



ACW BASELINE REPORT: DOMESTIC POLICY

Hadrian Mertins-Kirkwood



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ACW Baseline Report: Domestic Policy

Hadrian Mertins-Kirkwood

Research Intern, Canadian Centre for Policy Alternatives (CCPA)

hadrian@policyalternatives.ca

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For more information, contact:

Adapting Canadian Work and Workplaces

York University - Ross N8 19

4700 Keele Street, Toronto, ON. M3J 1P3

(416) 736-5895 | acwinfo@yorku.ca | adaptingcanadianwork.ca

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Introduction

This report provides an overview of the Canadian policies and financing instruments designed to discourage the emission of carbon and other greenhouse gases (GHGs) into the atmosphere (“green policies”). The report is focused in particular on energy policy in Canada as it relates to the production and consumption of “clean” as opposed to “dirty” energy. Energy use is directly responsible for the vast majority of Canada’s greenhouse gas emissions, which means any policies that encourage or discourage the production or consumption of different kinds of energy has a direct impact on those emissions. The report also presents and assesses the policy visions of Canadian governments (federal, provincial, and territorial) as they relate to energy production and consumption in the context of climate change.

To this end, the report is guided by two research questions:

1. What policies and financing instruments have Canadian governments implemented so far to encourage or discourage different kinds of greenhouse gas-emitting activity?
2. What green policy visions have Canadian governments put forward and what actions have they promised to take on greenhouse gas-emitting activity moving forward?

“Policy” in this report is broadly construed to include not just official policy documents but also legislation, programs, and organizations (e.g. government agencies) that are relevant to the research questions. Government action takes many forms and all actions contribute to a comprehensive climate change mitigation and adaptation strategy.

The report has four main sections. The first sketches out the current state of energy production and consumption in Canada as well as historical levels of GHG emissions by sector and province. The second discusses Canada’s green policy vision at the international, national, and sub-national level. The third describes the energy and climate policy landscape at the federal level and in each province and territory in Canada. The concluding section addresses some outstanding issues and offers recommendations for future policy and further research.

METHODOLOGICAL NOTES & DISCLAIMERS

An initial review of government policies that was conducted for this report identified over 900 policies, programs, or organizations of potential relevance to the research questions. This database was gathered primarily from departmental websites and informed by government policy documents and academic and civil society publications. The sheer volume of policies, not to mention their significant interconnectedness, makes a comprehensive analysis prohibitively complicated. Instead, this report focuses on those policies—in the best judgement of the author—that are most directly relevant to the research questions at hand. It is possible that some obscure policies, though relevant, may have been overlooked in the course of this research. However, it is highly unlikely that the most important policies (in terms of ambition, cost, or impact) would not be included in the government summaries and academic discussions of energy and climate policy in Canada that formed the basis of this research.

To define “relevant” policy for the purposes of this report, a policy typology was constructed (see Table 1). Government policies designed to encourage or discourage greenhouse gas emissions in Canada can be divided along two axes: (1) by category of policy instrument (regulation, taxation, or direct subsidy), and (2) by category of policy area (energy production or energy consumption). Policy areas can be further divided in terms of the primary industrial sector involved: clean versus dirty energy on the production side (or both, for cross-cutting policies) and commercial versus personal energy use on the consumption side. Policy visions or statements (e.g. climate change action plans) fall outside of this typology and are discussed separately.

Table 1: Typology of policies to encourage or discourage low carbon-emitting industrial activity

	Energy Production (Supply)			Energy Consumption (Demand)	
	Clean Energy Industry Specific*	Dirty Energy Industry Specific**	Both / Other***	Commercial & Industrial	Personal & Residential
Regulatory Policies	e.g. renewable portfolio standards	e.g. <i>Cessation of Coal Use Regulation</i> (Ontario)	e.g. comprehensive energy industry legislation	e.g. cap-and-trade systems	e.g. green building codes
Funding/ Financing Programs & other Non-Tax Subsidies	e.g. feed-in-tariff programs	e.g. Petroleum Exploration Enhancement Program (N&L)	e.g. Industrial Research Assistance Program (Canada)	e.g. commercial net metering	e.g. home energy efficiency rebates
Tax Policies and Subsidies	e.g. capital cost allowances for renewable energy production	e.g. mineral exploration tax credits	e.g. research and development tax credits	e.g. Green Energy Equipment Tax Credit (Manitoba)	e.g. Low Income Climate Action Tax Credit (BC)

* Policies specifically related to hydro, solar, wind, biofuels, and geothermal energy production

** Policies specifically related to oil, natural gas, and coal energy production

*** Includes general energy industry and business incentive policies as well as nuclear energy policies

The line between “clean” and “dirty” energy is not always obvious. For the purposes of this report, “clean” energy includes non-emitting renewables (i.e. hydro, solar, wind, and geothermal energy) but also biofuels, which are renewable but still carbon-emitting. “Dirty” energy includes those energy sources reliant on the extraction and combustion of fossil fuels (i.e. petroleum/oil, gas, and coal). Natural gas and liquid natural gas (LNG) are included in this category, despite being touted as a clean energy alternative in some jurisdictions, because they are both non-renewable and a significant source of carbon emissions.¹ Similarly, carbon capture and storage (CCS) technology is considered “dirty” because it merely reduces emissions without discouraging the further use of GHG-emitting fossil

¹ David Suzuki Foundation and the Pembina Institute. (2011). *Is natural gas a climate change solution for Canada?* <http://www.davidsuzuki.org/publications/downloads/2011/DSF-Pembina-NatGas-web.pdf>

fuels. Nuclear energy is a special case because it requires the extraction and radioactive decay of uranium, a non-renewable resource, but does not directly contribute to climate change through GHG emissions. For the purposes of this report, nuclear energy is considered neither “clean” nor “dirty” and is addressed separately.

One final issue complicates this discussion of energy and climate policy: the rapidly-changing policy landscape in Canada. Programs that existed five years ago may have ended, and programs that have been promised may or may not be implemented. Therefore, what appears to be tangible government action in the short-term (e.g. a one-time investment in a new renewable energy project) may actually be a policy oversight in the long-term (e.g. by time-limiting available funding). The patchwork nature of energy and climate policy makes cost comparisons especially difficult, and attributing increases or decreases in emissions to particular policies is similarly elusive. This report is a snapshot of the current state of energy and climate policy in Canada, but it does not claim to predict how the green policy landscape might change moving forward or what the impact of current policies might be in the long term.

