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# Climate Change Strategies of Ontario: A Trans-bioeconomic Regional Approach

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## ABSTRACT

Provincial governments in Canada are fundamental actors in redefining climate change strategies for reducing greenhouse gases (GHG) regionally in North America. The government of Ontario has shown the capacity for adapting and creating government machinery to build relations with other provinces and U.S. states. Its aim has been to articulate local interests to respond to global environmental pressures that demand short-term solutions. The main instruments used to contain GHGs for Ontario have been voluntary market mechanisms like cap and trade, the regional integration of energy and transport sectors, and enforcing the law within the province. This article presents Ontario's climate strategies and suggests that they can be analyzed using the concept of trans-bioeconomic regions.

**Key words:** cap and trade, climate change, greenhouse gases, energy, Kyoto Protocol, trans-bioeconomic region

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## INTRODUCTION

Provincial governments in Canada can become fundamental actors in redefining North American climate change strategies for reducing greenhouse gases (GHG). Looking back at the history and achievements of Canadian climate policies, results favor some provincial trends in terms of performance, enforcing the law, and scope, leaving the federal government –whether Liberal or Conservative– behind.

While climate change has been one of the environmental issues under discussion since the 1970s, the earlier focus was on issues like acid rain, toxic waste, and the ozone layer. The Montreal Protocol on Substances that Deplete the Ozone Layer, drafted in 1987, dealt with the "hot topic" of the time and "signaled that environmental issues were increasingly moving from the local and national to the global level" (Paehlke, 2008: 58).

Climate change was placed on the national agenda one year later. In 1988, the Changing Atmosphere: Implications for Global Security international conference took place in Toronto, just after the Intergovernmental Panel on Climate Change (IPCC) was established by the World Meteorological Organization and the United Nations Environment Program (Bramley, 2000: 1-2). This conference was a precedent for establishing the United Nations Framework Convention on Climate Change (UNFCCC) in December 1992, in which Canada and 160 other countries participated. After several UNFCCC meetings, at the end of the 1997 meeting in Japan, a protocol to operate the framework was drafted, the Kyoto Protocol (KP). It was signed by Canada's Liberal government April 29, 1998, with a commitment to reduce GHG 6 percent, taking 1990 as a baseline year; this goal had to be met by the period 2008-2012 (Environment Canada, 2008).

However, the road to negotiation and ratification of the protocol was difficult for the country. Before signing it, "Canada was focused exclusively on the U.S. position. Canadian negotiators were directed by the two federal ministers leading the delegation to stay 1 percent behind the U.S. Canada was cognizant of the need to remain economically competitive with its largest trading partner" (Harrison, 2007: 103). By that time, the U.S. had set a goal of 3 percent GHG reduction. In this sense, the Canadian government established a national climate-change process to consult with its constituency and other stakeholders, including the provincial and territorial governments. This process set the Canadian government position at a 2 percent reduction (Climate Change Resource Center, 2008; Harrison, 2007: 106).

Nonetheless, the U.S. government suddenly raised the goal to a 7 percent GHG reduction due to internal social and political pressures –especially Al Gore's environmental campaign and nomination as Democratic Party presidential candidate.

The Canadian government then raised its own commitment to 6 percent, changing its position at the last minute before signing the protocol. The response of some provinces was between ambiguous and negative (Stillborn, 2002: 5; Smith, 1998: 10-11). Some disagreed strongly and argued that it was not what consensus or previous programs had established. Alberta, for example, disagreed with the percentage, others in the way it was done, like Saskatchewan and Manitoba, and others, like Quebec, adopted Kyoto but fought for decision-making autonomy. It was Ontario and British Columbia who welcomed the federal commitments and started fighting for environmental leadership (Smith, 1998: 12).

However, a change in the context made countries that had already signed the KP –or were about to– lose their balance. Elections took place in the U.S. giving the presidency to the Republican Party led by George W. Bush. In spring 2001, President George W. Bush announced that the U.S. would not ratify the KP. By then, the Canadian federal government was already locked into the agreement because it had been one of its promoters, along with Japan, the European Union and, ironically, the U.S. Canada was stuck with a very high commitment and with criticism inside the country. The Canadian federal government ratified the Kyoto Protocol in December 2002 hoping that the international inertia of the Johannesburg 2002 Conference on Environment and Development would convince provinces to implement the KP.[1] However, ratification had no support in eight out of ten provinces, among the business community, and especially from Ontario; only Quebec and Manitoba were in favor (Harrison, 2007: 107). Canada's main economic partner had left the agreement, leaving Canadians with low rates of competitiveness –especially for local economies integrated regionally with the U.S and that used fossil fuels to produce energy. The only way out for the Canadian federal government was to fight for exceptions and privileges at the following meetings of the KP process.

The general reaction of the provinces was that most ignored the KP. Taking its own path, the government of Ontario has been developing strategies and creating governing machinery to build relations with other provinces and some U.S. states for responding to climate change. The main instruments Ontario has used to contain GHGs have been voluntary market mechanisms like cap and trade, the integration of energy and transport sectors on a regional basis, and enforcement of the law within the province.

