of the program are described below.

Coverage	All large final emitters (> 100 MT/year COE)
Regulatory cap on GHG emissions intensity	<p>Existing facilities will have to achieve an 18% improvement in GHG emission <i>intensity</i> per year from 2010 to 2012 (6% per year) and an additional 2% per year from 2012 until 2018</p> <p>New facilities receive a 3 year grace period after which they will have to demonstrate energy intensity efficiency at least as good as designated alternatives, including carbon capture and storage methods.</p>
Alternative compliance mechanisms (<i>flexibility mechanisms</i>)	Credits for early action (voluntary reductions prior to regulation)
	Credits from domestic offsets system (unlimited)
	Credit from Kyoto flexibility mechanisms (limited to 10% or target)
	Investment in technology fund (initially at \$15 / tone and up to 70% of target, but eliminated by 2018)

This regulation and companion offset systems are being implemented under the *Canadian Environmental Protection Act*, S.C. 1999, c. 33, which authorizes the regulation of toxins and imposition of criminal penalties (Boyle 2008). Part 11 of the act permits the use of cap and trade and other market based mechanisms. Part 5 allows regulation of multiple toxins.

For firms and sectors other than LFEs, the only opportunity for participation in the federal cap and trade system will be the offset system. Participation will require a proposal, review to determine compliance with pre-existing project protocols. The environmental integrity of the system will depend on the credits being issued only for quantifiable, verifiable, incremental and permanent reductions. This rigor, while essential to this type of policy instrument, means that many emission intensive processes and practices may not be able to participate at all in this key federal climate initiative. Many of the most important reforms for long term reduction of GHGs, like reform of urban land use practices, would be very difficult if not impossible to quantify with sufficient precision. Also, they may be unable to prove that they would have occurred absent some government program or regulation, thus failing the 'incremental' requirement. To the extent the offset protocols were relaxed, the potential for double counting of reductions increases. According to government announcements, the kinds of offsets projects most likely to be approved for credit include landfill methane capture, renewable energy projects and certain agricultural practices.

Provincial climate policy approaches

At the provincial level, the picture is mixed. Perhaps surprisingly, it was the province of Alberta which implemented the first and so far only cap and trade regime, in 2007. Like the proposed federal regulation, it is an intensity based cap on large final emitters, with a complementary offsets system.

Several provinces are preparing their own cap and trade regimes, intended to operate independently of the federal system. The development of these provincial cap and trade regimes appears to be strongly influenced by inter-provincial dialogues and various associations of sub-national governments within Canada and across North America. Three such transborder

initiatives are active in Canada: the Regional Greenhouse Gas Initiative (in which New Brunswick has participated as an observer), the Western Climate Initiative (which counts Quebec, Ontario, Manitoba, Saskatchewan and British Columbia as members) and the Midwest Greenhouse Gas Reduction Accord (in which Ontario and Manitoba have participated) [Q42].

Two provinces have introduced carbon taxes as part of their climate policy applicable. Quebec was the first jurisdiction in North America to impose a carbon tax on fossil fuels. First enacted in 2007, the tax applies to approximately 50 large fossil fuel importers and distributors. The levy amounts to 0.8 cents per litre of gasoline and 0.9 cents per litre of diesel. Revenue from these taxes are not specifically earmarked, but rather join general revenue pools.

British Columbia established a more comprehensive carbon tax scheme in 2008. It is a broadly applicable, consumption based tax on all fuels. The tax amount was initially \$10/tonne of carbon content in the fuel, rising to \$30 by 2010, or about \$2.4 cents per litre of gas or \$2.7 cents per litre of diesel. A key feature of the plan is that it is meant to be revenue neutral. This means that every year the government is obligated to provide tax reductions for small businesses and individuals and tax credits for low income families in the same amount as received through the carbon tax. This is meant to help defray to higher cost of living due to the tax.

Emissions trading systems in the provinces

Several cap and trade systems are emerging in the provinces, in apparent competition with the proposed federal system. Perhaps surprisingly, the first system (and the only one presently in operation) is Alberta's. Commentators have noted that Alberta was motivated in part by a desire to occupy the field and impede federal intrusions. Also, it may acted to help stem a movement in California and the U.S. Congress to restrict oil sands imports. Notably the preamble of the provincial legislation authorizing the cap and trade scheme (i.e., the *Climate Change and Emissions Management Act*, S.A. 2003, c. C-16.7 (CCEMA), and the *Specified Gas Emitters Regulation*, Alta. Reg. 139/2007, adopted under it), emphasizes Alberta's ownership over its natural resources and declares GHGs -- carbon dioxide and methane -- to be "non

toxic," thus (in the view of the Act), asserting provincial authority over GHGs vis-à-vis the federal government⁶³.

Alberta's independent approach contrasts with other provincial cap and trade development efforts underway, which appear to be highly collaborative. British Columbia⁶⁴, Manitoba, Quebec and Ontario with Saskatchewan as observer, participate in the Western Climate Initiative (WCI). WCI was initiated by California and several other Western U.S. states but now includes the aforementioned Canadian provinces and a number of northern Mexican states as observers. Ontario and Quebec have signed a separate agreement to develop a cap and trade system. New Brunswick has observer status in the Regional Greenhouse Gas Initiative comprising several northeastern U.S. states. Manitoba, in addition to the WCI, participates in the Midwest Region GHG Reduction Accord with several Midwest U.S. states.

The table below describes some key elements of the cap and trade system being developed or in operation under these various continental initiatives. Boyle (2008) has observed that these various discrete regulatory proposals, as well as the federal initiative in the U.S., unlike the European emission trading systems seem to have a domestic focus with important difference even among them, thus suggesting that the globally centralized approach suggested by Kyoto is not finding fertile ground in North American governments.

⁶³ The CCEMA requires Alberta to reduce GHG emissions relative to GDP by 50 percent of 1990 levels by 2020 and the Emitters Regulation requires large emitters in the province to begin reducing emissions intensity immediately. Around 100 industrial facilities are regulated. They must reduce emissions intensity by 12% per year starting in 2007 and to submit yearly compliance reports to the Ministry of Environment. As a compliance and credit system, there is no allocation of allowances. The Emitters Regulation does not require project developers to register the project with authorities or to have the project pre-validated by a third party. Government oversight occurs only once the project is completed and when the regulated emitter -- having purchased credits privately, submits a "GHG Assertion" to the Ministry. In the case of Alberta, given projected economic growth rates, absolute emissions are likely to rise considerably under the current intensity cap in the Emitters Regulation.

⁶⁴ British Columbia has recently introduced a carbon tax (*Greenhouse Gas Reduction (Renewable and Low Carbon Fuel Requirements) Act*, S.B.C. 2008, c. 16) and a province-wide cap and trade law (*Greenhouse Gas Reduction (Cap and Trade) Act*, S.B.C. 2008, c. 32) and has committed to reduce GHG emissions by 33% by 2020 from 2007 levels (Boyle 2008). Thus, Alberta and British Columbia, have moved ahead of the federal government on climate change policy, but are on very different paths (Boyle 2008).

It may be that these associations have allowed extension of quotas to sources other than those covered by Kyoto [Q33]. Specifically, the WCI has proposed to cover aviation.

Association	Overall target	Key features of cap and trade system	Orientations and distinctions
Western Climate Initiative (BC, Saskatchewan (observer), Manitoba, Ontario, Quebec, several US states including California and some northern Mexican states as observers)	15% below 2005 by 2020	Limited use of offsets Method of allocation a mix of auction and subsidy for green practices program Covers all facilities emitting more than 25MT; first phase electricity and LFEs only, aviation, transport and commercial and residential emissions to be covered in second phase (after 2015) through caps on upstream fuel distributors	Leading continental association of more progressive subnational jurisdictions
Midwest Region GHG Reduction Accord (includes Manitoba and several U.S. states)		Auctioning of initial allocations; offsets limited	
Regional Greenhouse Gas Initiative (New Brunswick as observer and various northeastern U.S. states)	10% off 2006 by 2018	Covers fossil fuel electricity generators only on a short term cap and trade system; set aside of allowances to be given away to green practices and projects; offsets limited and predetermined protocols	
Alberta		Baseline and credit-automatic grandfathering based on current emissions; unlimited use of offsets; technology fund backstop at \$15/tonne initially; offsets projects with no pre-submission oversight and optional protocols	Carbon capture and storage development and deployment

The RGGI is a short-term experiment among a small group of neighbouring states that share power supply infrastructures. The MGA Accord is centered on jobs and economic opportunities associated with sequestering carbon from coal and adapting its agriculture sector to biofuels. Alberta's Emitters Regulation appears to be an attempt to stave off potentially more onerous federal regulations than the province is willing to impose, or at least stake out a negotiating position with the federal government.

Part V and VI

Adaptation strategies and measures [Q46-56]

Introduction

Most scientists agree that mitigation efforts will not succeed in preventing some harmful impacts of climate change. The concentration of GHGs already in the atmosphere means that the world is 'committed' to a certain level of climate change, with the potential to cause considerable harm to human beings and ecosystems. Accordingly, human societies must adapt⁶⁵. For lawyers, adaptation touches on at least three important areas of inquiry (Verheyen 2004):

1. What is the nature and scope of the obligation to undertake and support adaptation activities? Should some bear a greater share of the burden? Which vulnerabilities should be addressed first and how?
2. How do existing legal regimes guide, promote and/or constrain adaptation measures and efforts to increase adaptive capacity? This is a concern in part because of significant uncertainties inherent in the data upon which adaptation decisions depend.
3. Should adaptation efforts fail, to what extent are governments, corporation or others liable for 'residual' damage caused by climate change? Should those most responsible for climate change be held liable for its most harmful impacts?

In this section, we attempt to provide some insight into these questions in a Canadian context. First, however, we provide a brief review of key vulnerabilities to climate change in Canada and some of the major adaptation efforts to date.

⁶⁵ Adaptation takes many forms. It may be autonomous and reactive, based on the decisions of a large number of individuals or groups facing an imminent crisis or feeling its effects. Coordinated, public action in anticipation of a change in the climate may be the most effective way to avoid certain harms. Another important distinction is made between 'tactical' or 'micro' adaptation measures involving concrete solutions to specific threats (e.g., the redesign of a storm water discharge system to increase capacity) and 'strategic' or 'macro' adaptation measures that increase the general resilience of a system (e.g., increased education and resources in a community or increased biodiversity in an ecosystem).

Vulnerability to climate change in Canada

Considerable climate change is already being experienced in Canada. In fact, during the past 50 years average temperatures in Canada have increased at twice the rate of the global increase. Notably, there is considerable variability both geographically and seasonally in the magnitude of the change being experienced. The impacts of climate change on socio-economic and bio-physical systems could be severe. Public health and safety may be threatened by more extreme weather events such as heat waves, flooding and storms and by increased prevalence or first appearance of certain disease vectors. Stress in water resources may threaten agriculture, transportation and human settlements. Adverse socio-economic impacts are expected as well in regions that depend on natural resource industries such as forestry. Exposure and sensitivity is and will continue to be greater in Canada's northern latitudes where many aspects of life are already being affected by melting permafrost and reduced sea ice.

Overview of Canada's adaptation programs

Governments at all levels in Canada are increasingly aware of the need for adaptation to inevitable climate change. While climate change mitigation efforts were the initial focus of governments in Canada, there are now many programs and planning initiatives at every level of government that purport to address the need for adaptation⁶⁶. Most governments are at some stage in the lengthy process of analyzing impacts and preparing to respond.

Some attempts have been made to develop a comprehensive federal adaptation strategy, and a framework for integrating federal and provincial adaptation efforts. None has been finalized or approved to date (OAG 2006; PRI 2009). As a result, much adaptation planning remains agency-specific, narrowly focusing on those risks that climate change poses to programs and policies for which a particular agency is responsible. Such adaptation plans have been developed by Agriculture and Agri-Food Canada, Fisheries and Oceans Canada, Health Canada, Indian and

⁶⁶ Various factors are believed to have contributed to the limited progress in adaptation to date. Initial efforts internationally as well as domestic were on mitigation. Also, some believed that focusing on adaptation would distract from mitigation. Also, adaptation policy is viewed as being in its infancy (OAG 2006).