Canadian Energy and Emissions Context

REGULATORY FRAMEWORK

In Canada, the provincial governments have control over natural resources within their borders and are responsible for providing electricity. The federal government has control over resources on Aboriginal and federal lands and is responsible for interprovincial and international energy transmission. The territories have varying levels of control and responsibility depending on their agreements with the federal government. All nuclear-related activities, including research, uranium mining, power generation, and waste management, fall under federal jurisdiction.²

Both the federal and provincial governments are responsible for environmental regulations, including those related to GHG emissions. Both levels of government are also able to pursue energy security policies that they deem to be in their best interests. Given the increasing internationalization of energy trade and the global nature of GHG emissions, energy and climate policy necessarily entails a high degree of overlap and therefore demands significant cooperation. The federal government and the provinces themselves are engaged in various regional and intergovernmental policy processes, which are discussed in more detail later in this report.

ENERGY SUPPLY AND DEMAND

Canada is described as an “energy superpower” by some politicians and pundits because of its diverse and extensive natural resources and export-oriented extractive industry. Canada accounts for 3.6% of global primary energy production, which makes it the fifth-largest energy producer in the

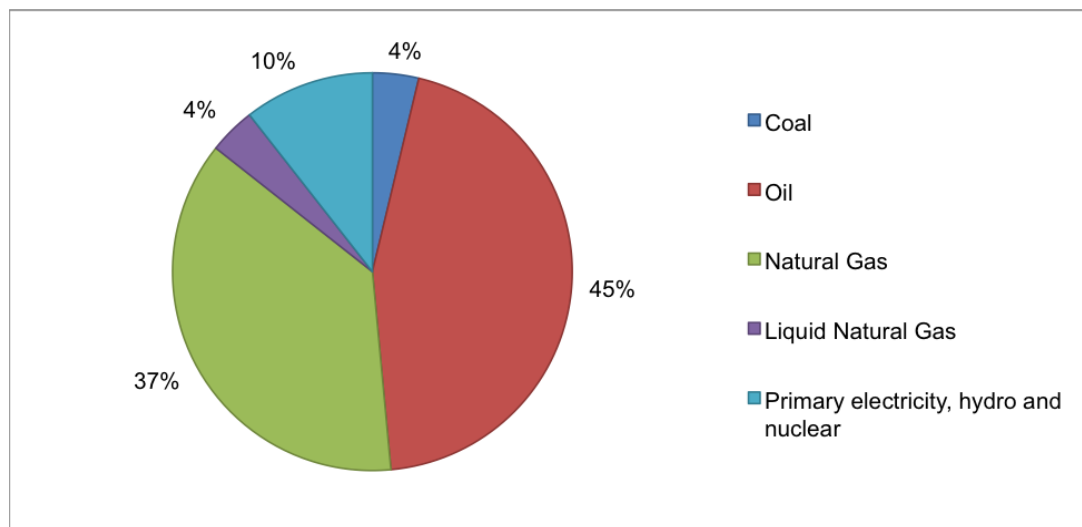
² The Standing Senate Committee on Energy, the Environment and Natural Resources. (2012). “Appendix 5: Federal, Provincial and Territorial Energy Jurisdiction” in *Now or Never: Canada Must Act Urgently to Seize its Place in the New Energy World Order*, July. http://www.parl.gc.ca/content/sen/committee/411/enev/dpk-energy/appendices_e.htm

world.³

The vast majority of the energy produced in Canada is non-renewable oil and gas (see Figure 1). Much of the fossil fuel extracted in Canada, including nearly all the crude oil, is exported for refinement and is not consumed directly in Canada. Nevertheless, this report holds Canada responsible for all the greenhouse gases resulting from resources extracted in this country. The massive production and export of coal, oil, and gas in Canada is responsible for a significant proportion of global GHG emissions, regardless of whether or not those resources are consumed directly in Canada. Indeed, Canadian “exports” of GHGs are greater than the level of GHGs produced domestically.⁴

Figure 1: Total primary energy production in Canada, terajoules (2013)

Source: Statistics Canada, CANSIM 128-0016



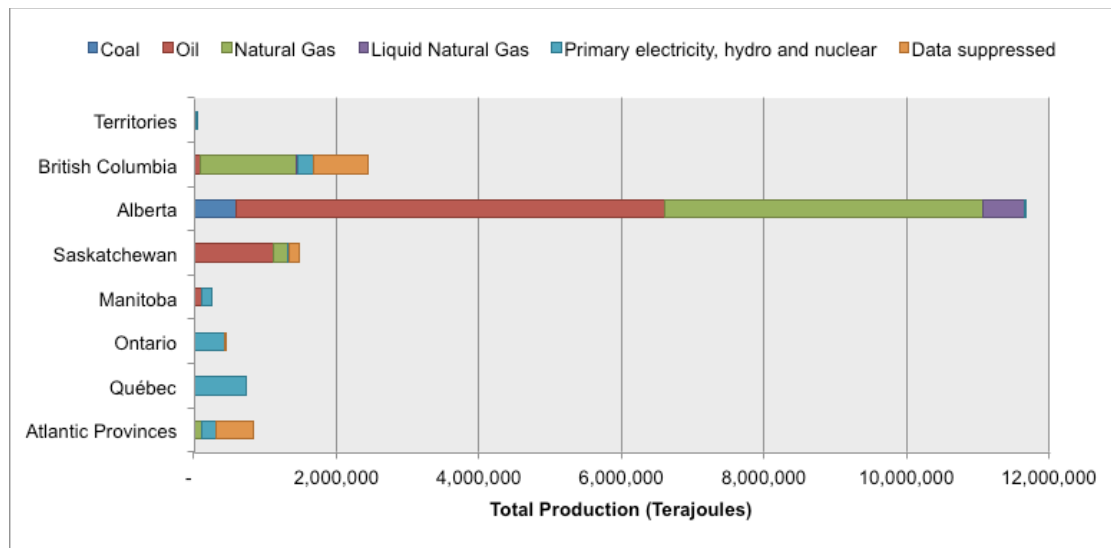
Energy production is highly regional (see Figure 2). Alberta produces 65% the country’s energy, followed by British Columbia (14%) and Saskatchewan (8%). These three Western provinces plus Newfoundland and Labrador account for the vast majority of Canadian energy exports. Almost all of the energy produced in the rest of Canada powers regional electricity grids.