The objective of this article is to present Ontario's climate-change strategies and to suggest that they can be analyzed using the concept of trans-bioeconomic regions. In the first part, I will draft a brief note about the jurisdiction and compe-

[1] In Canada, some international agreements can be ratified directly by the prime minister.

tence over natural resources and the issue of climate change in Canada. The second part will deal with Ontario's political and legislative strategies on climate change. In the third part, I will develop the concept of trans-bioeconomic regions and analyze some of Ontario's most important actions using this approach. In this section, I will also present the main instruments used by the province to contain GHGs, that is, voluntary market mechanisms such as cap and trade, the regional integration of sectors, and enforcement of the law within the province. I will conclude presenting the practical and theoretical limits of this new form of conceiving and constructing a region, as well as the challenges and opportunities Ontario's policy paths present within the current regional context.

## JURISDICTION AND COMPETENCE OVER NATURAL RESOURCES IN CANADA

Canada intensely debated the jurisdiction over natural resources since the nineteenth century. Protection of the environment was not specified as a power of the legislature in the Constitution Act of 1867 (Juillet, 2005: 106-7), so legislative jurisdiction must be found in the existing division of powers. The British North American Act –the Canadian Constitution of 1867– specified in Section 109 that provincial governments had jurisdiction over their lands and natural resources. Sections 92(5) and 92(13) confirmed the exclusivity of the rights the provinces had over land sales and resources –except fishery resources, which were under the exclusive jurisdiction of the federal government (Howlett, 2000: 114). The most crucial claim to legislative jurisdiction over environmental management at the federal level fell under the federal parliament's power to make laws regarding all matters not assigned exclusively to the provinces. In addition, Parliament has legislative jurisdiction in the areas relevant to environmental policy, such as maritime and inland fishery resources, navigation, and shipping or taxation (MacKay, 2004: 2).

Tracing back the origins of environmental policy in Canada, its foundations date to federal-provincial disputes over the management and control of Canada's land and resources in the early years of Confederation (Howlett, 2000: 531). Yet, as Luc Juillet claims (2005), due to the lack of a clear reference in the Constitution Act of 1867, nowadays both levels of government –federal and provincial– have to justify the legitimacy of their intervention into environmental issues by referring to specific powers over other related fields. Provinces have claimed their right to jurisdiction over taxation, agriculture, and administration of natural resources, and this right is the key for environmental policy design: "Canadian provinces own pub-

licly-held resources within their borders. With some 90 percent of Canada's land mass still in public hands, the provinces thus control the natural resources most relevant to climate policy: oil, gas, and coal on the one hand, and forest sinks and hydroelectric potential on the other" (Harrison, 2007: 97).

The federal government for its part would claim its jurisdiction over fishery resources, navigation, criminal law, federal land, fiscal issues, international treaties, and matters of "peace, order, and good government" (MacKay, 2004: 3). For example, provinces can levy taxes on natural resources during the extraction process; the rest of the taxes have to be divided by both levels of government –leading necessarily to negotiation. But most important is the provinces' right to implement or not any international treaty; this is one of the main reasons why provincial cooperation is indeed necessary for developing environmental treaties in Canada. However, the federal government has used its "declaratory power" (Section 92[10c]) to gain complete control of some resources at strategic moments such as during World War II.

Thus, the environmental legislative sphere overlaps many areas of exclusive federal and provincial constitutional jurisdictions. Both levels of government also overlap and concur in certain jurisdictional and competency areas. The ambiguous nature of legislative jurisdiction in Canada has caused the federal government and the provinces to enter into several hundred federal-provincial agreements on the environment, informal arrangements, and court cases (MacKay, 2004). As Kathryn Harrison states, "In Canada, the courts have granted presumptive regulatory authority under the 'property and civil rights' clause to the provinces, which thus exercise greater autonomy in Canadian environmental policy" (2007: 97). In the end, this ambiguity about jurisdiction and competence regarding environmental affairs benefits the provincial design of environmental local policies, and poses them as an exceptional voice for influencing the national ones.

## ONTARIO'S CLIMATE ACTION PLANS

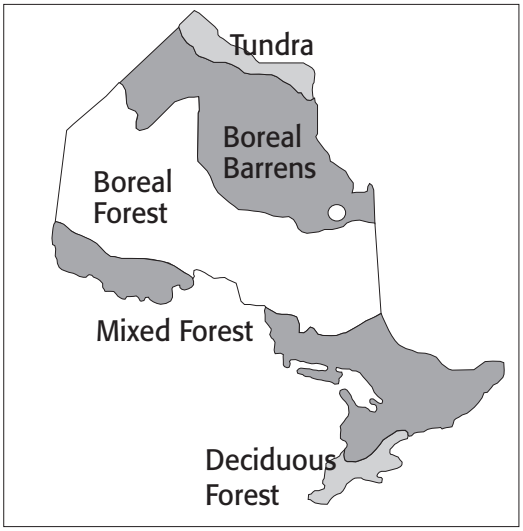
Several Canadian provinces drafted climate action plans during the first years of this new century; British Columbia, Quebec, Ontario, Alberta, and Saskatchewan are the most important since they are also the biggest polluters (see table 1). Each of them was based on a "common but differentiated" approach where each province established specific commitments in specific time frames based on its kind of economic activity. For all provinces, the main source of emissions was energy consumption, which accounted for 80.9 percent of GHG emissions in 2008; and, in the

province of Ontario, automakers, manufacturing, and energy production sectors are still the most polluting (Environment Canada, 2008: 37-43; 532-533).