Northern Affairs Canada, Justice Canada, Public Safety and Emergency Preparedness Canada, and Transport Canada.

Two federal agencies have been given a broader mandate. Environment Canada has taken a leadership role in climate research and monitoring efforts nationwide. It collects and disseminates climate modeling results through its Canadian Climate Change Scenarios Network. Natural Resources Canada leads several impact assessments and adaptation planning programs. In 2007, it published a comprehensive survey of projected climate impacts for the country (NRCan 2007). Commentators have noted that at times there has been a lack of clarity regarding the division of responsibilities between these two agencies. Further, auditors have called for the federal government to establish more clear priorities, expected outcomes, timelines and performance metrics on adaptation programs.

Federal / provincial collaboration on adaptation planning also has been limited. It typically utilizes existing linkages and joint programs. For instance, under the *Disaster Financial Assistance Arrangements* (1970), the federal government provides financial assistance to provinces for severe weather events and other disasters. The federal *Crop Insurance and Canadian Agriculture Income Stabilisation Program* compensates for production and income losses of farmers due to severe drought (OAG 2006). Perhaps the most active and productive collaborations have been in the area of climate science research and modeling, where several inter-governmental initiatives have supported climate modeling efforts (e.g., the Ouranos Consortium in Quebec, the Prairie Adaptation Research Collaborative).

At the provincial level, adaptation is at an early stage. As provincial governments have primary legislative competence over most urban infrastructure (directly or through municipal governments), their efforts have been focused on regional threats to such infrastructures. Generally, provincial plans recognize the need for additional vulnerability studies and the development of concrete plans for adaptation. A number of provinces have embraced various strategic approaches such as 'integrated watershed management planning' and have set out

general goals of adaptation. Notably, several of these provincial approaches are not explicitly climate related but rather part of sustainable development and green infrastructure initiatives.

Municipalities are said to have gone further than other levels of government in Canada in their attempts to integrate climate change into infrastructure planning and management. Halifax, N.S., under its ClimateSMART program, has implemented new design standards for certain coastal infrastructure to account for a rise in sea levels, developed adaptation planning methodologies and proposed actions as part of an integrated mitigation and adaptation planning toolkit.

In his report on federal adaptation policy dated December 2006, the Auditor General for Canada reached the following conclusions:

A strategy for adapting to a changing climate is a critical need, given the number of regions and sectors of the country that are potentially vulnerable and the number of players that will need to participate in adaptation efforts. Strategies support action by clarifying priorities for action, expected results and how they will be measured, timelines, and roles and responsibilities of the different players. Yet in none of the spheres of federal activity—government wide, departmental, policy/program, and national (federal government working with provinces and territories)—did we find an adaptation strategy.

* * * *

Since its commitment in 1992 [under UNFCCC] to address the impacts and adaptation aspects of climate change, the federal government has made limited progress in setting priorities and developing adaptation strategies to support Canadians. It has also made limited progress in organizing its activities to obtain information needed to identify potential impacts and address vulnerabilities. As a result, much remains to be done to ensure that Canadians are ready to deal with a changing climate.

Key elements of planning to adapt to climate change are identifying priorities and expected results, and developing strategies for adaptation. We found that the federal government, provinces, and territories have no jointly identified expected results. At the federal level, the government has made only limited progress identifying expected results in adaptation. It has not clarified to what extent it intends to deal proactively with the potential impacts on its own or with other levels of government and those who will need to adapt. Nor has it clarified the roles of departments.

This lack of an adaptation strategy obscures fundamental questions of climate justice: should Canadian farmers and fisheries receive subsidies for climate change impacts while aboriginal communities in the North face cultural extinction? Has the government allocated sufficient funds to adaptation efforts abroad consistent with its responsibilities under UNFCCC. Relying on the existing bureaucratic and policy silos and established programs for adaptation also may favour politically powerful and engaged communities who may not be the most vulnerable.

Part VII

The land use solution to the climate crisis

Urban form and GHG emissions

Cities are a 'predominant source of anthropogenic carbon dioxide emissions', seventy percent or more of total emissions by some accounts (Schroeder & Bulkeley 2009). Activities primarily responsible for urban emissions are the burning of fossil fuels for urban transportation, the generation of electricity and heat to operate infrastructures and buildings (including lights, appliances, heating systems, air conditioners, water heaters) and the disposal of GHG-emitting waste products.

Urban form⁶⁷ is closely related to the quantity of GHG emissions produced. Residents of denser, more compact and mixed-use neighbourhoods, generate much lower quantities of GHGs on average. For example, it is estimated that residents of New York City contribute 7.1 tons of GHGs per capita per year. That is less than a third of the 24 tons/capita which is the annual average in the U.S. By contrast, more than 30 tons / capita are emitted in low density, suburban Atlanta (Nolon 2008).

Even within a single metropolitan area, considerable variations in GHG emissions are seen from one neighbourhood to another. In Toronto, some census tracts are estimated to produce as little as 3.1 tons / capita per year (Weghe & Kennedy 2007), a small fraction of the 15 tons / capita average for all Ontarians (Environment Canada 2008). The 'greenest' Toronto census tracts are clustered in the most dense, central areas of the city.

GHG emissions per capita are lower in denser urban areas primarily because of lower travel demand (residences, jobs, services and amenities are in close proximity), less frequent use of cars (public transit is frequent and popular, walking and biking are convenient alternatives), and greater energy efficiency of compact buildings. Attached and multi-family housing, for example, are easier to keep warm in winter. There may also be greater economies in the provision of utility services in denser areas and more efficient energy systems may be viable there (e.g., co-generation of heat and electricity, district heating). Finally, denser human settlements may occupy less land, allowing preservation and augmentation of forests and other carbon sinks as

⁶⁷ The term "urban form," as used in this paper, refers to the location of buildings, roadways, structures and open space within cities with consideration to how their physical characteristics (size, design, type) and use affect their function, city residents and surrounding environments. The key focus is on the interaction between objects and spaces. The scale of analysis may vary from a cluster of buildings to an entire metropolitan area.

well as agricultural belts, whose proximity to cities may further reduce transportation-related emissions (Nolon 2008)⁶⁸.

Elements of a land use solution

Considering the connection between emissions and the urban built environment, one way to mitigate climate change is to modify the urban form through regulation and other measures to increase density, compactness and diversity of uses. Nolon (2008) refers to this as a 'land use solution', one of several potential GHG 'stabilisation wedges' (after Pacala and Socolow (2004)). See also Silsbe (2003).

A land use planning solution may encompass the following goals, strategies and tools⁶⁹:

⁶⁸ The net impact in terms of GHG emissions of local agriculture is debatable in cold climates like Canada where yields are relatively low and preservation of harvested products may require lengthy refrigeration.

⁶⁹ There are other measures in the realm of urban planning (beyond land use regulation) which may reduce emissions. At the scale of individual buildings, 'green building' designs and appliance standards may improve energy efficiency. Planning processes also may be used to raise community awareness. Here, however, we focus solely on land use or 'spatial planning' tools to alter urban form, as defined above.

Goals	Land use strategy	Select land use planning tools
<ul style="list-style-type: none"> · Reduce travel demand (lower vehicle kilometers traveled (VKTs)) · increase carbon efficiency of vehicle fleet · increase carbon efficiency of operating buildings and infrastructure · protect carbon sinks · reduce waste 	<ul style="list-style-type: none"> · increase intensity of urban uses (number of users per area) · increase diversity of uses · enhance transportation networks for public transit, active transport modes and low emission vehicles · ease congestion of roadways by reducing demand · build denser structures (more and more compact interior spaces) · develop and use renewable and more efficient energy systems · limit urban expansion · preserve / enhance agricultural belt and forests · redirect development to built up areas (centres, nodes, corridors) and infill and brownfield sites 	<ul style="list-style-type: none"> · zoning laws specifying floor area ratio, number of floors, lot coverage, building type and height · zoning laws prescribing allowed building use(s) · subdivision control rules prescribing layout of buildings, rights of way and provision of utility services · project approval, environmental assessments and design review processes · zoning variance applications · assessment of development charges · integrated land use, transportation and energy planning · urban growth control measures (e.g., greenbelt designations, urban growth boundaries, land banking, transferable development rights) · regulation of parking areas, congestion and road pricing, traffic calming and shared streets design · requirement for preservation and planning of trees

Many believe that significant GHG reductions could be achieved with such land use planning strategies. (Ewing 2007) projected that by shifting 60% of new growth in the U.S. to achieve more dense settlements⁷⁰, a reduction of 85 million tons of GHGs per year by 2030 (seven to ten percent of total emissions) could be achieved. In Canada, studies by CMHC confirm that potential GHG reductions of as much as 40 to 60% are possible due to reduced vehicle kilometers traveled (VKTs) in denser inner city neighbourhoods. Portland, Oregon is one of the only cities in North America to avoid any major increases in GHG emissions from 1990 levels, while many others experienced double digit growth (Bailey (2007). Its urban growth control

⁷⁰ A very modest goal of only about 12-14 dwelling units per acre was selected, or about 75% more dense than the 2003 U.S. or Canadian average.

policies which have resulted in more compact, more dense, more transit friendly development have been credited (Nolon (2008); Bailey (2007))⁷¹.

One important advantage of urban form modification as a climate mitigation strategy is that it addresses underlying, structural conditions that influence, indeed may determine, high consumption and emission patterns in Canada⁷². A car dependent, high-energy lifestyle is the only practical option for many households living in North American suburbs. As Silsbe (2003) puts it, "the way we lay out our cities not only encourages automobile use, it requires it." By changing the urban form, more climate-friendly consumption decisions become viable or even preferable.

Further, such demand-management and reduction approaches are more consistent with principles of environmental ethics and better complement other policy goals such as protection of biodiversity and conservation of precious and scarce resources, including petroleum. As a practical matter, such demand side measures may be essential as efficiency improvements and technological solutions alone may not produce GHG reductions large enough to avoid dangerous climate change (Ewing et al 2007)⁷³. Technological improvements are likely to be offset by increasing population, especially if continued low density development patterns increase household travel demand (Rose & Burkholder 2009).

⁷¹ There is debate and disagreement regarding the extent of GHG emission reductions that are achievable through modification of the urban built environment. Some believe that increase density alone would yield few emission reductions. However, land use measures can be, and likely would be, coupled with other mitigation policies. Indeed, densification may help create the physical, economic and political conditions enabling complementary measures. For instance, increased density in an area may permit improved public transit service not viable otherwise, which would attract new transit riders. As the proportion of transit users increase, more restrictive regulation of car usage (road and congestion pricing) may gain political support.

⁷² In their study of emissions from the urban transportation section, Ewing et al (2007) refer to a three prong approach to mitigation: improved fuel efficiency, fuel switching to lower carbon fuels and reductions of distances traveled. Fuel efficiency and switching alone is not expected to produce the GHG reductions needed. Significant reductions in travel demand are necessary which would require densification of human settlements.

⁷³ **[Q48]** Urban form is also closely connected with the extent of exposure and vulnerability to changes in the climate. Land use and land cover interact closely with the climate system. Changes in land use have great potential to compound or confound projected climate change (Pyke & Andelman 2007). For instance, in urban areas, careful massing and clustering of buildings and the greening of surfaces can dramatically minimize dangerous urban heat, improve storm water system performance and deliver other benefits. Sensible development controls of seaside and riparian lands can help manage erosion and flood risks. Green building codes can increase the ability of a region to tolerate water-related stress. In Canada, there is a rich history of town planning for extreme climate conditions. The towns of Kitimat, Leaf Rapids, Inuvik and Fermont, were designed decades ago with consideration for extreme weather (Oke 1984).