³ Canada trails only China (18.9%), the United States (14.7%), Russia (10.3%), and Saudi Arabia (5.1%) in total primary energy production (2012 figures). U.S. Department of Energy. “International Energy Statistics,” U.S. Energy Information Administration. Accessed August 24, 2015. <http://www.eia.gov>

⁴ Marc Lee and Amanda Card. (2011). *Peddling GHGs: What is the Carbon Footprint of Canada’s Fossil Fuel Exports?* Canadian Centre for Policy Alternatives. <https://www.policyalternatives.ca/sites/default/files/uploads/publications/National%20Office/2011/11/Peddling%20Greenhouse%20gasses.pdf>

Figure 2: Primary energy production by province/territory (2013)

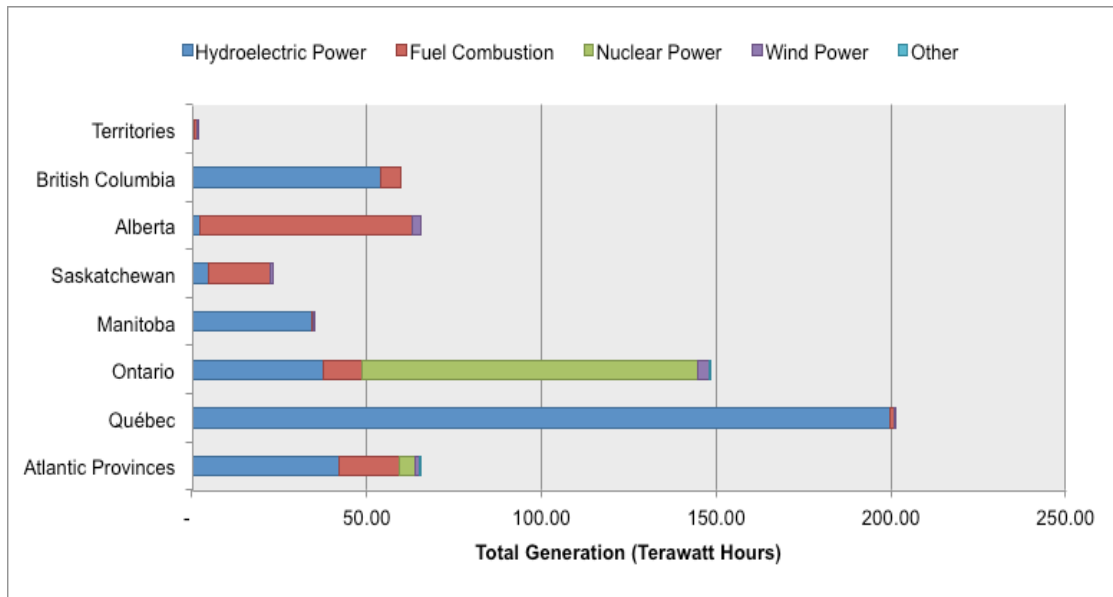
Source: Statistics Canada, CANSIM 128-0016



Because a significant proportion of the fossil fuels that are extracted in Canada are exported, Canada's *electric power generation* profile looks very different from *total energy production*. More than four fifths of power generation in Canada is non-emitting, since it relies predominantly on hydroelectric power and not on fuel combustion; however, regional differences remain extreme (see Figure 3). Québec and Ontario, which produce the majority of Canada's power for domestic use, are almost completely clean (or neutral, due to Ontario's reliance on nuclear power). Alberta, Saskatchewan, and Nova Scotia, on the other hand, are primarily powered by dirty energy sources.

Figure 3: Electricity generation (power production) by province/territory (2014)

Source: Statistics Canada, CANSIM 127-0002

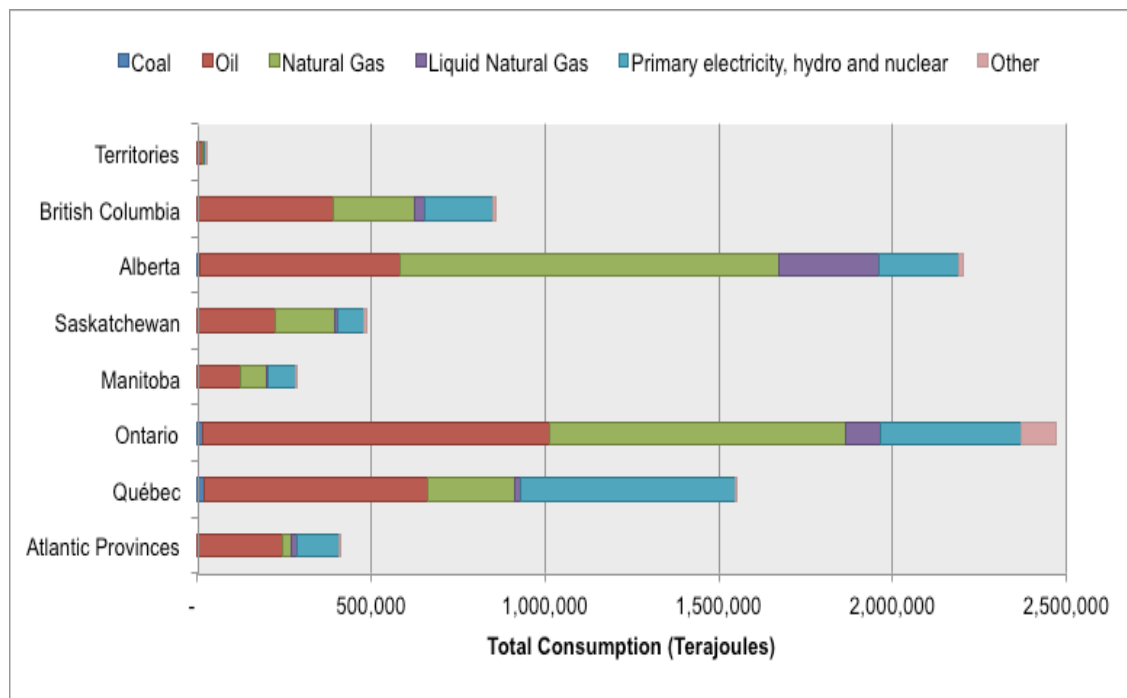


Note: “Fuel combustion” includes all electricity generated in conventional steam turbines, internal combustion turbines, and combustion turbines, which includes both fossil fuels and biofuels. “Other” includes solar and tidal power generation.