## Impacts and Responses

Ontario, like all regions in Canada –and probably the world– is vulnerable to climate change. The impacts are being felt already in the ecological regions of the province (map 1). In the last decade, the province had experienced extreme weather, flooding, water shortages, lower water levels in the Great Lakes, forest fires, reduced agricultural production, damages to infrastructure and property, and outbreaks of water-borne diseases (Chiotti and Lavender, 2008: 229). These situations affect citizens' health, infrastructure, productivity, and resources, and particularly lead to scarcity of fishery resources and the loss of polar biodiversity.

**Map 1**
ONTARIO'S REGIONS BY TYPE OF VEGETATION




**Source:** Carolinian Canada http://www.carolinian.org/SpeciesHabitats_Forests.htm.

In response to these impacts and local needs, since 2005 the Ontario government has taken actions such as reducing coal-plant emissions by one-third, protecting 1.8 million acres through the Golden Horseshoe Greenbelt Plan, and trying

to save energy by using alternative fuels (Ministry of Municipal Affairs and Housing, 2009; Office of the Premier NR, 2007a). Also in 2005, the government of Ontario participated in the first Shared Air Summit. This conference brought together government, corporations, scientists, and non-governmental leaders from Canada and the United States to discuss strategies to reduce trans-boundary air pollution, smog, and climate change. As a consequence of its participation, Ontario established new standards for 40 air pollutants and tougher regulations and limits for the largest industrial sources of smog emissions (Office of the Premier, NR, 2007a). Since then, the Ontario government has been very active in moving climate policies toward a more comprehensive approach. During 2005 and 2006, it established several programs to save electricity in social housing services, new and more efficient domestic appliance distribution, credits for own-energy providers or alternative energy suppliers and customers, as well as 690 wind turbines, and support for the hybrid car industry and consumers (Office of the Premier, NR, 2007a). In fact, by 2006, Ontario became the national leader in the construction of wind facilities for producing energy (Environment Canada, 2008: 533). As a result of its participation the following year in the 2006 Second Shared Air Summit, Ontario signed one agreement with Quebec and another with the northeastern U.S. states to reduce trans-boundary air pollution.

In this context, the provincial government drafted the Energy Conservation Responsibility Act in March 2006, with the purpose of requiring "ministries, agencies, and broader public sector organizations...to prepare energy conservation plans on a regular basis, and report on energy consumption, proposed conservation measures, and progress," (Ministry of Energy and Infrastructure, 2006), as well as installing smart meters (meters that can record and report electricity consumption information automatically) in residences and small businesses in a first stage due to be completed in 2010. This was combined with a pricing system for energy conservation and saving. That same year, Ontario's minister of energy and infrastructure amended the Energy Efficiency Act of 1992 to include new, higher standards in energy-using products (Ministry of Energy and Infrastructure, 2006). With these two laws, Ontario's government was dealing with small-scale electricity consumption; but the limits to industrial polluters, dealt with in the Shared Air Summit, were not enough to cut GHG emissions as expected. The Ontario government needed to deal with big polluters, such as the energy production industries.

The first move to cut big polluters' emissions was to deal with the coal industry. From 2003 to 2006, the Ontario government had been cutting emissions allowed from coal plants by almost a third, and implementing regulations requiring that coal not be used to generate electricity in certain areas of the province –in Nanticoke, Atikokan,

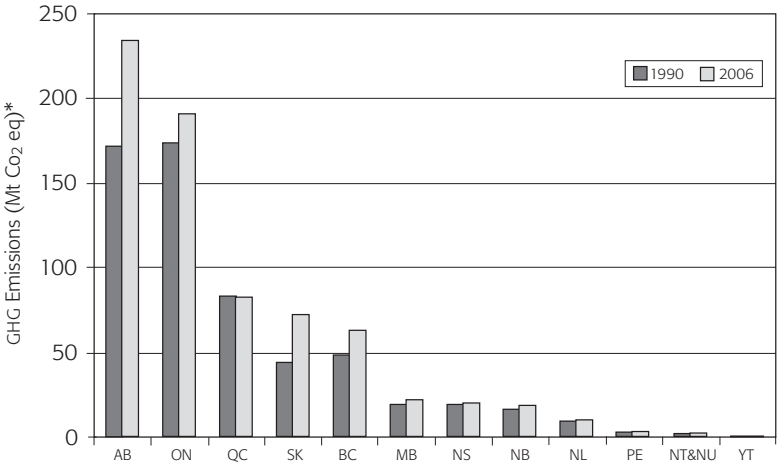
Lambton and Thunder Bay– after December 31, 2014 (Ministry of Environment, 2009a: 40). However, almost the same amount of electrical energy is still being produced using coal in the country. The explanation is simple: "Ontario outsources energy based on coal generation elsewhere (importing coal-based energy from the U.S.)" (Burda and Peters, 2008: 10), simply transferring GHG coal-emissions to its neighbor.