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There are some disadvantages to the land use solution. Significant modification of urban form necessarily entails long term and sustained effort. Quite literally, the form of the urban environment is fixed in brick, cement, timber. In North America, new construction every year accounts for only a very small portion (2% or less) of all buildings and structures in use. Thus, achieving even modest increases in density would require years (even decades) of improved practices in new developments. Further, the retrofit of many low density, car oriented neighbourhoods would be costly and complex. In short, the land use solution is not likely to deliver substantial GHG reductions in the short term⁷⁴.

Further, modifying land uses is very likely to require mandates. Indeed, many (though not all) land use tools used by planners in North American are command and control style regulation. This is in part because most urban land in Canada is privately owned. As Canada's national approach to climate policy shows, voluntary programs and incentives are unlikely to be sufficient. Considerable political opposition to any land use regulation can be expected.

Prospects for implementation of the land use solution in Canada

The potential for GHG reductions through modifications of the urban form is well recognized by planners in Canada (Silsbe 2003). This approach to mitigation is even referenced in some official planning documents. For instance, Montreal's Master Plan, promulgated in 2004, states:

Respecting the spirit of the Kyoto Protocol, Montréal's urban development will aim to increase the use of public transportation and active modes of transport such as walking and cycling. The intention is to consolidate and increase urban density, particularly within walking distance of metro and commuter train stations, while fully respecting the characteristics of existing neighbourhoods (emphasis added).

Montreal Master Plan, Part I, Chapter 1 at p. 2).

Despite such intentions and broad support from the planning profession, concrete, broad-scale efforts to increase density, compactness and diversity in urban Canada remain rare. Low-density, car-dependent development patterns, featuring detached, single family homes in large lots and large-scale, car-oriented commerce, predominate nearly everywhere.

⁷⁴ Portland's relative success in GHG reductions can be attributed to policies first enacted in the mid 1970s, nearly 40 years ago. Ewing et al, looking only at GHG reductions related to urban transportation noted that the speed and extent of reductions would depend on the market share of compact development, reduction in VKT per capita with compact development, Increment of new development relative to the base, proportion of weighted VKT within urban areas, ration of CO2 to VKT reduction for urban travel and the proportion of transport CO2 due to motor vehicle travel.

In a review of six Canadian metropolitan areas, Alexander and Tomalty (2002) reported that for new development at urban fringes (so called 'greenfield' development) only very slight increases in density have occurred in recent years. Suburban density, even in new developments, remains well below that necessary to support quality public transit. They also found little evidence of increased density in already built up areas outside the core, 'downtown' areas. Further, there is little mixed use development occurring in greenfield areas as developers appear convinced that retail uses will not be commercially successful and that home buyers will want to avoid being adjacent to non-residential uses⁷⁵.

The endurance of 'sprawl' patterns of development is especially disheartening when one considers that many urban planning movements have strongly advocated compactness and densification for decades⁷⁶. More troubling is the fact that concern about climate change, and incipient climate change plans and policies, do not appear to be motivating much concrete activity in the area of land use.

Recently, Gore et al. (2008) reviewed the climate policies of eight large Canadian cities. They wondered how and why certain municipal governments were responding to the climate crisis and to what extent land use planning was part of that response. They determined that:

one of the areas that cities in Canada do not appear to be prioritizing for action is in land-use planning. While some cities have implemented tree-planting activities and several are pursuing improvements in public transit infrastructure, few cities are directly identifying the emission reduction benefits of growth management and increased density... [T]he majority of cities investigated have few if any specific

⁷⁵ Alexander and Tomalty (2002) also found that "...Outside the downtown ... it seems that only in Vancouver and to a lesser extent in Toronto is intensification activity contributing to the strengthening of a system of urban nodes...Where sub-regional data was available, it was found that transit modal share was higher for downtown trips but extremely low for trips in suburban locations. This suggests that the decentralization of employment, in combination with suburban residential growth, will further erode transit share unless dramatic measures are taken to counteract these trends."

⁷⁶ Beginning in the early 1980s, if not earlier, 'new urbanists' began to extol the benefits of mixed use, human scaled communities that favour walking and biking around lively centers. The 'smart growth' movement, at least 20 or more years old, urges restrictions on urban expansions and compact city patterns by concentrating development in already built up areas and along corridors. Transit oriented developers for years have proposed increase densities around transit and multi-modal stations, thus reducing the use of private cars. More recently, dense and compact cities have been advocated even as a measure against obesity.

initiatives making these connections. ... [E]fforts to challenge land-use preferences in the name of climate change will inevitably be one of the most difficult actions city governments take in future (emphasis added).

Among the few land use related climate initiatives was Vancouver's modest Eco-Density Charter. It requires LEED Silver certifications for any re-zoning applications and imposes additional sustainable performance criteria on sites greater than 2 hectares. Future actions under the program are to prioritize basement apartments and laneway housing forms.

Betsill and Bulkeley (2007) in their review of worldwide reports on municipal action on climate change confirmed that municipal attention remains largely fixed on energy efficiency and energy demand reduction measures (e.g., more efficient street lighting, landfill gas capture), action in cities' proprietary capacity (e.g., modernizing bus fleets, 'green purchasing' for government agencies) or on voluntary or incentive programs, rather than on land use regulation. See also Bulkely et al 2009, p. 11.

Jurisdictional frameworks as constraints or catalysts to the land use solution

There are many reasons for the prevalence of certain development patterns in Canada. Economic, political, even cultural, factors deeply engrained in Canadian society are said to impede efforts to increase density and decrease car dependence (whether for climate change mitigation or some other goal). A full exposition of them is beyond the scope of this paper⁷⁷.

⁷⁷ Political and economic conditions said to favour conventional development patterns in Canada include:

- municipalities strongly desire the new employment and revenue opportunities that private sector development may bring. The perception that 'if we don't approve the project, the town just down the road will' may give rise to a race to the bottom from which only exceptional jurisdictions escape;
- there is often vocal citizen opposition to new development which is perceived by many as a threat to quality of life and property values. A 'not-in-my-backyard' (NIMBY) position may be the legacy of damaging 'urban renewal' practices of the past;
- cheap fuel prices and direct subsidies by national and provincial governments (especially in highway construction) have created financial incentives for the adoption of car-oriented lifestyles (Rose & Burkholder (2009) argue that the supposed 'love affair' with the car of many North Americans is instead a 'marriage of convenience').

Gore et al. (2005) concur that promotion of densification and reductions in car dependency in Canada are extraordinarily divisive policy areas and that intense political opposition to any such efforts may explain the

We focus our analysis here on potential impediments or opportunities arising from the legal structures governing land use planning in Canada. More specifically, we attempt to answer a question of great interest to many legal and policy analysts that have studied local responses to climate change:

To what extent does the jurisdictional framework within which domestic governments act (in our case Canadian governments in the area of land use planning) constrain or enable climate change policy?

By jurisdictional framework we refer to the distribution of powers amongst various levels of government, primarily through legal rules that define the duties and responsibilities of each level. It sets the boundaries for policy making and other activities of each government and its agencies within a certain policy area⁷⁸.

It has been shown repeatedly that the nature and extent of any government's response to climate change is strongly influenced by the vertical structures of domestic government within which that government is embedded (Schroeder & Bulkeley 2009; DeAngelo & Harvey 1998; Gore et al. 2008; Trisolini 2009). Thus, an assessment of the domestic jurisdictional framework helps to answer two questions central to climate policy analysis:

1. What tools are available to senior levels of government (those most directly responsible for entering into and coordinating responses to international climate commitments) to induce action by lower levels of government?
2. In the absence of policy by higher levels of government (or weak responses compromised by national level politics), what is the scope and jurisdictional right of lower levels of government to undertake independent action on climate? (adopted from Harvey & DeAngelo 1998);

On the closely related but distinct matter of inter-governmental collaboration, jurisdictional framework analysis is also very helpful. Legal structures may determine the nature and extent

timid response of municipal government to climate change. They conclude that land use reform would be "one of the most difficult actions city governments may take in response to climate change."

⁷⁸ This is referred to also as 'capacity to act' (Hammer 2009) and is closely related to the concept of 'vertical autonomy' as defined by Harvey & DeAngelo (1998). The 'vertical autonomy' of a municipality may be seen as a function of the city's relationship with senior-level government or the extent to which senior level governments dictate the municipality's role in a particular policy area relevant to climate.

of linkages between governments. Collaboration is particularly important in climate policy as the activity of municipal governments can have significant potential to support policy actions by higher levels of government and vice versa. For example, a federal or provincial carbon tax could make building energy retrofits more attractive, something municipal government would stimulate and administer through local initiatives. At the same time, a large city's aggressive use of land regulations to reduce VKTs could have a major impact on national GHG emissions, supporting efforts to comply with international law obligations.

Policy harmony is essential especially in federated states such as Canada. Considering the difficult history of federal/provincial relations in Canada, governments should minimize jurisdictional battles over 'who does what' and focus instead on 'who should do how much of what' (Gore et al. 2008). Optimally, all levels of government would collaborate to implement a set of complementary policies to support appropriate action at each scale (local, regional, national). DeAngelo and Harvey concluded that:

Given the separation of powers within federal hierarchies, it is clear that attainment of significant GHG emission reductions will require the active involvement of all levels of government, so that complementary and mutually reinforcing measures are concurrently implemented⁷⁹ (emphasis and footnote added).

Analysis of the jurisdictional framework governing land use in Canada

Jurisdictional competence over land use is granted under the Canadian Constitution to provincial governments. This is so by virtue of their exclusive power over "property in the province" and regarding matters of a 'merely local' nature⁸⁰. Constitution Act, sections 92(13) &

⁷⁹ Focusing on subnational climate policies, Puppim De Oliveira (2009) argues that integration of climate policies is essential along four dimensions: different policy areas or sectors (e.g, transportation, land use, energy), other levels of government, across civil society groups, and within climate objectives, namely adaptation and mitigation.

⁸⁰ In this regard, climate change may pose a challenge to constitutional precepts. What was merely local more than 100 years ago at the time of Confederation is now of keen and growing interest to all levels of government. Climate change has been called the quintessential global problem which demands international attention and response. Yet, land use, a key causal factor of, and potential remedy for, high GHG emissions is a matter of fundamental local interest. Thus, land use planning as a mitigation strategy is a legitimate interest of

(16). The federal government can claim very limited (and shared) authority in land use matters⁸¹. As for municipal governments, they are only alluded to under the Constitution⁸², and are not granted any independent authority or responsibility under it. All municipal responsibilities and power are entirely derivative and held at the will of the provincial governments. As 'creatures of the province', any action of a municipality found to exceed the scope of the powers delegated by provincial legislation (*ultra vires*) cannot stand.

Today, the laws of every province do delegate significant authority to municipal government extending over many policy realms critical to climate change mitigation efforts. Land use regulation is one of them. Thus, under provincial law, Canadian municipalities typically have at least partial control of:

- Land use through official plans, and zoning and other implementing regulations
- Project development and building permitting
- Parking supply and prices
- Road and public transit use and operation
- Parks and recreation facilities
- Power and gas utility management
- Waste collection and management.

It is primarily because of these responsibilities that municipal governments are said to have direct or indirect influence over a majority of national GHG emissions and arguably should play an important role in crafting and implementing climate policy (Robinson 2000).

officials at every level of government, from the UN Secretariat, through the Prime Minister's office and the provincial cabinet, right down to the local council and mayor. In effect, the climate regime is further 'globalising' the land use planning processes. Thus, it may attract new stakeholders, resources and opportunities, potentially increasing opportunities for more aggressive policy responses. Other global and trans-boundary environmental problems such as ozone depletion, acid rain, smog have also helped to globalise interest in land use and other activities historically considered of purely local interest. As such climate change mitigation may be only a more recent, perhaps more extreme example of the old saying 'think globally, act locally.'