On the consumption side, the energy mix is more varied and more evenly distributed (see Figure 4). All provinces consume large amounts of refined petroleum products (i.e. oil)—predominantly as fuel for transportation—that are roughly proportional to their levels of population and industrial activity. All provinces also consume natural gas, often to heat homes and buildings.

Figure 4: Energy use (final demand) by province/territory (2013)

Source: Statistics Canada, CANSIM 128-0016



Eight of 13 provinces and territories are net energy importers and the other five are net energy exporters. Mostly significantly, Ontario only produces a fifth as much energy as it consumes. Conversely, Alberta produces more than five times as much energy as it consumes.

In sum, most of the *total energy* Canada produces is from dirty sources even though most of the *electric power* generated in the country is from clean sources. There are important regional differences in this energy mix: British Columbia, Saskatchewan, and especially Alberta produce a greater proportion of energy from dirty sources (and significantly more energy overall) than most of the rest of Canada. In the other provinces, most energy production comes from clean sources but only for immediate domestic use and significant energy imports are needed. Energy consumption is fairly even across the country; all provinces consume a mix of dirty and clean energy.

GREENHOUSE GAS EMISSIONS

Canada emits about 2% of global greenhouse gases and is a leading per capita GHG emitter. Total emissions have increased 18% since 1990, although per capita emissions have declined 6% over the same period.⁵

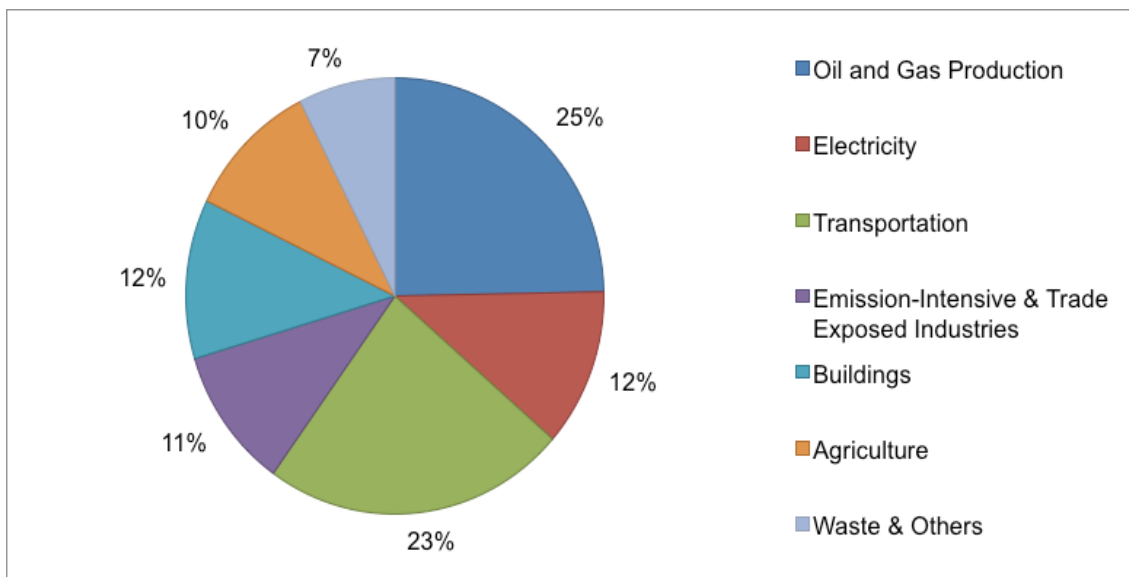
GHG emissions come from a variety of sources. In Canada, no single source is chiefly responsible for Canada's contribution to global climate change, although the oil and gas industry and the transportation sector together make up about half the total (see Figure 5). These two categories are also the fastest growing. The oil and gas industry, which contributed a quarter of emissions in 2013, only contrib-

⁵ Environment Canada. (2015). *National Inventory Report: Greenhouse Gas Sources and Sinks in Canada*, The Canadian Government's Submission to the UN Framework Convention on Climate Change, p. 19.

uted 17% of Canada’s total in 1990. GHG emissions from the transportation sector, which includes personal vehicles, increased from 21% in 1990 to 23% in 2013. On the other hand, GHG emissions from the electricity sector have declined in both absolute and relative terms since 1990—from 15% to 12% of Canada’s total emissions.

Figure 5: Greenhouse gas emissions by economic category in Canada (2013)

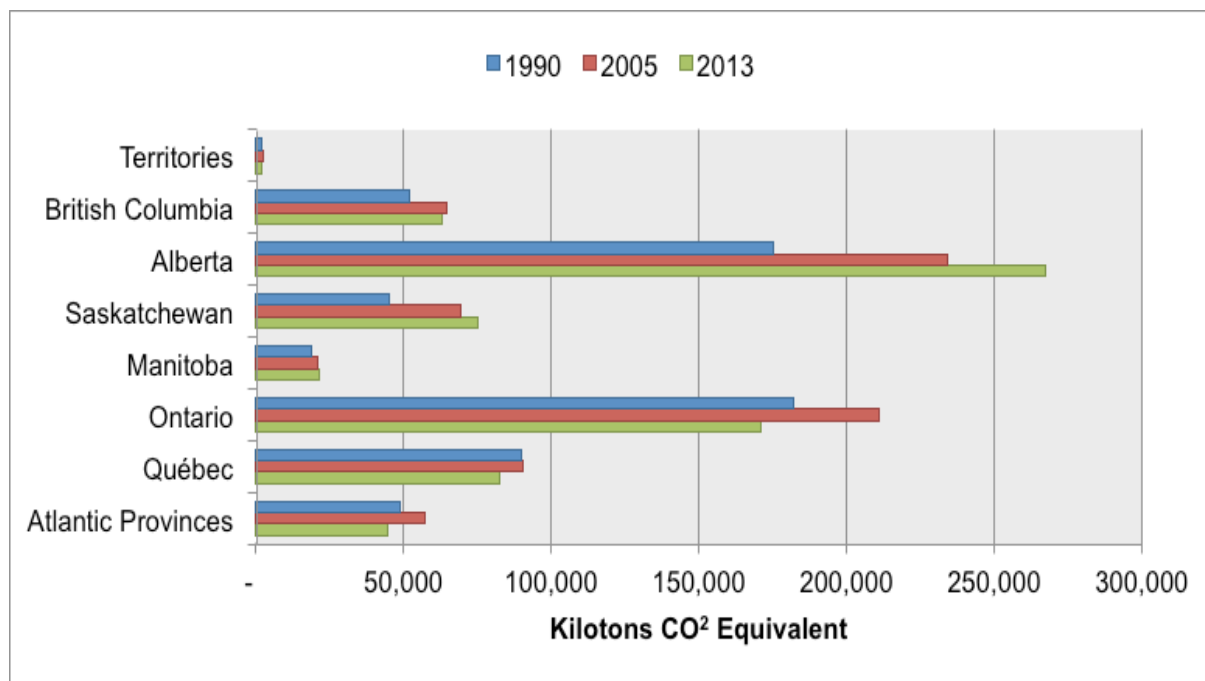
Source: Environment Canada, Table 2-15, *National Inventory Report (2015)*