So, these energy policies were failing to reduce GHG emissions. Since 1990, Ontario had constantly been the second most polluting province after Alberta with almost 200 megatons (Mt) accumulated by 2006 (table 1) and had increased its GHG emissions since 1990 by almost 10 percent. It was not until 2007 that the government of Ontario launched its Go Green: Ontario's Action Plan on Climate Change with the goal of dealing with the province's GHG emissions and energy demands, specifically electricity. The main sources of electricity in the province have been coal, hydro, natural gas, but nuclear power is the most important (Environment Canada, 2008: 491-496). The plan included a strategy to lower GHG emissions by 1) efficient transportation, 2) de-carbonization of the economy, 3) development of green power and alternative fuels, 4) restoration of forests, 5) green agriculture, 6) sustainable cities and towns, 7) greening industry, and 8) creating green jobs (Government of Ontario, 2007). These priorities set by Liberal Premier Dalton McGuinty attempted to establish an integrated plan for reducing GHG 6 percent below 1990 levels by 2014 (61Mt), 15 percent by 2020 (99Mt), and 80 percent by 2050 (Government of Ontario, 2007): these are almost the same as the goals established by the Canadian federal government in the Kyoto Protocol.

> To achieve its 2014 targets, the government [of Ontario] will finish the job of closing down Ontario's coal plants and carry out its existing policies, which would account for more than 50 percent of all targets. About 15 percent will come from transit investments and working on initiatives with the federal government and other partners, including strong, national fuel-efficiency and auto emissions standards. Some 15 percent will result from other policies, including home audits and incentives for municipalities to reduce their greenhouse gas emissions. (Office of the Premier, NR, 2007b)

Ontario's Go Green Plan was now integrating big polluting sectors such as energy production, automakers, transportation, and manufacturing, and focusing on fuel efficiency with the former coal industry adjustment. To effect this energy reconversion and GHG emissions reduction, linkages and negotiations with business groups took place. In 2005, the auto industry, through the Canadian Vehicle Manufacturers' Association and the Association of International Automobile Manu-

**Table 1**
GHG EMISSIONS COMPARED BY PROVINCE IN MT




**Source:** NIR-2006, 2008.
**Note:** $CO_2$ eq means that all other greenhouse gases are included in this measurement.

facturers of Canada, signed a Memorandum of Understanding for taking actions to voluntarily reduce new vehicles' GHG emissions in Canada so that by 2010, annual emissions reductions would reach 5.3Mt (Natural Resources Canada, 2005). The plan's vehicle emissions standards dovetailed with an energy bill passed that same year in which both vehicle and gasoline producers needed to adapt their products for reaching a low-carbon fuel standard that would require a 10-percent reduction in carbon emissions from transportation fuels by 2020, as well as reaching the target of a 5-percent annual average ethanol content in gasoline (Ministry of Environment, 2008: 40). In this same direction, the government developed a transportation program called Move Ontario 2020, which included 902 kilometers of rail and light transit for the Greater Toronto and Hamilton Area, as well as expanding the subway lines (Ministry of Environment, 2008).

Yet, the Go Green Plan left one of the main sources of energy in Ontario out of the debate: nuclear energy. In 2009, the Ontario Power Authority (OPA) needed to either rebuild or close the Pickering B and the Bruce B nuclear stations, both scheduled to come offline in 2013 (Burda and Peters, 2008: 7-8). The OPA had announced that they would probably choose to refurbish them to continue nuclear electricity generation. Civil society organizations like the Pembina Institute had been putting

pressure on the McGuinty government to reverse the decision and reduce GHG emissions by replacing both nuclear facilities with other green options such as hydro (including electricity imported from U.S.), solar, and biomass (Burda and Peters, 2008: 2-10), start programs for co-generation (Pembina Institute, 2007a: 13), and continue leading the nation in wind facilities.

However, through the Go Green Plan and the OPA, McGuinty's government modeled a scenario of 13-percent GHG reduction if both nuclear facilities were renewed soon with more efficient technology (Government of Ontario, 2007). Ontario's government had tried to follow its constituency's advice and began a reconversion to renewables, through the Renewable Energy Standard Offer Program drafted in 2008. This program meant spending money on subsidies for energy-efficient homes that use solar panels, and for agriculture and agri-food biogas systems that convert organic waste into methane to produce energy. It has also given incentives to the creation of green jobs, attracting green investment, and developing research for clean technologies and infrastructure, especially in the area of bio-fuels (Ministry of Environment, 2008: 27-30).