⁸¹ The national government shares competence with the provinces on land use practices in federal lands (such as national parks) and federally regulated activities like airports, seaports and the like. However, that represents a very small proportion of land in most cities.

⁸² The sole reference to municipalities in the *Constitution Act* (1867) is simply to grant the provinces the power with regard to the establishment and operation of municipalities, should they wish to.

Notwithstanding the delegations, provincial governments oversee the land use decisions of municipalities in several ways. This is perhaps best exemplified by the 'municipal boards' in many provinces which hold quasi-judicial reviews of municipal decisions and can revise or reject municipal decisions on land use and many other matters⁸³.

In short, land use policy making in Canada is characterized by a very strong and assertive provincial authority, a nearly absent federal government, and highly dependent municipalities. These characteristics seem to have important consequences for climate policy. Below, we discuss first how jurisdictional frameworks are affecting the ability of higher level governments to induce local land use action, with a particular focus on mechanisms for collaboration. Later, we discuss opportunities for independent action by local governments.

Federal and provincial involvement in local land use action

In their comparative analysis of three federal states (Germany, the U.S. and Canada), DeAngelo and Harvey (1998) noted that Canada was the most decentralized⁸⁴. In their view, this left few regulatory tools at the disposal of the national government to directly influence local action on climate change. At the time of their study, the Kyoto Protocol had not yet been ratified by Canada. They speculated that ratification would strengthen the jurisdictional competence of the national government.

This does not seem to be the case. Today, more than ten years later, there remains little direct collaboration between federal and municipal government action in areas of importance to climate change policy such as land use. Indeed, Canada appears to be remarkable in that regard when compared to the U.S. (where there exists direct federal regulation of municipal emissions

⁸³ Provincial governments have shown little hesitation to exercise their ultimate authority over the structure of municipalities and municipal government. Earlier this decade several municipal mergers and dissolutions of municipalities were carried out by provincial government despite strong local opposition. For political reasons, however, they are more reticent about intervening too strenuously in the substantive decisions of the elected municipal councils.

⁸⁴ They reviewed and analyzed the response to climate change in three cities: Wuppertal in Germany, Toronto in Canada and Portland, Oregon in the U.S.

and many federal 'block grants' intended for municipal use) and some European countries where land use policy is regularly formulated by the central government.

One important but limited mechanism for federal / municipal collaboration is the use of third parties to transfer federal moneys to municipalities. Most relevant in this regard is the Green Municipal Fund established by the Federation of Canadian Municipalities (FCM). FCM received \$375 million from the federal government to help set up this fund. The fund offers grants to municipalities for sustainable development projects. Although it was not expressly established as a climate change mitigation effort, clearly some of the projects funded under will help reduce GHG emissions and vulnerability to climate change⁸⁵.

The proposed federal regulation of large final emitters (LFEs), and especially, the domestic offsets system associated with that regulation, might become a new and significant opportunity for more robust direct federal / municipal collaboration. As participants, municipalities which adopt land use regulations leading to long term and significant reductions in the distance traveled by vehicles ('vehicle-kilometers traveled' or VKTs) for example might apply to receive carbon credits. Those credits could be sold in the emerging carbon markets either by a single municipality or by 'aggregators' (possibly the FCM) to fund multi-government initiatives. The prospect of carbon credits also may open opportunities for 'carbon financing' of new climate-supportive local actions or development.

Depending on the conditions of the carbon market, this mechanism could open new and substantial sources of revenue for municipalities. This in turn may help to level the playing field for more environmentally conscious communities as they evaluate the impact of new development in the face of pro-development interests. In fact, it may be

⁸⁵ An initiative by a prior Liberal Party government, known as 'A new deal for cities' promised a new era of increased federal / municipal collaboration. A share of the federal fuel tax was allocated to municipal government. However, after ascent of the Conservative Party to power, no further progress has been made in this regard (Robinson & Gore 2005).

argued that municipal participation in the offsets program (especially with land use reform projects) should be an essential objective of federal climate policy. Otherwise, this promising and long term potential solution to the climate crisis would fall almost entirely outside the national regulatory framework⁸⁶.

However, this opportunity for more robust federal / municipal collaboration may be lost if the new regulation is not carefully designed. FCM has repeatedly urged the federal government to facilitate municipal offsets projects by providing more lenient requirements for governmental projects. For instance, rules that would bar projects supported or required under other public programs may be relaxed. Flexible aggregator rules would also facilitate 'carbon financing' for new municipal initiatives⁸⁷.

The potential for linking local land use policy with the other senior-level government, that is the province, is of course virtually limitless from a legal perspective. As noted before, all land use power held by the municipality, indeed the very municipal corpus, derives from the provincial authority. While Canada's *ultra vires* doctrine is looser than the U.S.'s Dillon Rule (especially after the decision of the Supreme Court of Canada in *114957 Canada Ltée (Spraytech, Société d'arrosage v. Hudson (Town)* [2001] S.C.R. 241, recognizing a municipality's 'general welfare' powers as authorizing a ban on pesticide

⁸⁶ It is likely that some municipal projects will be able to participate in the proposed federal offsets system. Under Alberta's system, which the federal government seems to be using as a model, municipal projects such as Edmonton's composting facility, wind turbine projects and landfill capture projects have qualified. The problem remains that more structural demand-side measures like urban form modifications do not fit well with offset project eligibility requirements.

⁸⁷ Any relaxation of carbon crediting rules is rightly opposed by environmental groups. Credits should be quantifiable, verifiable and incremental if the integrity of the global regime is to be protected. This highlights the advantages of other climate policy instruments such as carbon taxes. A project based, offsets approach is likely to exclude most broad land use measures. Accurately and precisely measuring the quantity of reductions is obviously easiest to do when a building or discrete site is involved and a baseline of emissions can be relatively projected. As noted above, establishing a clear and verifiable link between any particular city-wide densification measure and a subsequent decrease in VKTs for the area is extremely complex, maybe impossible. The selected approach may thus be biased against demand-side approaches. By contrast, a broad carbon tax aimed at consumption may be a better complement to a land use approach.

use), provincial governments clearly have full and plenary authority to dictate whatever local land use policy they see fit – although this could be risky politically.

In fact, there is considerable variation between provinces and over time in the extent of provincial involvement in local land use decisions. Recent legislative developments in Ontario, in particular the *Green Energy Act*, S.O. 2009, c. 12, Schedule A, and the *Places to Grow Act*, S.O. 2005, c. 13, are especially interesting in this regard. Under the *Green Energy Act*, provincial planners are empowered to waive any land use regulation that may interfere with the siting of a renewable energy plant. Under the *Places to Grow Act*, provincial planners have for the first time imposed relatively high density requirements that all local and regional land use development plans must satisfy.

These two laws represent a new and significant assertion of provincial authority over day to day local planning functions. Will it result in more climate-friendly land use policies, counteracting competitive pressures between municipalities? Will the more stringent density requirements change land use practices significantly? Will Ontario's standards help to bring up straggling jurisdictions, especially in the fast growing exurbs of Toronto? Will it hamper local elected officials from making more aggressive land use reforms?

Capacity of local government for independent action on climate

DeAngelo and Harvey also determined that each of the three cities studied, including Toronto (their Canadian example) had considerable capacity to implement climate policies independent of other levels of government, through informal or formal activities. Gore et al. (2005) explored the relevance of limited jurisdictional capacity of cities in their review of climate policies. As noted above, they observed little activity in the area of land use. One reason for this in their view is that most provinces have final oversight over land use planning, and, therefore, cities may have to navigate a difficult legal intergovernmental quagmire if they want to significantly amend long-range

planning, or they may be waiting for provinces to lead in this area⁸⁸. The authors concluded that considering the lackluster federal response to climate change and the diverse economic interests that affect provincial responses, the initiatives of municipal government deserve more attention and support.

It is perhaps not surprising that cities have chosen to act in their non-regulatory capacities. City officials have several kinds of 'levers of power'. Hammer (2009) lists five:

- Rule making (e.g., zoning bylaws)
- Regulatory oversight (e.g., enforcing building codes established by province)
- Direct expenditure (e.g., purchasing of fuel for car fleet, leasing of facilities to house municipal agencies, and services like snow removal);
- Financial incentives (tax breaks or direct financial support to promote energy efficient, fuel saving behaviours);
- Information gathering and dissemination, facilitation and advocacy⁸⁹.

The most prevalent and well known examples of municipal climate change mitigation strategies involve non-regulatory approaches. Cities have installed methane capture systems in their landfills, offered grants for installation of green roofs and energy retrofits, changed traffic light bulbs to high efficiency models, increased transit services and built bicycle trails to encourage active modes of commuting, modified purchasing requirements for buses and municipal fleets to favour low emission vehicles. What remains rare are the kinds of land use regulations at the heart of a structural change. It is in this areas where municipal capacity to act may be weakest.

Which jurisdictional framework is best?

Considering the urgency and gravity of the climate crisis, it may be argue that power over critical policy areas such as land use, transportation and energy should be allocated to those

⁸⁸ Some might argue that in fact there is no climate change planning worthy of the name in Canada beyond aspirational targets and promises of future actions which remain vague. Some have noted that most municipal activity qualifies as 'no regrets' measures on a case by case basis, meaning they can be and are being justified without any reference to climate change.

⁸⁹ Energie-Cities similarly characterizes key local authority in several classes including: service provider, model, developmer, advisor, producer, consumer, planner, regulator, motivator, supplier.

levels of government most willing to act aggressively. In this regard, some believe that municipal governments may be in a favoured position. Municipal government is best situated to know and control local land use practices. DeAngelo & Harvey (1988) assert that:

Many opportunities to reduce greenhouse gas emissions, and the associated costs and economic benefits, are highly site-specific. Municipal governments, because they are more directly involved in local activities and more aware of local conditions and opportunities, are therefore well positioned to be able to capitalize on emission reduction opportunities within their own jurisdiction⁹⁰.

Further, fossil fuel industries and car manufacturers typically do not have a strong voice in municipal politics⁹¹. At the same time, municipal governments are subject to strong political pressures from private development interests. Further, DeAngelo and Harvey (1998) note that the impact of GHG emissions may not be deemed a local concern as they will affect first and perhaps primarily foreign countries.

Of course, efficacy of outcomes is not the only criteria for evaluating jurisdictional allocations. Allocations of authority should also promote fairness in decision making. The principles of subsidiarity would suggest that regarding land use decisions Other approaches include a home rule approach which permits local authorities to define the scope of their powers.

There may be some political advantages to the disaggregation of power to act on climate across different levels of government.