GHG emissions trends vary by province and territory (see Figure 6). Eight of thirteen provinces and territories have achieved mild absolute reductions in total emissions since 1990, but significant increases in the other five have led to increased total emissions for the country as a whole. Emissions have increased most in Saskatchewan (66% since 1990) and Alberta (53%). Alberta now accounts for 37% of Canada’s GHG emissions followed by Ontario (24%) and Québec (11%).

Figure 6: Greenhouse gas emissions trends by province/territory (2013)

Source: Environment Canada, Table A10, *National Inventory Report (2015)*



Notably, Alberta consumes only 27% of the country’s energy while Ontario consumes 29%. The disparity between energy use and GHG emissions can be explained in large part by the emissions associated with oil and gas extraction—e.g. the oil sands alone account for 8% of Canada’s total emissions. Crucially, it is neither energy production nor energy consumption *on their own* that is responsible for Canada’s contribution to global climate change. Both energy supply and demand in Canada must be addressed as part of a comprehensive climate change mitigation and adaptation strategy.

Canada’s Green Policy Vision

Urgent calls for action to address anthropogenic climate change are not new in the scientific literature, but only in recent years has public concern been raised to the point where governments have been forced to respond in meaningful ways. Canada, at the international, national, and sub-national levels, has made a wide variety of commitments to combat climate change. The various targets and policy measures that Canadian governments have proposed and/or committed to provide a relatively comprehensive, but certainly not cohesive, green policy vision for the country.

INTERNATIONAL POLICY COOPERATION

At the international level, the Government of Canada is party to several organizations and agreements

dedicated to climate policy. Most significantly, Canada is a member of the United Nations Framework Convention on Climate Change (UNFCCC), ratified in 1994, which is the premier international forum for negotiating emissions targets and global policy coordination. The stated objective of the Convention is to stabilize greenhouse gas concentrations “at a level that would prevent dangerous anthropogenic (human induced) interference with the climate system.”⁶

The UNFCCC meets annually at its Conference of the Parties (COP), which has produced, among other agreements, the Kyoto Protocol (1997) and the Copenhagen Accord (2009). Canada withdrew from the Kyoto Protocol in 2011 and is on track to miss its Copenhagen target (a 17% reduction in GHG emissions below 2005 levels by 2020). Nevertheless, Canada will attend the COP21 meeting scheduled for December 2015 in Paris, France, which is being touted as a critical juncture to set ambitious new targets for global GHG emissions reductions. Heading into COP21, Canada has made the weakest pledge in the G7: a commitment to reduce GHG emissions by 30% below 2005 levels by 2030, which is equivalent to about 2% below 1990 levels.⁷ The recent election of a new federal government in Canada may mean new, more ambitious targets.

Canada is a member of several regional or issue-specific climate change organizations, including the Climate and Clean Air Coalition, the Global Methane Initiative, the Arctic Council’s Sustainable Development Working Group, and the now-defunct Asia-Pacific Partnership on Clean Development and Climate, although none of these collaborations has resulted in ambitious policy visions or led to significant commitments. Canada is also party to several major international fora that indirectly influence climate and energy policy, such as the G7 and G20. Through these organizations, Canada has made several important pronouncements. For example, through the G20 Pittsburgh Declaration (2009) and the 2015 G7 Leaders’ Declaration, Canada committed to the phase-out of fossil fuel subsidies in the medium-term and the elimination of fossil fuels entirely by 2100.⁸

Canada’s green policy vision is somewhat constrained by commitments made on a bilateral, plurilateral, and multilateral basis in international trade and investment agreements. These treaties, such as the North American Free Trade Agreement (NAFTA) and the World Trade Organization (WTO), have enabled foreign governments and investors to directly challenge Canadian governments’ climate and environmental policies.⁹ When obligations to protect investors collide with policies to protect the environment, it is often left to international arbitration panels to decide which rights to uphold. This process, known as investor-state dispute settlement (ISDS), has had troubling consequences for Canadian governments attempting to take action on climate change and environmental degradation.¹⁰

In sum, Canada is an active participant in international climate change discussions but has not articulated a clear green policy vision at the international level. Canada’s unwillingness to make serious

⁶ UNFCCC. (2014). “First steps to a safer future: Introducing The United Nations Framework Convention on Climate Change,” United Nations Framework Convention on Climate Change. http://unfccc.int/essential_background/convention/items/6036.php

⁷ “Canada.” Climate Action Tracker. May 20, 2015. <http://climateactiontracker.org/countries/canada.html>

⁸ “Leaders’ Declaration G7 Summit Germany,” Foreign Affairs Trade and Development Canada, June 7-8, 2015. http://www.international.gc.ca/g8/g7_germany_declaration-g7_alllemagne_declaration.aspx?lang=eng

G20 Information Centre. (2009). “G20 Leaders Statement: The Pittsburgh Summit,” Munk School of Global Affairs at the University of Toronto, September 24-25. <http://www.g20.utoronto.ca/2009/2009communiqu0925.html>

⁹ Scott Sinclair and Stuart Trew. (2015). “International Constraints on Green Strategies: Ontario’s WTO Defeat and Public Sector Remedies,” in Stephen McBride and Carla Lipsig-Mummé, eds., *Work in a Warming World*, Montreal and Kingston: Queen’s Policy Studies Series, McGill-Queen’s University Press.