One of the last actions of the Ontario government, taken by Minister of Environment John Gerretsen, dealt with creating carbon sinks. In July 2008, it was announced that Ontario would be protecting at least 225 000 $km^2$ of the Far North Boreal region to create a globally significant carbon sink. In addition, in the province's South region, the government launched a plan to plant 50 million trees by 2020 (Ministry of Environment, 2008). This approach can be interpreted in different ways that could turn out to be complementary. First, it is possible that if the GHG-emissions target is not reached as promised, and the incentives and voluntary mechanisms cannot achieve a change in the province's type of consumption-production activities, at least some of the $CO_2$ could be captured by these sinks. On the other hand, Ontario's creation of sinks is also a strategy in several regional agreements in North America to treat GHG emissions, through mechanisms like cap and trade systems in local carbon markets.

## TRANS-BIOECONOMIC REGIONS AND CAP AND TRADE MARKETS

The province of Ontario has participated in some of the newly developed regional institutions for GHG reduction in North America. These regional schemes represent a parallel route to the regionalism expressed in the North American Trade Agreement (NAFTA). Like NAFTA, these regional pacts are formal in the sense that they express binding commitments within a region. However, they are informal because they are made up of sub-national governments, generally linked territorially. They

are also informal in the sense that they are social constructs (Boas, Marchand and Shaw, 2005) that incorporate different social sectors and specific policy objectives beyond national frontiers. As a consequence, what defines these regions is the integration and coherence of their transnational economic activities (Clarkson, 2008; Morales, 2008; Ramos, 2002) and their energy and environmental policies. In this sense, these regions look like dynamic agreements intended to integrate four factors into policy design and outcomes.

The first factor deals with the integration and convergence of economic activities with environmental policies and strategies (Rowlands, 2008; Bernstein et al., 2008), especially for climate change. The starting point of the region's coherence and integration can vary, but in general it is the energy sector that leads the interconnectedness of economic integration, development, and climate change. The second factor is expressed in the leading actors of this local energy integration. Sub-national governments in North America have become the cornerstones of this kind of integration. These governments have created transnational "supra sub-national" institutions that generally create binding commitments among the parties to them. They run parallel –complimentary or contrary– to national policies or global instruments, challenging the nation-state jurisdiction and United Nations strategies for dealing with climate change.

The third factor refers to the incorporation of external environmental impacts of other parties –"externalities"– into regional policy schemes to absorb their costs and make policy adjustments. In this sense, these regions integrate sectoral policies with climate-change goals transnationally, resulting in the sharing of externality costs. The last factor deals with the preservation of the territory's natural vocation for conservancy and development (Toledo and Moguel, 1992), especially for energy production and use.

At this point, I will propose the concept of trans-bioeconomic regions to designate these kinds of formal-informal regions composed and led by sub-national governments in North America. Trans-bioeconomic regions take into account the differentiated responsibility for addressing the problem of climate change and energy production/consumption. Although there can be regions within countries that share these characteristics, it is my aim in this research to deal only with the ones with transnational linkages. In North America, there are some initiatives that are trans-bioeconomic regions. The Regional Greenhouse Gas Initiative, the Mid-western Greenhouse Gas Reduction Accord, the Western Climate Initiative, as well as different green conservation and economic corridors all include the participation of different U.S. states, some Canadian provinces (Knigge and Bausch, 2006), and even some of the northern Mexican cities and states.

These North American trans-bioeconomic regions have used several mechanisms and instruments, either developed within their own institutions or borrowed from global climate-change governance agreements. Their main goal is to achieve energy efficiency by integrating some policy sectors and adjusting their GHG-reduction commitments to their economic capabilities. For example, some regions use common standards for developing green pricing systems, GHG inventories, climate action plans, public energy funds, green taxes, or green portfolios where a mix of types of energy are established over time (Knigge and Bausch, 2006). Some of them, like taxes and portfolios, can become obligatory, but in general these instruments are voluntary. However, one of the most popular is the cap and trade system. Cap and trade is a voluntary, market-oriented mechanism for giving incentives to business for managing or reducing GHG emissions. In this mechanism,

> governments place a cap, or limit, on the total amount of emissions allowable, and then require firms to account for their emissions by obtaining emission "allowances" for every tonne of carbon dioxide they emit. Firms can obtain the allowances when the allowances are first allocated and later by buying and/or trading allowances with other firms. (Ministry of Environment, 2009a: 23)

The limits for capturing GHG emissions –which are the basis for the allowances– are controlled by governments, so gradually allowances would become more scarce and expensive, paying for technological reconversion. In the short term, pricing carbon and capping industry and electricity would provide incentives for reducing emissions and lowering costs, for example gaining efficiency or developing conservation instruments. In the long term, it would help encourage the development and adoption of transformative technology to meet deep reductions required by Ontario's longer-term targets (Ministry of Environment, 2009b). These "carbon markets" are already in operation and connected to each other: the European Union Climate Exchange (European Climate Exchange, 2009) and another in Chicago already exist (Chicago Climate Exchange, 2009). In North America, there are several carbon-market projects to develop climate exchange institutions: the newly inaugurated Montreal Climate Exchange (Bourse de Montréal, 2009), others in California and New York, and yet another in the northeast region, which includes some Canadian provinces (Chicago Climate Exchange, 2009).