Conclusion

Is there something different about the climate change problem that suggests a more vigorous land use reform may be achievable in Canada? One answer to that question may be that

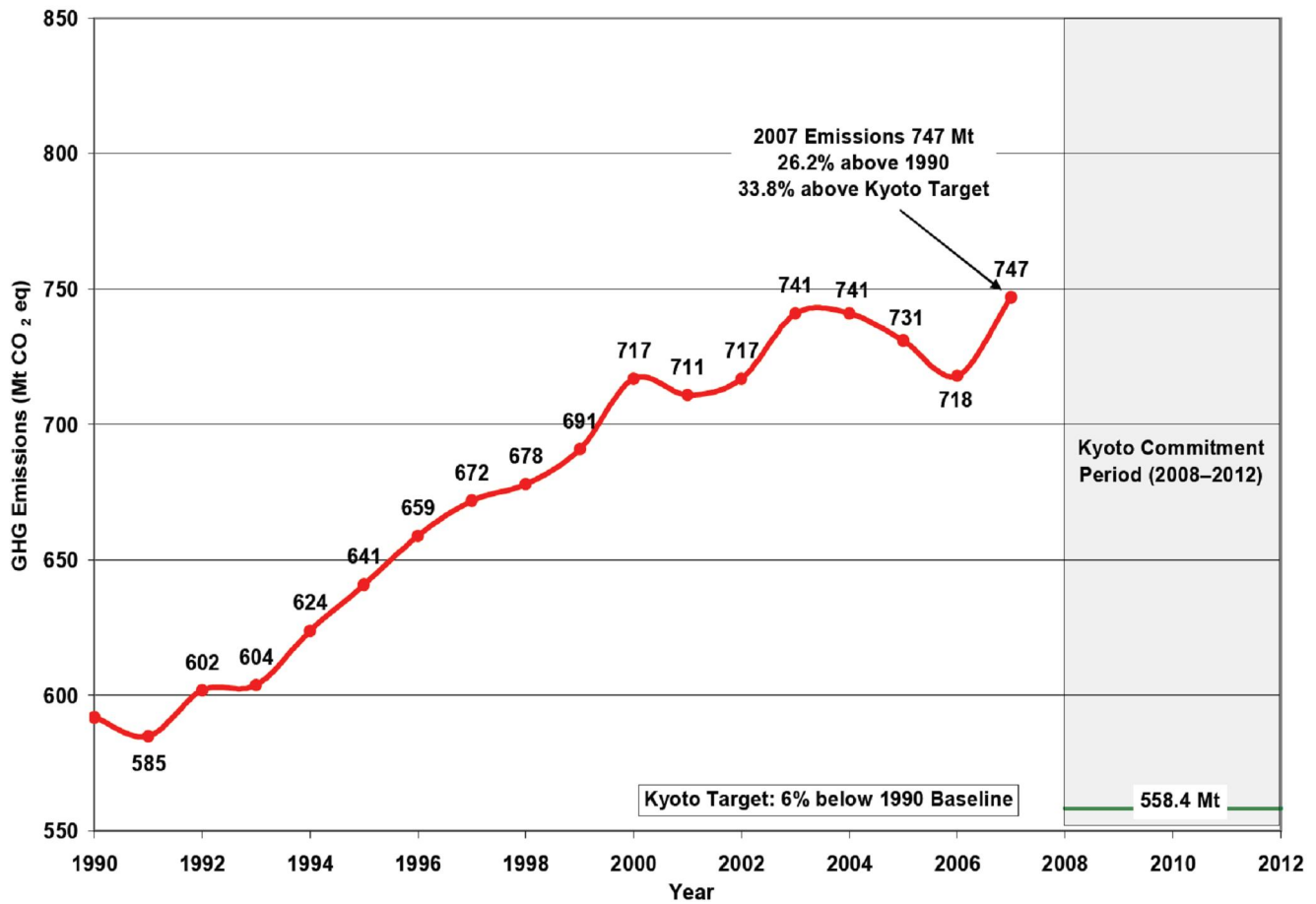
⁹⁰ 'Political forces opposed to GHG emission abatement, involving primarily the fossil fuel and automobile industries, do not normally operate at the municipal level. Second, it seems to be easier to develop implementable action plans at the local level, and third, it has in some cases been easier to find proponents of such actions.' (DeAngelo and Harvey (1998), 114).

⁹¹ In Canada, this may help explain the leadership role of some municipal governments even in provinces whose climate policies have been relatively weak. Calgary, for instance, has instituted a well regarded Envision Calgary climate change plan. Okotoks, Alberta has implemented extensive carbon reduction programs and supported development of an extensive solar powered district heating system.

climate change policy is being provoked and promoted by a relatively robust, and still developing, international legal regime (best exemplified by the UNFCCC and the Kyoto Protocol) plus a number of very active global governance networks that include sub-national governments, non-governmental organizations and private enterprise.

Our primary contention here is that new challenges as well as new opportunities for land use planners may arise from the global climate regime (however weak). This is in part because urban land uses appear to be a key source of the problem of GHG emissions, and local action is critical to adapting to climate impacts as well as a stabilizing GHGs concentrations. This may attract new stakeholders and resources to municipal activities. Indeed, the success of national mitigation efforts will depend on how well governments at all levels will be able to support land use action. Yet, the constraints endemic to the planning system (briefly noted above) as well as legal and jurisdictional frameworks present significant barriers to land use planners hoping to implement a climate change mitigation strategy.

APPENDIX 1 - Canada's total GHG emissions 1990 – 2007



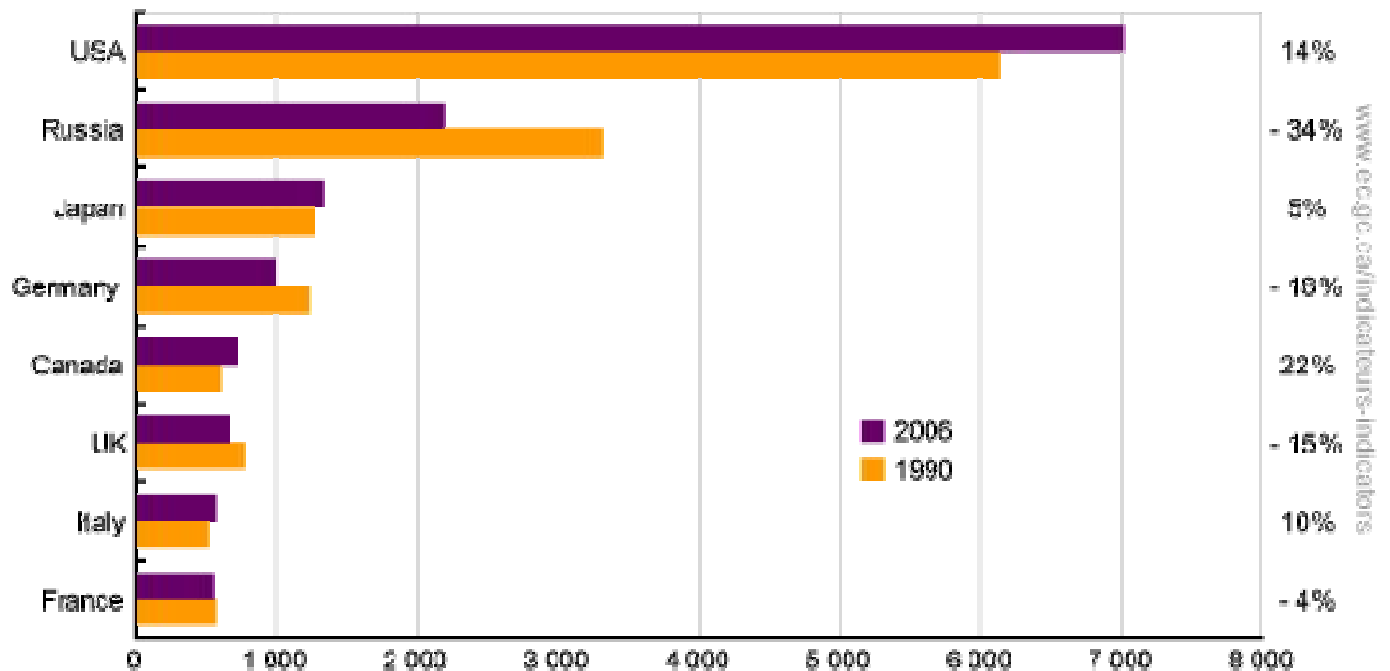
Taken from: Environment Canada (2008)

APPENDIX 2 - GHG emissions by country 1990 and 2006

GHG emissions by country 1990 and 2006

Megatonnes of carbon
dioxide equivalent

Percent change
from 1990

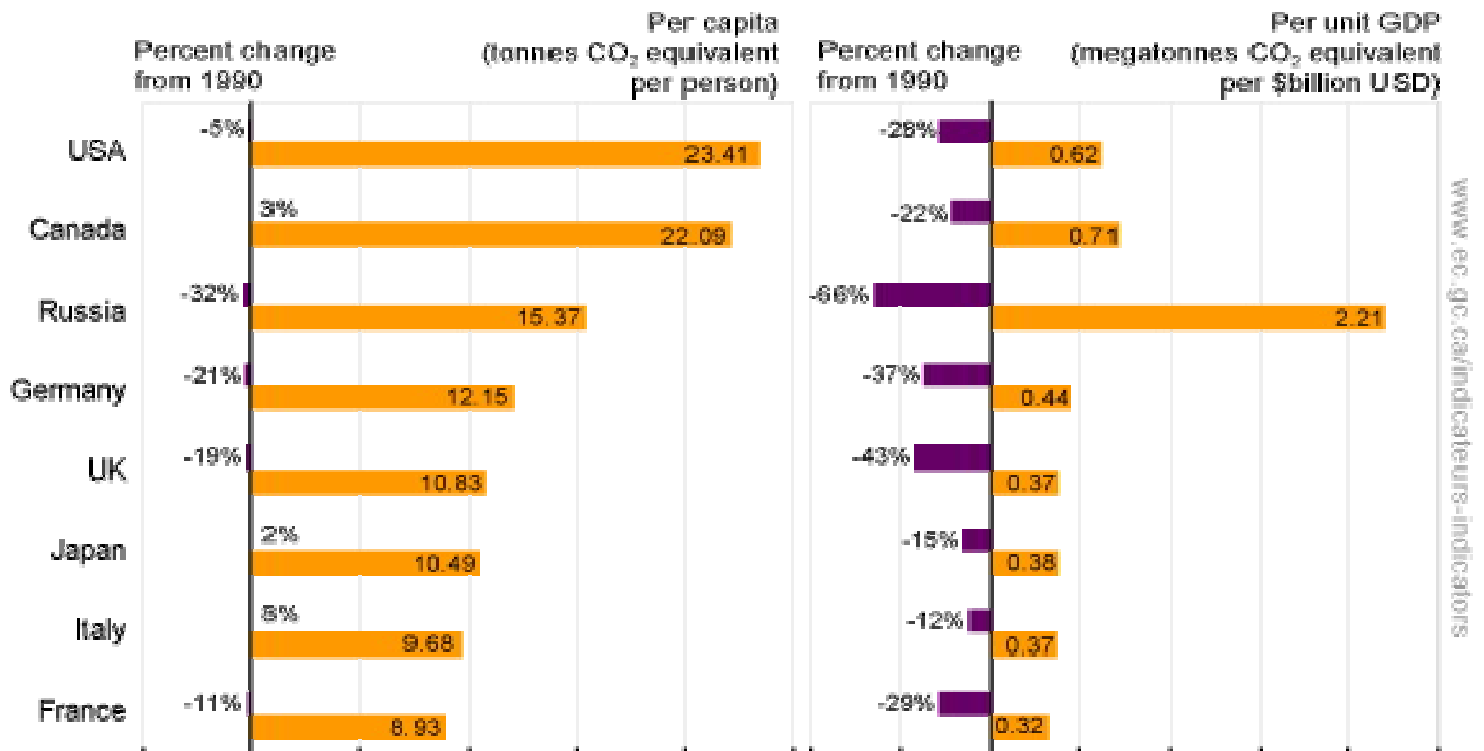


Source: The Greenhouse Gas Inventory Data Interface, United Nations Framework Convention on Climate Change website: http://unfccc.int/ghg_data/ghg_data_unfccc/items/4148.php.

Taken from: Environment Canada (2008)

APPENDIX 3 - GHG emissions per person and per unit of GDP by country, 2006

GHG emissions per person and per unit GDP by country, 2006



Note: Gross Domestic Product values and populations numbers for Russia come from the World Bank. The World Bank GDP values are in current \$USD, millions. All other GDP values come from the OECD and are in constant \$USD, constant PPPs, reference year 2000, millions.