¹⁰ Scott Sinclair. (2015). *NAFTA Chapter 11 Investor-State Disputes to January 1, 2015*, Canadian Centre for Policy Alternatives. <https://www.policyalternatives.ca/publications/reports/nafta-chapter-11-investor-state-disputes-january-1-2015>

reductions commitments in particular has provoked some international observers to label Canada a “climate laggard.”¹¹ Moreover, Canada has made trade and investment commitments that conflict with efforts to combat GHG emissions. Canada’s green policy vision at the international level is ambivalent at best and cynical at worst.

FEDERAL POLICY VISION

Consistent with its position at the international level, the Canadian federal government has acknowledged the necessity of action on climate change at the domestic level without making significant commitments or plans to reduce GHG emissions. Officially, the federal government has published a long series of climate change action plans: *National Action Strategy on Global Warming (1990)*, *National Action Program on Climate Change (1995)*, *Action Plan 2000 (2000)*, *Climate Change Plan for Canada (2002)*, *Project Green – Moving Forward on Climate Change: A Plan for Honouring Our Kyoto Commitment (2005)*, and *Turning the Corner: An Action Plan to Reduce Greenhouse Gas Emissions and Air Pollution (2007)*. Each of these strategies acknowledges the importance of addressing climate change through GHG reductions.

However, all of these documents have been quietly abandoned or ignored to the point where there is no longer any official strategy guiding Canada’s federal response to climate change. The government has instead promised to take a “sector-by-sector” regulatory approach to emissions reductions, but it has not published either a detailed plan or a timeline for implementation. Indeed, the government’s climate change portal makes no mention of any overarching strategy or policy vision for actually mitigating or adapting to climate change.¹² So although the government has made some (weak) commitments internationally, it has proposed no comprehensive plan for actually meeting those targets domestically. Similarly, it has articulated no overarching energy strategy that might help to address Canada’s growing GHG emissions.

PROVINCIAL/TERRITORIAL POLICY VISION

The situation at the provincial and territorial level is very different. Canadian sub-national governments consider themselves to be global leaders on climate change mitigation and adaptation and have collectively published dozens of climate change and energy policy strategy documents (see Appendix). Since 2009, every province and territory has proposed at least one climate change strategy, with varying degrees of ambition and breadth. Several provinces publish annual reports or updates on their progress, and many are in the process of renewing and adapting their climate change plans and energy strategies for the years to come.

The specifics of each province and territory’s targets and strategies are discussed in more detail in the next section. Generally speaking, Canadian sub-national governments have made commitments to reduce GHG emissions and invest in renewable energy that exceed those of the federal government. The provinces and territories have been much more willing than the federal government to experiment with policies, such as BC’s carbon tax or Québec’s cap-and-trade system, that have little precedent but

¹¹ Canadian Press. (2015). “Canada blasted as ‘climate laggard’ in international report,” CBC News, June 5. <http://www.cbc.ca/news/politics/canada-blasted-as-climate-laggard-in-international-report-1.3102808>

¹² “Canada’s Action on Climate Change,” Government of Canada, last modified September 19, 2014. <http://www.climatechange.gc.ca/default.asp?lang=en&n=E18C8F2D-1>

may one day be expanded to other jurisdictions. The Canadian provinces and territories are fertile testing grounds for new green policy ideas.

Yet the provinces and territories are not necessarily working in concert. For example, some provinces are pursuing absolute emissions reductions but others have simply committed to reducing emissions relative to “business as usual” levels. There are also disagreements about the best path forward for achieving emissions reductions; for example, whereas Saskatchewan is investing in carbon capture and storage technology to make coal generation “cleaner,” Ontario has phased out coal generation entirely.

INTERGOVERNMENTAL POLICY

The provinces and territories are for the most part acting independently, but they have made some efforts to collaborate on green policy. Through the Council of the Federation, the provincial and territorial Premiers published *A Shared Vision for Energy in Canada* (2007) and the *Canadian Energy Strategy* (2015). In the latest strategy, they acknowledged that “reducing greenhouse gas emissions will require an integrated, economy-wide approach that includes all sectors and all emitters.”¹³ The Premiers also issued a “Declaration on Climate Change” in 2015, which committed the provinces and territories to a “transition to a lower-carbon economy.”¹⁴ These documents and statements articulate a clear, big-picture vision for green policy in Canada, but crucially they lack measurable targets or binding commitments. By failing to demand measurable reforms, the provincial strategy has been criticized for implicitly endorsing the continued development and extraction of fossil fuels.

Other intergovernmental fora to address climate change in Canada include the Canadian Council of Ministers of the Environment (CCME), the Atlantic Climate Adaptation Solutions Association, the Prairie Adaptation Research Collaborative, and the Northern Premiers’ Forum, which published its *Pan-Territorial Adaptation Strategy* in 2011. The CCME in particular has facilitated a number of agreements on environmental regulations, including the Canada-wide Accord on Environmental Harmonization in 1998 and the Air Quality Management System (AQMS) in 2012. The CCME is responsible through the AQMS for the Canadian Ambient Air Quality Standards (CAAQS) and is in the process of establishing national Base-Level Industrial Emission Requirements (BLIERs).

The Western Climate Initiative (WCI) is a project involving several Canadian provinces and U.S. states to develop and implement GHG emissions trading programs. British Columbia, Manitoba, Ontario, and Québec are partners in the WCI, although so far only Québec has implemented a WCI cap-and-trade system (Ontario promises to do so). Other intergovernmental agreements include the *New England Governors and Eastern Canadian Premiers Climate Change Action Plan* (2001) and the *Québec-Ontario Concerted Climate Change Actions Memorandum of Understanding* (2014).