Some of the trans-bioeconomic regions in North America use this mechanism for climate change cooperation. Cap and trade allows participants –in these cases, sub-national governments, industries, and society– to adjust the type of instruments used. One example is the fact that the province of Ontario has considered using a

variation of the cap and trade model, where it would include offset credits along with allowances. An offset credit is a credit created by non-capped emitters. Whereas capped emitters are legally mandated to reduce their emissions by specific amounts, non-capped emitters are companies or other GHG-emission sources that take voluntary action. Examples of voluntary actions are carbon sequestration activities, tree planting, managing farmlands and forested areas, forest conservation, conservation of wildlife habitat and protection of watersheds. These would have to reduce emissions or sequester carbon in advance of, or along with, the development of emissions trading programs (Pearson, 2008: 11-12).

The province of Ontario has participated in several of these regional initiatives based on different elements. The first is Ontario's economic and social integration, "not with some amorphous mass called the United States of America, but, rather, with particular American regions and states" (Van Nijnatten and Boychuk, 2006: 487), such as Michigan, Ohio, Pennsylvania, Minnesota, New York, or Vermont. Productive relations have an important role in the definition of the transnational regional schemes in which Ontario participates. In order to integrate sectors such as industry, energy, transport, and agri-food (Ministry of Environment, 2008: 25) into the U.S. cross-border markets, the province had to incorporate environmental standards negotiated within regional schemes by some of the neighboring U.S. states. Second, this integration also means "vulnerability towards neighbors' activities" (Clarkson, 2008: 134), such as pollution, environmental depletion, and GHG emissions. This fact allows locating these problems and responses regionally and territorially, especially in the area of the Great Lakes, one of the most polluted in North America according to data from de Commission of Environmental Cooperation for North America (2008a). The third factor to consider is the kind of conservation policy that exists in these areas and the geo-ecological vocation for developing economic activities. In this sense, the Great Lakes area has both a pollution cluster and weak environmental protection (Commission of Environmental Cooperation for North America, 2008b) of the local ecosystems mainly composed of forests (Commission of Environment Cooperation for North America, 2008c), one of the main agents for capturing $CO_2$ and lowering GHG emissions.

Based on these factors, Ontario has been incorporating them into its own GHG reduction strategies and vice versa. We can track the province's participation in the trans-bioeconomic regional design at different territorial levels: in cooperation with trans-boundary neighbors or with a wider scope, interacting with other sub-national initiatives in the North American region.

## Trans-bioeconomic Regions and Cross-border Relations

The Greenbelt Plan, originally launched in 2005, was intended to expand its scope by 2008 to add protected countryside areas, especially headwaters, recharge areas, and associated wetlands (Ministry of Municipal Affairs and Housing, 2009). The plan and its expansion were based on the concept of a trans-bioeconomic region, which integrated the natural heritage in the southeast of the province with the area's economic development, and with the lake shared by the province and other neighboring provinces and states. In this area, conservation was needed to recover the forest areas now transformed into growing grasslands. In addition, it contributed to have a cleaner flow of water into Lake Ontario, shared with New York, which became a source for GHG capture and contributed to stop deforestation (map 1 and map 2).

**Map 2**
LOCATION OF THE GREENBELT AREA IN ONTARIO


**Source:** Wikicommons
http://en.wikipedia.org/wiki/File:Map_of_Ontario_GOLDEN_HORSESHOE.svg.

At the same time, this initiative recognized that economic activities and population are concentrated in this area (Pembina Institute, 2007b: 3-16) and needed to take into account the eco-systemic vocation for conservation. The initiative links the Oak Ridges Moraine region and the Niagara Escarpment –both with conservation plans– with the water system and a planned agricultural area to form the countryside of the belt. It also identifies major valley corridors of rivers flowing from the Oak Ridges Moraine and the Niagara Escarpment to provide natural linkage areas from the Greenbelt to Lake Ontario, as well as identifying two specialty crop areas: the Niagara Peninsula tender fruit and grape area and the Holland Marsh (Pembina Institute, 2007b: 3-16).

In an umbrella approach in which legislation and planning must follow environmental standards derived directly from the provincial government or regional institutions, municipalities were required to make their official growth plans conform to the Greenbelt Growth Plan by June, 2009. In addition, municipalities needed to take into account other provinces' protection trends for their economic growth goals (especially territorial expansion for demographic reasons). For example, there are interprovincial programs with the province of Quebec, such as the Source Protection Plans under the Clean Water Act (2006), or the expansion of the subway line through the Metrolinx's Regional Transportation Plan (Ministry of Municipal Affairs and Housing, 2009).