Source: The Greenhouse Gas Inventory Data Interface, United Nations Framework Convention on Climate Change website: http://unfccc.int/ghg_data/ghg_data_unfccc/items/4146.php; StatExtracts On-line Database, The Organisation for Economic Co-operation and Development website: <http://webnet.oecd.org/wbos/index.aspx>; The United Nations Population Division website: www.unpopulation.org; World Development Indicators 2006 Data and Statistics, The World Bank website: <http://web.worldbank.org/WBSITE/EXTERNAL/DATASTATISTICS/0,,contentMDK:20899413~pagePK:64133150~piPK:64133175~theSitePK:239419,00.html>

Taken from: Environment Canada (2008)

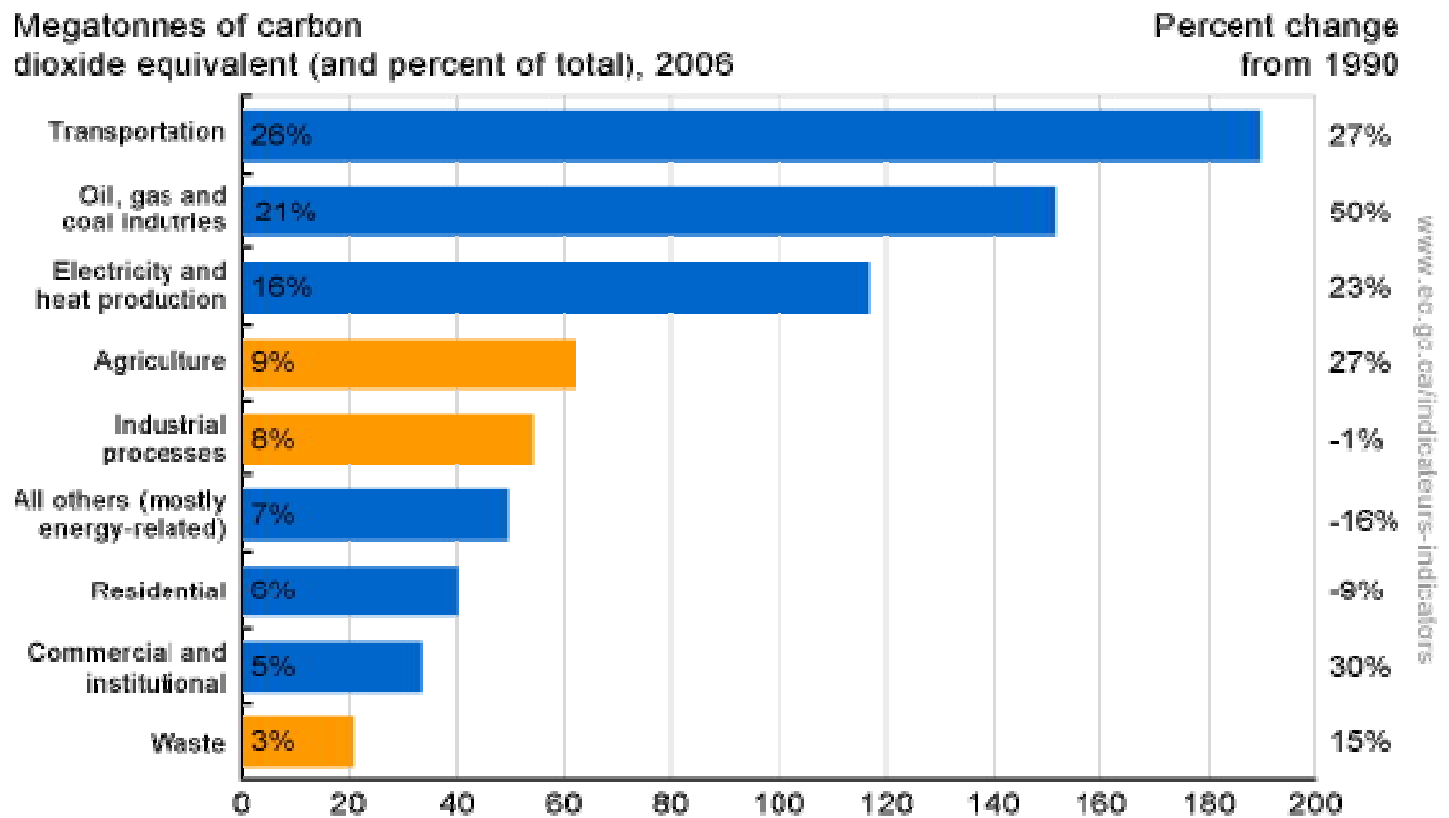
APPENDIX 4 - Changes in emissions and activity drivers by country

Table 6: Changes in emissions and activity drivers by country, 1990-2005^a

	GHG Emissions (Mt CO ₂ eq)		Change in activity drivers		Population intensity (tonne CO ₂ eq/person)			Intensity of the economy (kg CO ₂ eq per dollar GDP)			
	1990	2005	Chg from 1990	Kyoto target (relative to 1990)	"Kyoto Gap" ^a	GDP ^a	Pop	2005	Chg since 1990	2005	Chg since 1990
<i>United States^b</i>	6,229	7,241	16.3%			57%	19%	24.4	-2.10%	0.65	-26%
<i>European Community^c</i>	4,258	4,193	-1.5%	-8.0%	7.0%	33%	7%	13.4	-8.00%	0.64	-26%
<i>Japan</i>	1,272	1,360	6.9%	-6.0%	13.7%	23%	3%	10.6	3.36%	0.27	-13%
<i>Germany</i>	1,228	1,001	-18.4%	-21.0%	3.2%	28%	4%	12.1	-21.44%	0.51	-36%
Canada	592	734	24.0%	-6.0%	32%	52%	16%	22.7	6.7%	0.90	-18%
<i>United Kingdom</i>	771	657	-14.8%	-12.5%	-2.6%	42%	5%	10.9	-18.55%	0.41	-40%
<i>Italy</i>	517	580	12.1%	-6.5%	19.9%	21%	3%	9.9	8.52%	0.52	-7%
<i>France</i>	567	558	-1.6%	0.0%	-1.6%	33%	7%	9.2	-8.26%	0.39	-26%
<i>Australia</i>	418	525	25.6%	8.0%	16.3%	67%	19%	25.8	5.45%	1.15	-25%
<i>Spain</i>	287	441	53.3%	15.0%	33.3%	52%	12%	10.2	37.22%	0.65	1%
<i>Netherlands</i>	213	212	-0.4%	-6.0%	6.0%	38%	9%	13.0	-8.74%	0.55	-28%
<i>Czech Republic</i>	196	146	-25.8%	-8.0%	-19.3%	23%	-2%	14.2	-24.58%	2.17	-40%
<i>Austria</i>	79	93	18.0%	-13.0%	35.6%	37%	7%	11.3	10.51%	0.45	-14%
<i>Sweden</i>	72	67	-7.3%	4.0%	-10.8%	36%	5%	7.4	-12.03%	0.25	-32%
<i>Denmark</i>	70	65	-7.0%	-21.0%	17.7%	37%	5%	12.1	-11.77%	0.38	-32%
<i>Norway</i>	50	54	8.8%	1.0%	7.8%	58%	9%	11.7	-0.14%	0.30	-31%

Source: Environment Canada (2008)

APPENDIX 5 - Sources of GHG emissions by sector, Canada, 2006



Note: The blue portion of the chart represents GHG emissions from the energy sector. The other sectors reflect the UNFCCC methodology.

Source: *The National Inventory Report 1990–2006: Greenhouse Gas Sources and Sinks in Canada*. Environment Canada, 2008.

Taken from: Environment Canada (2008)

APPENDIX 6 – Trends in GHG emissions in Canada since 1990

	1990	1995	2000	2003	2004	2005	2006	2007
Total GHG (Mt)	592	641	717	741	741	731	718	747
Change since 1990 (%)	NA	8.3	21.2	25.1	25.2	23.5	21.4	26.2
Annual Change (%)	NA	NA	NA	NA	0.0	-1.3	-1.7	4.0
Average Annual Change (%) *	NA	1.7	2.1	1.9	1.8	1.6	1.3	1.5
GDP (Billions 2002\$)	825	899	1,101	1,175	1,211	1,246	1,285	1,320
Change since 1990 (%)	NA	8.9	33.3	42.3	46.8	51.0	55.7	59.9
Annual Change (%)	NA	NA	NA	NA	3.1	2.9	3.1	2.7
GHG Intensity (Mt/\$B GDP)	0.72	0.71	0.65	0.63	0.61	0.59	0.56	0.57
Change since 1990 (%)	NA	-0.5	-9.1	-12.1	-14.7	-18.2	-22.0	-21.1
Annual Change (%)	NA	NA	NA	NA	-3.0	-4.1	-4.7	1.3
GDP: Canada - Gross Domestic Product – expenditure based, chained 2002 dollars – Statistics Canada, 2008.								
*Average annual change since 1990. NA = Not Applicable.								

Source: Environment Canada. Trends in Emissions and Emissions Intensities for Selected Years (1990–2007) http://www.ec.gc.ca/pdb/ghg/inventory_report/2007/som-sum_eng.cfm#tphp

APPENDIX 7 - Main sources of GHG emissions in Canada

Canada's main sources of GHG emissions.^{1,2,3,4}

Source	% of national emissions (1990)	Emissions (Mt CO ₂ e ⁵ , 2006)	% of national emissions (2006)	% change in emissions (1990–2006)
Industrial facilities	52.8	379	52.5	21
Electricity generation	15.6	111	15.3	19
Oil and gas production, transmission and distribution	16.8	144	20.0	44
Other industrial facilities	20.4	124	17.2	3
Transportation	24.2	180	25.0	26
Passenger cars and trucks	11.3	74	10.3	11
Freight trucks	5.2	60	8.3	92
Railways	1.2	6	0.8	-14
Aviation (domestic)	1.1	8	1.2	31
Other transportation (off-road, marine, buses etc.)	5.3	32	4.5	2
Buildings	11.8	73	10.2	5
Residential buildings	7.4	40	5.5	-9
Commercial buildings	4.3	33	4.6	30
Agriculture (apart from energy use)	8.3	62	8.6	27
Landfills	2.9	20	2.8	18
Other	0.9	4	0.6	
Federal government operations ^a	0.7	3	0.4	^b -24
Total		721		22

^a These emissions have already been counted once in the preceding sources.

^b Change 1990–2002.

¹ Environment Canada, *National Inventory Report — Greenhouse Gas Sources and Sinks in Canada 1990–2006* (Ottawa, ON: Environment Canada, 2008), 480, 507.

² Natural Resources Canada, *Energy Use Data Handbook Tables (Canada)*, Office of Energy Efficiency, http://oee.nrcan.gc.ca/corporate/statistics/neud/dpa/handbook_tables.cfm (accessed February 6, 2009).

³ Government of Canada, *Federal House in Order — Annual Report on Emissions Reductions From Federal Operations* (Ottawa, ON: Government of Canada, 2004), 11. Also available online at <http://oee.nrcan.gc.ca/publications/statistics/fhio04/pdf/fhio2004.pdf>.

⁴ All data has been derived from the *National Inventory Report*, except for the cars and trucks data which has been derived from the *Energy Use Data Handbook Tables*, and the federal government operations data, derived from the *Federal House in Order* report.