Taken together, the green policy visions articulated by Canadian governments suggest a recognition of the severity of climate change and the necessity of government action. However, the ambition of commitments and significance of promises vary dramatically between jurisdictions. The federal government in particular has failed to propose a comprehensive plan for reducing GHG emissions in Canada,

¹³ *Canadian Energy Strategy*, The Council of the Federation, July 2015. http://www.canadaspremiers.ca/phocadownload/publications/canadian_energy_strategy_eng_fnl.pdf

¹⁴ “Declaration of the Premiers of Canada,” Québec Summit on Climate Change, April 14, 2015. <http://www.mddelcc.gouv.qc.ca/sommetClimat2015/pdf/Declaration-SommetCC-ANG.pdf>

despite agreeing to emissions reduction targets at the international level. The provincial and territorial governments have been more ambitious in presenting climate change and renewable energy strategies, although their efforts to coordinate policy have had mixed results. The subnational governments remain an important testing ground for green policy, but without greater intergovernmental cooperation and/or federal coordination the actual impact of these experiments on Canada's total GHG emissions will likely be limited.

Overview of Policies and Programs in Canada Green¹⁵

This section outlines the most important policies—regulations, subsidies, and tax measures (see methodological notes above)—related to clean energy and climate change at the federal and provincial/territorial levels in Canada. GHG emissions targets and progress for each jurisdiction are also indicated.

When reading through these summaries, please keep in mind that the quantity of policies and programs does not necessarily correlate with their size or impact. As we shall see, there are more policies that explicitly support clean energy than there are explicitly supporting dirty energy, but when it comes to dollar figures, non-renewables still receive outsized support. Research, development, and demonstration (RD&D) spending is just one aspect of green policy, but it effectively illustrates the issue. According to the International Energy Agency, the federal and provincial governments spent \$711 million on energy RD&D in 2014.¹⁶ Of that total, 29% was directed toward fossil fuel RD&D and only 17% was used to support renewable energy RD&D.

Note also the distinction between *total energy production* and *electric power generation*. Energy production includes raw materials like coal or crude oil that are extracted in a jurisdiction but not actually consumed there. Power generation is a subset of total energy production that refers only to the energy produced for local or regional electric power grids.

Finally, although oil and gas royalties are included under "Taxation," note that royalties are technically distinct from taxes. Whereas a tax is a government levy on private revenue, a royalty represents the public share of the development of a publicly-owned resource. Nevertheless, in practice, both serve to disincentivize certain types of economic activity (i.e. fossil fuel extraction) and to generate income for governments. Because the *effective* royalty rate paid by industry is typically well below the province's advertised rate (unlike a fixed tax rate), specific royalty rates are omitted in this section.

FEDERAL GOVERNMENT

As described above, the federal government has made some commitments at the international level—most recently, a commitment to reduce GHG emissions by 30% below 2005 levels by 2030—but has so far failed to articulate a comprehensive domestic climate change or energy strategy. Nevertheless,

¹⁵ Unless otherwise indicated, the following sources are used in this section: for provincial energy production and consumption (2013 figures), see Statistics Canada. (2014). "Table 128-0016: Supply and demand of primary and secondary energy in terajoules," CANSIM, December 12; for provincial electricity generation (2014 figures), see Statistics Canada. (2015). "Table 127-0002: Electric power generation, by class of electricity producer," CANSIM, August 27; for provincial GHG emissions (2013 figures), see Environment Canada. (2015). *National Inventory Report (1990–2013): Greenhouse Gas Sources and Sinks in Canada*, Part 3, p. 42-70. Note that the provinces occasionally publish their own measurements of GHG emissions that differ from the Environment Canada data.

¹⁶ "Energy Technology RD&D Budgets Database (2015 Edition)," International Energy Agency, 2015. <http://www.iea.org/statistics/topics/rdd>

the federal government has taken some meaningful steps to lower carbon emissions through a variety of green policies, primarily through its sector-by-sector regulatory approach.

This approach may change under Canada's newly-elected federal government. The party platform of the new government includes sweeping promises in all areas of green policy, from greater clean energy subsidies to increased cooperation with the provinces. It is not yet clear how and when this platform will be implemented, although it would have significant implications for Canadian green policy.

Natural Resource Canada (NRCan) and Environment Canada are the federal departments currently most responsible for green policy, but dozens of other departments and government agencies have implemented green policies of their own.

Note that the federal government considers both natural gas and carbon capture and storage technology to be "clean", whereas this report classifies them as dirty.

REGULATIONS: The government is taking a "sector-by-sector," rather than economy-wide, approach to GHG emissions regulations. Under the *Canadian Environmental Protection Act*, Environment Canada has so far regulated coal-fired electricity generation, mandated a 5% renewable fuel content for gasoline, and implemented emissions regulations for most classes of vehicles and engines. Moving forward, the government has promised stricter emissions regulations for heavy-duty vehicles and some other categories of engines.

NRCan administers the *Energy Efficiency Act*, which legislates the promotion of energy efficiency and alternative energy sources. The *Energy Efficiency Regulations* are updated regularly to create or strengthen performance standards for products.

SUBSIDIES: Significant federal support for clean energy is organized under NRCan's ecoENERGY label (a surviving initiative of the now-defunct, cross-departmental ecoACTION program), which has since 2006 distributed \$5 billion worth of production and consumption subsidies. Direct funding and financing for the energy industry includes the ecoENERGY for Biofuels Program, ecoENERGY for Renewable Power Program, ecoENERGY for Alternative Fuels Program (a natural gas subsidy), ecoENERGY Innovation Initiative, ecoENERGY for Aboriginal and Northern Communities Program, and ecoENERGY Technology Initiative. Through these programs, the government makes direct investments in energy projects, partners with industry on RD&D, or provides other financial supports to encourage a lower-carbon energy industry in Canada. Of these clean energy subsidies, only the Alternative Fuels and Biofuels programs, which run until 2016 and 2017 respectively, are currently accepting applications and distributing funds.

Sustainable Development Technology Canada (SDTC) is an NRCan-supported, arm's-length foundation that administers the NextGen Biofuels Fund and the SD Tech Fund, which includes the SD Natural Gas Fund. SDTC has distributed \$740 million in government funds to energy projects since 2001.

Past federal subsidies for clean energy include the Clean Energy Fund (CEF), which was a \$200 million program administered by NRCan's Office of Energy Research and Development (OERD) until 2012, and Infrastructure Canada's Green Infrastructure Fund, which provided nearly \$1 billion in

support for sustainable economy projects until 2014. Notably, both funds made major contributions to large-scale carbon capture and storage projects, although dozens of smaller renewable energy projects were also funded.