As neighbors, Ontario and Quebec have also been developing cooperation mechanisms to cope with climate change and to deepen the economic integration with neighboring U.S. states. In June 2008, Ontario signed a Memorandum of Understanding with Quebec to collaborate on a regional cap and trade system for GHGs (Ministry of Environment, 2008: 33). The strategy has gone further to integrate some sectors like transportation and electricity through regional mechanisms, such as the Regional Greenhouse Gas Initiative (RGGI) established in 2003. This initiative is a cooperative effort by 10 northeastern and mid-Atlantic U.S. states jointly with some Canadian provinces (Ontario, Quebec, Newfoundland, and the Atlantic Provinces) to design a regional cap and trade system, setting the target of reducing GHG to 1990 levels by 2010 and reducing them 10 percent by 2020 (New England Governors/ Eastern Canadian Premiers, 2001), especially by electricity power plants in the region. In the future, RGGI may also be extended to include other sources of GHG emissions besides $CO_2$ (Pearson, 2008: 10). In this sense, the Greenbelt Plan would serve as a carbon sink for this region.

Ontario also joined as an observer the mid-western Greenhouse Gas Reduction Accord signed on November 16, 2007, which currently includes seven mid-western members (Illinois, Iowa, Kansas, Michigan, Minnesota, Wisconsin, and Manitoba)

and three more observers (Indiana, Ohio, and South Dakota) (Mid-Western Governors Association, 2007). This accord was designed to cut GHG emissions and promote energy conservation through 1) a cap and trade system, 2) establishing GHG reduction targets and timeframes, 3) setting low-carbon fuel standards, and 4) designing regional incentives and funding mechanisms (Pearson, 2008: 10).

These different mechanisms try to link together some of the main elements of the trans-bioeconomic region. Because of the members' proximity and economic integration, these initiatives have developed mechanisms that presuppose deepening integration in sectors such as electricity and transportation. They are looking forward to harmonizing environmental standards and the creation of a green development and business area. These regions tend to use mechanisms like cap and trade systems or trans-sector policies. Although this region is the most appropriate for this kind of green integration and could profit greatly from it, it is still the heart of polluting, industrial North America. A change toward energy reconversion in businesses and industry here could create a precedent for green reconversion in other parts of North America.

## RELATIONS AMONG DIFFERENT TRANS-BIOECONOMIC REGIONS IN NORTH AMERICA

In July 2008, Ontario joined the Western Climate Initiative (WCI) with the goal of giving its industries the opportunity to participate in a broad carbon market that helps them deliver real reductions at a lower cost (Western Climate Initiative, 2007; Pearson, 2008: 10). Together with Quebec, British Columbia, Manitoba, and five other U.S. Pacific Coast states, Ontario is helping develop this initiative, which has the goal of reducing GHG emissions 15 percent by 2020 by establishing carbon trading systems no later than 2012. The mechanism is directed at integrating several sectors at a time into the carbon market. Ontario's plan is to start with electricity and industrial sectors, followed by manufacture and natural gas, and finally residential and commercial natural gas, fuel oil, and transportation fuels by 2015 (Ministry of Environment, 2009b: 7-11; Western Climate Initiative, 2009). The WCI does not include the participation of Ontario's U.S. neighboring states, thus affecting the integration of policies that are indeed sketched in other initiatives. However, Ontario's participation in this initiative has enhanced cooperation mechanisms with RGGI (where U.S. states do participate) and served as a link to western Canadian provinces with similar policy goals.

At a macro-regional level, in 2008, Ontario joined The Climate Registry to help develop GHG standards for reporting and measuring GHG emissions in all cap and

trade mechanisms in North America. This registry intends to work with other North American provinces and states to develop and manage a common GHG-emissions reporting system that measures, tracks, verifies, and publicly reports emissions across borders and industries (The Climate Registry, 2009; Pearson, 2008: 10). This registry is made up of all Canadian provinces, the Yukon and North West Territories, 40 U.S. states, and Mexico's six border states. The Climate Registry is based on the Kyoto Protocol's registry-report system. In this case, the trans-bioeconomic region expands its scope and harmonizes measurement systems to almost all of North America (The Climate Registry, 2009). In this sense, the trans-bioeconomic region is knowledge-oriented and geographically located.

As a summary of this section, we can note that different regional efforts have linked provinces and states in different kinds of initiatives. Their formal-informal integration, besides being regional, has intended to focus on sectors. This approach has resulted in the drafting of comprehensive policies for climate change within different levels of authority that take into account the impact and capabilities of the local economies.