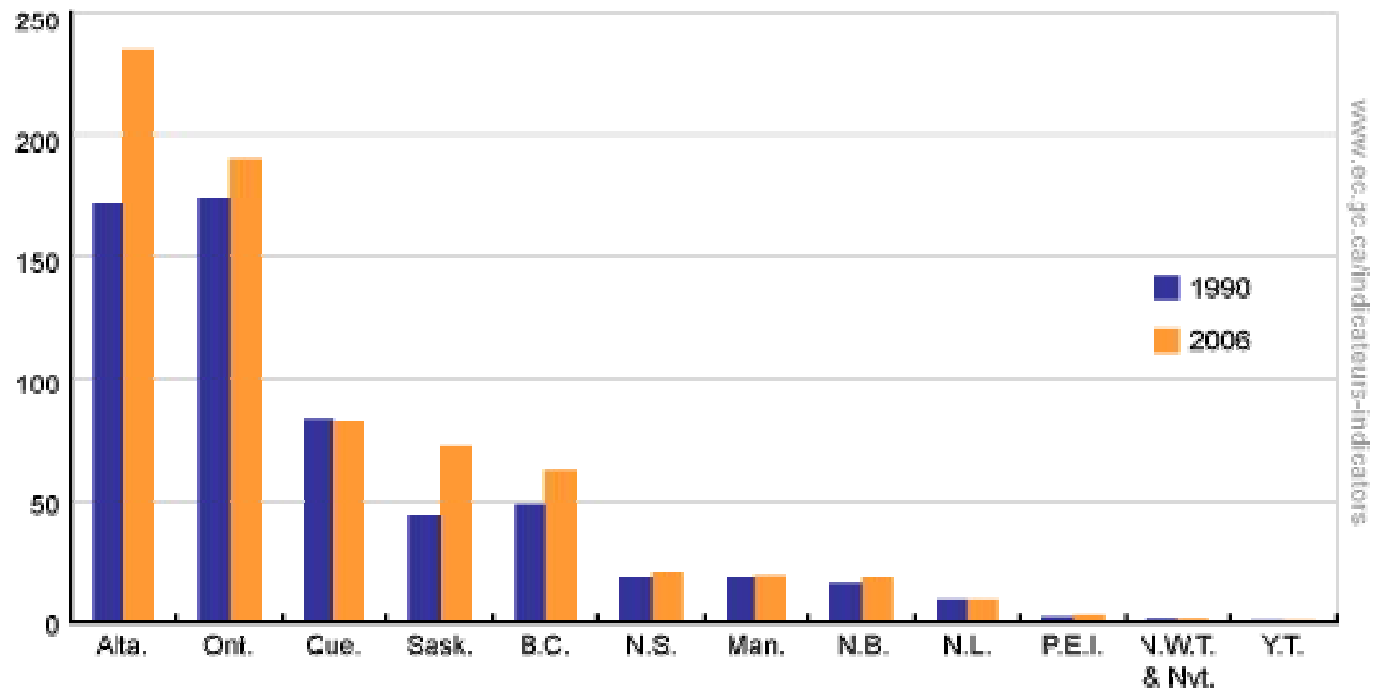
⁵ Megatonnes of carbon dioxide equivalent.

Taken from: Pembina Institute <http://climate.pembina.org/docs/Canadas-GHG-mainsources.pdf>

APPENDIX 8 – Greenhouse gas emissions by province/territory, 1990 to 2006

Greenhouse gas emissions by province/territory, 1990 to 2006

Megatonnes of carbon dioxide
equivalent



Source: *The National Inventory Report 1990–2006: Greenhouse Gas Sources and Sinks in Canada*. Environment Canada, 2008.

Source: Environment Canada (2008)

Appendix 9 – GHG emissions per capita of provinces and territories of Canada, 1990 and 2006

Tableau 3 Émissions de GES totales par habitant des provinces et territoires canadiens entre 1990 et 2006

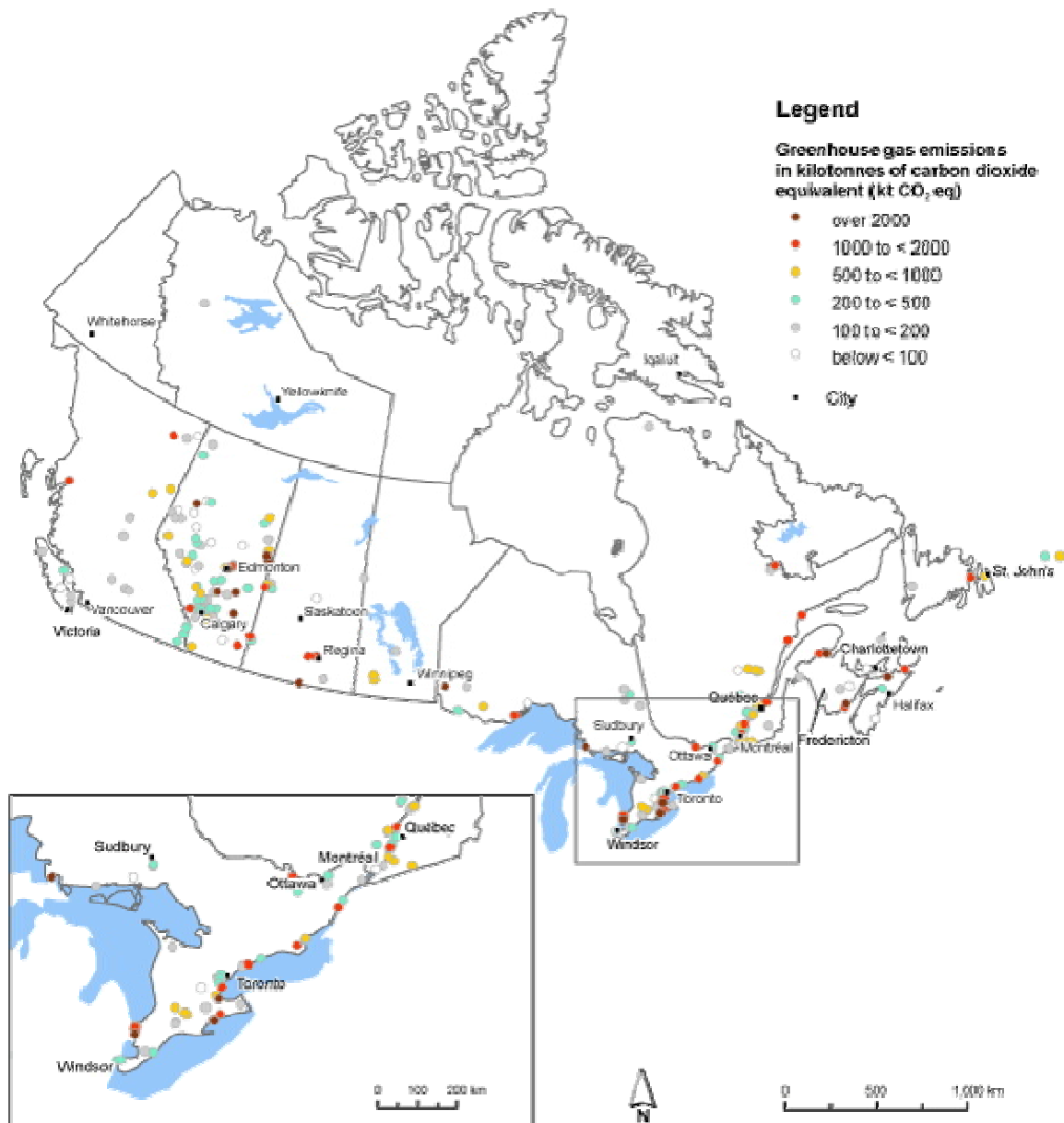
Provinces	Émissions (Mt éq. CO ₂) ¹		Variations 1990 à 2006	Population ⁴	Émissions par habitant en 2006
	1990	2006	%	2006	t éq. CO ₂ par habitant
Terre-Neuve-et-Labrador	9,4	9,4	0,0	509 677	18,4
Île-du-Prince-Édouard	2,0	2,1	4,6	138 519	14,8
Nouvelle-Écosse	19,0	19,6	3,2	934 405	21,0
Nouveau-Brunswick	15,9	17,9	12,6	749 168	23,9
Québec ²	83,4	84,7	1,6	7 651 531	11,1
Ontario	174,0	190,0	9,2	12 686 952	15,0
Manitoba	18,8	21,2	12,8	1 177 765	18,0
Saskatchewan	44,0	72,0	63,6	985 386	73,1
Alberta	172,0	234,0	36,0	3 375 763	69,3
Colombie-Britannique	48,9	62,3	27,4	4 310 452	14,5
Yukon	0,5	0,4	- 26,8	31 229	12,6
Territoires du Nord-Ouest et Nunavut	1,5	1,3	- 13,5	72 643	17,7
Canada ³	592,0	721,0	21,8	32 623 490	22,1

1. Les données relatives aux émissions des provinces et des territoires (sauf pour le Québec) proviennent de l'*Inventaire canadien des gaz à effet de serre 1990-2006*, mai 2008.
2. Émissions calculées par le ministère du Développement durable, de l'Environnement et des Parcs (MDDEP) en septembre 2008 et provenant de l'*Inventaire québécois des émissions atmosphériques*.
3. Le total canadien n'est pas égal à la somme des émissions des provinces et des territoires, car les émissions fugitives provenant des raffineries de pétrole ainsi que la consommation de HFC et de SF₆ ne sont pas comptabilisées à l'échelle provinciale. De plus, les émissions québécoises calculées par Environnement Canada ne sont pas présentées dans ce tableau.
4. Données provenant de la dernière mise à jour de Statistique Canada en juin 2008.

Source: Ministry of Sustainable Development, Environment and Parks, Quebec
<http://www.mddep.gouv.qc.ca/changements/ges/2006/inventaire2006.pdf>

APPENDIX 10 Location of large facility greenhouse gas emissions in Canada

Large facility greenhouse gas emissions



Notes: Unlike the National Inventory Report which compiles GHG data at a national level, developed from national and provincial statistics, the Facility GHG Emissions Reporting Program applies only to the largest industrial GHG emitters in Canada. In the GHG emissions reporting program, all facilities that emit the equivalent of 100 000 tonnes (100 kt) or more of greenhouse gases (in CO₂ equivalent units) per year are required to submit a report.

Source: Greenhouse Gas Division, Environment Canada. 2008. Facility Greenhouse Gas Emissions Reporting Program. Overview of the Reported 2006 Greenhouse Gas Emissions. Environment Canada, 2008. (http://www.ec.gc.ca/pdb/ghg/facility_e.cfm)

Appendix 11 Canada and Kyoto - timeline of key events (compiled by author)

Date	Description	Notes
1988	34th election	Mulroney's second majority government
1990	National action strategy on global warming announced	GHG emission target: 1990 levels by 2000
12/06/92	Canada signs UNFCCC	unfccc website
04/12/92	Canada ratifies UNFCCC	unfccc website
1993	35th election	Jean Chretien wins majority defeating conservative Kim Campbell (PQ official opposition)
21/03/94	UNFCCC enters into force	unfccc website
Feb 1995	Environment and energy ministers approve the National Action Program on Climate Change (NAPCC)	http://www.ec.gc.ca/soer-ree/English/Indicators/Issues/Climate/Bulletin/cc_iss_e.cfm 'did nothing to reduce emissions' (Stoett 2006)
1997	36TH election	Chretien's 2 nd majority (reform party official opposition)
29/04/98	Canada signs Kyoto Protocol	unfccc website
2000	37th election	Chretien's third majority (Canadian alliance official opposition)
2000	Action plan 2000	
Spring 2001	US announces it will not ratify Kyoto protocol	(Harrison 2006)
2002	Climate change plan for Canada announced	Target: 91 MT of COE reductions from large final emitters, including 55 MT in negotiated agreements with major emitters. Also voluntary reductions from auto industry and a one tonne challenge initiative for individuals.
17/12/02	Canada ratifies Kyoto	unfccc website
2004	38th election	Martin minority government (liberal) (official opposition Harper's conservative party)
16/02/05	Kyoto enters into force	unfccc website
2005	Project green – moving forward on climate change – a plan for honouring our Kyoto commitment	Regulation of LFE proposed for first time to obtain 45 MT reduction; technology investment fund to be set up and which could sell credits for up to 9 MT; GHGs added as toxic substances under the CEPA; climate fund set up by government to purchase GHG reduction credits from farmers and communities, also to purchase international credits; proposal to negotiate a voluntary agreement with automobile manufacturers to reduce emissions by 5.3 MT / year by 2010.
2006	39th election	Harper's Conservative Party forms minority government
22 June 2007	Kyoto Protocol Implementation Act becomes law	Hogg 2009
2007	Turning the corner – an action plan to reduce GHG emissions and air pollution	Proposed overall reduction of 150 MT by 2020, while Kyoto requires 220 by 2012, using 2006 actual emission levels. New government announces it will not purchase international credits. Regulatory framework for LFE firms: 6% reduction from 2007-2010 emissions. Partial flexibility mechanism for compliance include contributions to technology fund (\$15/tonne), emissions trading, use of early action recognition credits and participation and UNFCCC CDM. Regulations mandating auto fuel efficiency improvements by 2011 model year and appliance efficiency regulations as well as incentives for efficiency improvement in transport and other sectors.
2008	40th election	Harper's second minority government

APPENDIX 12 Synopsis of proposed federal emissions cap for large final emitters

GHGs	Base Year	Total Emissions in Base Year	Type of Target	2010	2011	2012	2013	2015	2015	2020
Existing Facilities	2006	780 MT (based on Government of Canada's Business as Usual projections)	Sector based intensity on non-fixed process emissions	18%	2%	2%	2%	2%	2%	150MT absolute reduction is targeted
New Facilities (First year operation 2004 or later)	3 rd year of operation (3 year grace period)	TBD	Sector-based intensity on non-fixed process emissions	To apply in 4 th year of operation, to be based on cleaner fuel standards, and require further 2% intensity reduction per year to 2020						

source:

http://www.macleoddixon.com/documents/Canadas_Regulatory_Framework_for_Air_Emissions.pdf

**APPENDIX 13 Elements of proposed federal regulatory framework for industrial emissions
(compiled by author)**

Law or policy	Basic elements of policy or law	Stated goals
Federal Regulatory framework for industrial GHG emissions	<ul style="list-style-type: none"> target reduction in GHG intensity for defined industrial sectors (-18% off 2006 levels by 2010 for existing facilities and 'clean' fuel standard for new installations) incentives until 2018 and 100% credit up to 2017 to build CCS ready compliance mechanisms: <ul style="list-style-type: none"> technology fund contributions in lieu of compliance at set limits until 2017 when phased out (two components of fund: deployment-and-infrastructure and research-and-development. Contribution at \$15/tonne of COE at first domestic offsets available and up to 10% allowance for CDM under Kyoto and up to 15MT in one-time credits for early action inter-firm trading of credits 	<p>165MT in direct and indirect reductions from the industrial sector by 2020 or about 37% reduction from BAU or a 21% reduction below 2006</p> <p>"a key principle is that there would be no inter-regional transfer of wealth" (p.3)</p> <p>Under April 2007 analysis, economic costs of plan estimated not to exceed .5% of GDP in any given year up to 2020 and to generate 'environmental and health' benefits to exceed \$6billion per year in 2015</p> <p>Fixed process emissions target of zero</p> <p>Three ways to set targets: facility specific used for oil sands, upstream oil and gas, etc (most lenient-used where non-homogeneous context 'beyond the control' of the operator); sector wide (more homogeneous conditions) used for lime, pulp and paper, and corporate specific (mix of facility types possible) used for electric generators.</p> <p>Thresholds for application proposed for some sectors (e.g., in upstream oil and gas, only facilities producing 3kt/facility and 10k barrels of oil equivalent/day/company will be subject to regulation. More stringent than Alberta so feds will discuss to reach agreement.</p> <p>'any decision in Canada on the transition to a fixed-cap regime [rather than intensity based] ...would take into account developments occurring in other countries, especially the United States, with the aim of establishing a North American emissions trading system once the United States implements a [ghg] regulatory system.' (p. 21)</p>

APPENDIX 14 Recent costly weather events in Canada, excluding drought

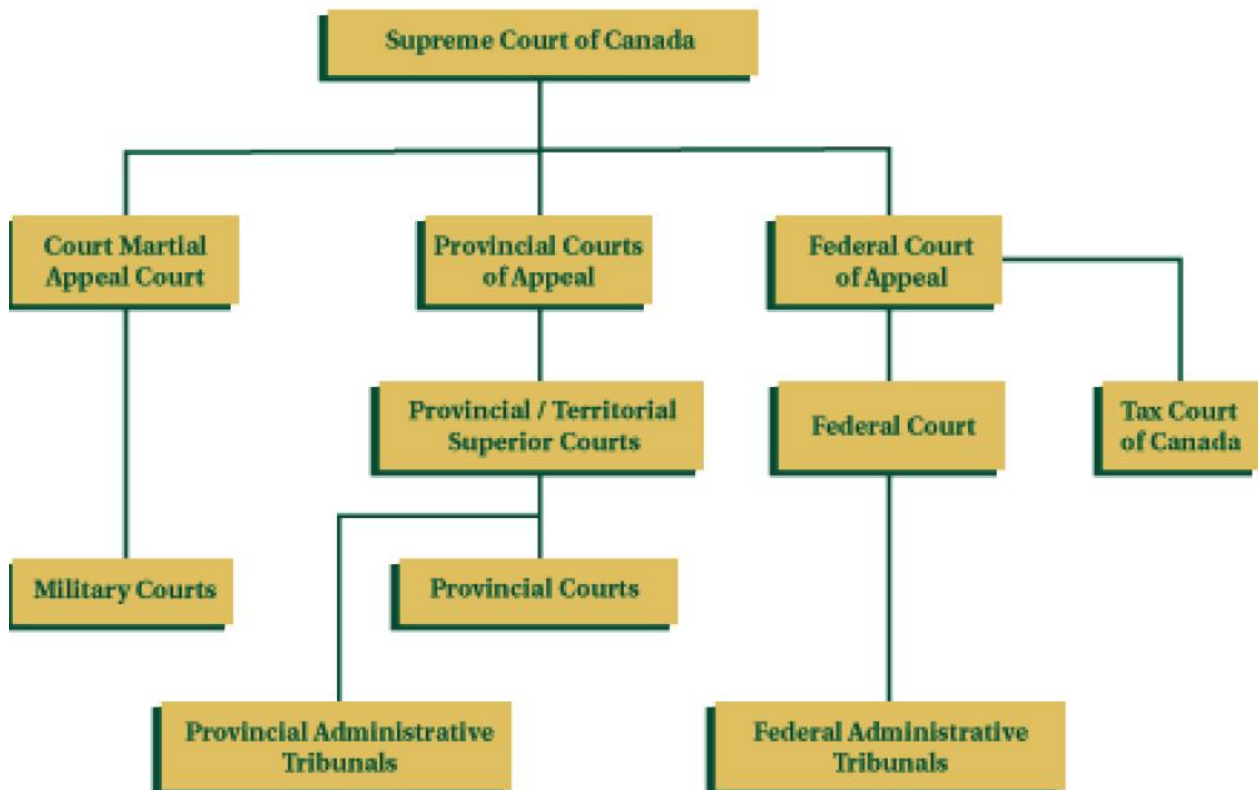
Event and date	Region	Estimated costs	Deaths	Injuries	Evacuations
Ice storm , 1998	Ontario, Quebec, Atlantic Canada	\$5.4 billion	28	945	17 800
Saguenay flood , 1996	Quebec	\$1.7 billion	10	0	15 825
Calgary hailstorm , 1991	Prairies	\$884 million	0	0	0
Red River flood , 1997	Prairies	\$817 million	0	0	25 447
BC/Alberta wildfires , 2003	British Columbia	\$700 million	3	unknown	45 000
Toronto extreme rain , 2005	Ontario	>\$500 million	0	0	0
Southern Alberta floods , 2005	Prairies	>\$400 million	4	unknown	>2000
Calgary hailstorm , 1996	Prairies	\$305 million	0	0	0
Hurricane Juan , 2003	Atlantic Canada	\$200 million	8	unknown	unknown

Source: From Impacts to Adaptation: Canada in a Changing Climate 2007, Synthesis Section, page 9, Natural Resources Canada (2006)

APPENDIX 15 Outline of Canada's court system

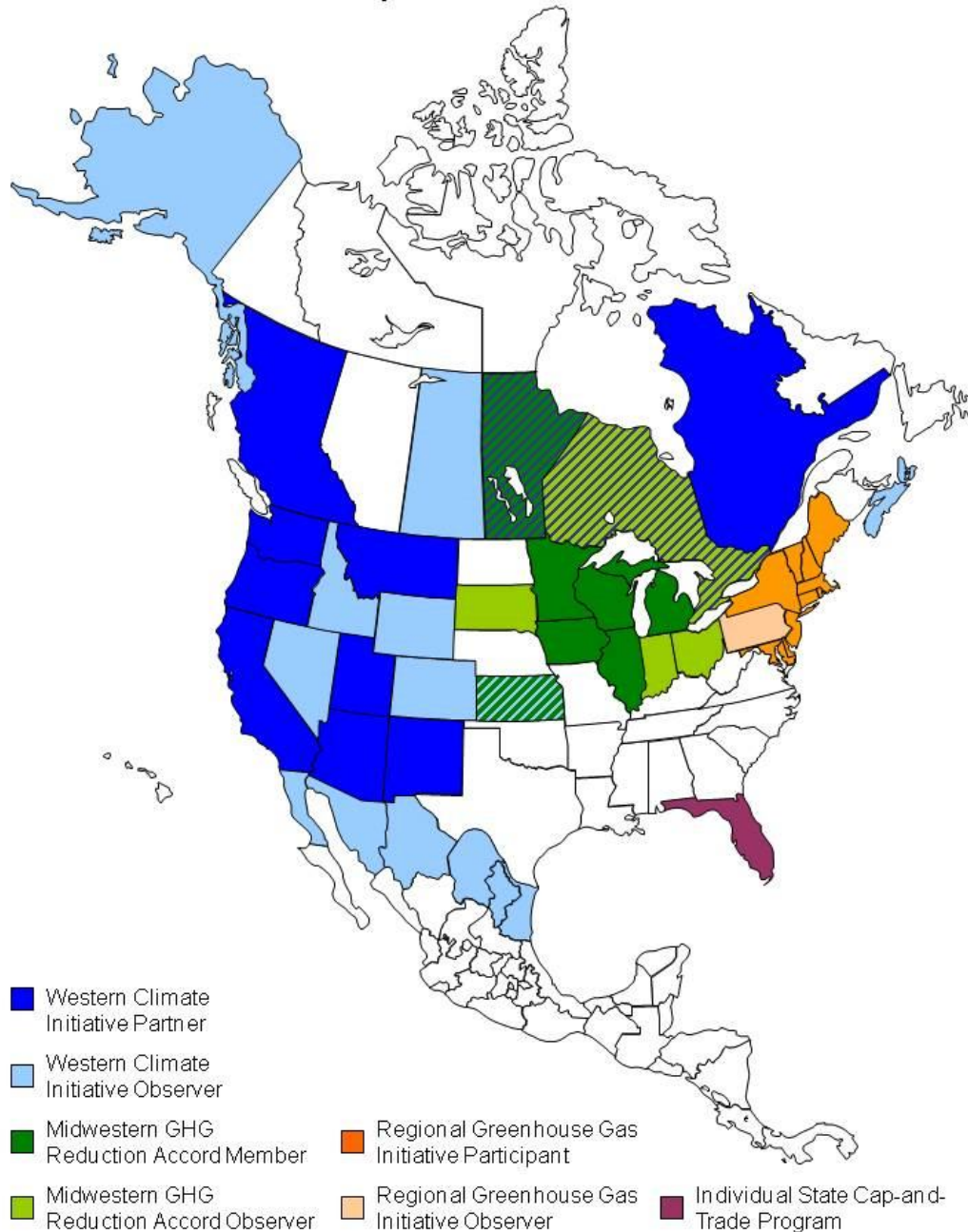
Source: <http://www.justice.gc.ca/eng/dept-min/pub/ccs-ajc/page3.html>

Outline of Canada's Court System



APPENDIX 16 North American cap and trade initiatives

North American Cap-and-Trade Initiatives



Source: http://www.pewclimate.org/what_s_being_done/in_the_states/NA-capandtrade

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