## Conclusions: Opportunities, Challenges, and Limits

Given the legal ambiguities in jurisdiction or competencies and the slow negotiations that the Canadian federal government carried out for climate policy (Howlett, 2000: 533), it is understandable that provinces were forced to create alternative institutional mechanisms locally to deal with the impacts of climate change. This article has presented these new routes and strategies that the province of Ontario has followed regarding to GHG-emission reductions in the North American context. The integration of policies into new forms of conceiving the region is what seems to be happening among Canadian provinces, U.S. states, and even some Mexican ones. The driving force for this integration has been climate change, but only if related to local governments' energy-efficiency goals. The main instruments for Canadian provinces have been voluntary market mechanisms, avoiding, in this sense, the establishment of compulsory commitments and specific obligatory targets. For example, Ontario has been avoiding instruments like carbon taxes or portfolios, in contrast with some of the U.S. states. Nonetheless, Ontario, Canada's second most polluting province, has been taking action to cope with climate change and to keep up with economic growth. The province's strongest initiatives are those drafted with neighboring provinces.

Ontario's government climate strategy dovetails with several initiatives that follow all elements of the concept of trans-bioeconomic region. However, trans-

bioeconomic regions have challenges and limits. The first is that the amount of GHG reduction that each will contribute has no major effect on a global scale. However, these initiatives "could contribute importantly to moving forward the overall politics of greenhouse gas regulation" (Engel, 2006: 56). The second is depending on cap and trade mechanisms for achieving goals. This instrument presents challenges in the context of North America's initiatives on climate change. It is possible that emissions regulations may be duplicated where there is participation in more than one market or where the federal government implements a new cap and trade system on a continental basis. The Climate Registry would be the priority as the leader of the cap and trade information system to avoid this situation. In addition, these regional mechanisms will need to avoid overlapping and find a way to coexist within national and international frameworks.

Until December 2008, Canada's prime minister and the U.S. president had not talked about integration mechanisms for dealing with climate change. In January 2009, the issue was put on the North American agenda thanks to a bilateral proposal to launch a North American cap and trade system. This proposal was drafted during a visit of President Obama to Prime Minister Stephen Harper. Prime Minister Harper pointed out the need to create a continental cap and trade system that would include, at first, the three NAFTA countries (Economist.com, 2009). For President Obama, this idea would be an important mechanism for technological conversion and lower external dependency on fossil fuels. This position was supported by the U.S. economic recovery bill signed on February 19, 2009, which stipulated that Obama's government would grant over US$76.53 billion for renewable energy, energy efficiency, and development of green technology. The Canadian government also put money into the issue, but only Can$1.60 billion (Weiss and Bramley, 2009: 1-2). Canada's prime minister has been forced to follow the green trends of his southern neighbor to try to match up the two countries' environmental rules and standards to keep economic relations going. This has made the government of Alberta unhappy: besides having to deal with fluctuating oil prices, it has been forced to create a climate action plan and support Canadian courts in punishing high contaminating oil companies (Economist.com, 2009). Once again the Canadian federal government has to deal with two fronts: the green provinces and Alberta.

Another challenge for the regional "supra-subnational" institutions in North America, where Ontario participates, is being able to adapt to a changing context. In June, 2009, the American Clean Energy and Security Act (Waxman-Markey Initiative) was passed in the U.S. House of Representatives. This national bill sets the target of generating 25 percent of electricity using wind, solar and geothermal energy, and biomass by 2050. It also includes a proposal for a cap and trade North

American market and mechanisms for carbon capture and sequestration (Pew Center, 2009). Although some U.S. states, like California, have declared that if this bill becomes law they will enforce it, others have said that the targets are too high (Gardner and Henderson, 2009). This would pose a serious issue for trans-bioeconomic regions in that they would have to adapt their already functioning schemes to the new policy and probably reconfigure the region's frontier. Nonetheless, this bill is still in the U.S. Senate and is expected to be discussed just after the December 2009 Copenhagen meeting of the Kyoto Protocol process.

Although Ontario has been preparing for these challenges through enforcing the law, industry incentives, and regional market mechanisms, Environmental Commissioner for Ontario Gord Miller pointed out that the stability and small growth of the province's GHG emissions reported in 2008 "might be attributable to a decline in economic activity, rather than the success of government initiatives. It will be important for the government to clarify the extent to which these reductions are permanent or only transitory" (Miller, 2008). Perhaps the new Green Energy Act, drafted by the Ontario government February 23, 2009, can reinforce the efforts the province has been developing (Ministry of Energy and Infrastructure, 2009). This bill was the result of pressure from the Ontario Sustainable Energy Association, together with other leading trade associations, environmental groups, First Nations, developers, manufacturers, farmers, and landowners (Ontario Sustainable Energy Association, 2009). Mark Lutes, the David Suzuki Foundation's climate change and energy policy analyst, notes that "with this initiative, Ontario is on track to become a leader in the global shift to clean energy and in preventing dangerous climate change" (Lutes, 2009). He added that this strategy would engender the right conditions for attracting investment for manufacturing and research in green energy and create about 50 000 new jobs during the next three years. This could allow Ontario's industry to continue supplying goods and services to the North American partners (Lutes, 2009).

When the U.S. and Canadian economies completely recover from the financial crisis, when demand for Ontarian products starts flowing again, and when today's uncertain oil prices stabilize, we will know for sure if Ontario was on the right path.

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