Support for the energy industry in general is provided through OERD's Program of Energy Research and Development (PERD). There are also a wide variety of federal grants and financing options for Canadian industry more broadly, which includes the clean energy industry. For example, Infrastructure Canada's \$33 billion Building Canada Plan, launched in 2007, and \$53 billion New Building Canada Plan (NBCP), announced in 2013, have funded hydroelectric projects and public transit infrastructure across the country. The NBCP's Federal Gas Tax Fund provides significant infrastructure funding to Canadian municipalities, which can be used for community energy systems and other green policies.

Besides direct funding and financing for energy projects, the federal government conducts or supports extensive energy research and development. NRCan's CanmetENERGY lab conducts clean tech research specifically, while the Natural Research Council's (NRC) Industrial Research Assistance Program (IRAP) provides support and funding for technologically innovative R&D more broadly. The Natural Sciences and Engineering Research Council (NSERC) conducts its own energy research but also partners with industry on both clean and dirty energy R&D. Atomic Energy of Canada Limited (AECL), a Crown corporation, conducts extensive nuclear research through its Canadian Nuclear Laboratories. Transport Canada's ecoTECHNOLOGY for Vehicles Program (eTV) conducts testing and research to improve vehicle efficiency.

The federal government also conducts and funds climate change research through Environment Canada's Climate Research Division and NSERC's Climate Change and Atmospheric Research Initiative.

Federal consumption subsidies fall mainly under the ecoENERGY label and include the expired ecoENERGY Retrofit—Homes Program—a \$5,000 residential energy efficiency grant—and the ecoENERGY Efficiency Initiatives, which include the 2011 National Energy Code for Buildings (NECB), energy efficiency financing and training for industry, and the promotion of more fuel-efficient homes, vehicles, and appliances. These programs are administered by NRCan's Office of Energy Efficiency.

TAXATION: Besides the Federal Gasoline Excise Tax, which is a general disincentive for burning fossil fuels for transportation, there are no large-scale federal taxation measures to address GHG emissions. On the contrary, the federal government provides extensive tax breaks and credits to the energy industry, which are de facto subsidies for different kinds of energy production and GHG-emitting activity.

Canada Revenue Agency (CRA) provides a few tax incentives for clean energy. Most notable are the capital cost allowance (CCA) and accelerated capital cost allowance (ACCA) for renewable energy and energy efficiency *systems* as well as the Canadian Renewable and Conservation Expenses (CRCE) deduction for renewable energy and energy efficiency *projects*.

Like the clean energy industry, the mining and fossil fuels industries have access to the CCA and ACCA deductions (although the ACCA is being phased out for the oil sands). The extractive industries also receive a number of unique benefits. The Canadian Exploration Expenses (CEE) allow corporations to deduct pre-production exploration and development costs for new extraction projects. The

Canadian Development Expenses (CDE), Canadian Oil and Gas Property Expense (COGPE), and Investment Tax Credit for Pre-Production Mining Expenditures allow for similar deductions. Furthermore, mining and oil companies can fully deduct any provincial or territorial mining taxes and royalties from their federal income tax. CRA allows fossil fuel companies to issue flow-through shares (FTS), which allow them to pass on some costs to investors who can fully deduct the expenses. CRA has eliminated or is phasing out a number of other federal tax incentives, although they remain available to older mines and wells.

SUMMARY: Estimates vary for the total value of energy subsidies in Canada¹⁷, but there are clear qualitative trends; namely, there are far more funding and financing programs expressly available to the clean energy industry, but far more tax breaks for the extractive industry. This apparent disconnect is consistent with the federal government’s lack of clear direction on climate and energy policy, which is further evidenced by its sector-by-sector approach to GHG emissions regulations.

BRITISH COLUMBIA

The government of British Columbia has called global warming “the challenge of our generation” and takes an active interest in green policy.¹⁸ Most notably, the province implemented a pioneering carbon tax in 2008 that remains unparalleled in North America. BC has released several climate change plans (2004, 2008) and clean energy strategies (2007, 2009) and publishes regular updates and discussion papers. In 2015, the government appointed a Climate Leadership Team of environmental and policy experts to develop the next phase of the province’s climate action plan. The province is also a member of several intergovernmental initiatives, including:

- The Western Climate Initiative;
- The UNFCCC’s “Under 2” Memorandum of Understanding;
- The *Pacific Coast Action Plan on Climate and Energy* (in partnership with the U.S. states of California, Oregon, and Washington); and
- The *BC Climate Action Charter* (which commits local governments to being carbon neutral).

For all its progress, however, BC’s GHG emissions have increased by 21% since 1990 and currently account for 9% of Canada’s total. BC uses 2007 emissions levels (64.3 Mt) as a baseline for its reduction target, but even so the province fell short of its 2012 interim GHG emissions reduction target of 6% below 2007 levels (61 Mt).¹⁹ The next interim target is an 18% reduction below baseline by 2016 (53 Mt), which it is likely to miss as well. The province has legislated commitments to reduce GHG emissions to 33% below 2007 levels by 2020 (43 Mt) and 80% below 2007 levels by 2050 (13 Mt). At its current pace of reductions, the province will not meet these targets either.

The province has made natural gas and especially liquid natural gas a central part of its energy strat-

¹⁷ See Kenneth J. McKenzie and Jack M. Mintz. (2011). “The Tricky Art of Measuring Fossil Fuel Subsidies,” *School of Public Policy Research Papers* vol. 4, no. 14, September. <http://www.policyschool.ucalgary.ca/?q=content/myths-and-facts-fossil-fuel-subsidies-critique-existing-studies-0>

¹⁸ Government of British Columbia. (2008). *Climate Action Plan*, http://www2.gov.bc.ca/assets/gov/environment/climate-change/policy-legislation-and-responses/climateaction_plan_web.pdf

¹⁹ The BC government claims to have met its 2012 target, but its figures only add up if the purchase of carbon offsets is included. This claim has come under heavy internal and external criticism and a detailed methodology was never made available for public review. See Marc Lee. (2015). *Envisioning a Good, Green Life in BC: Lessons from the Climate Justice Project – Submission to the BC Climate Leadership Team*. Canadian Centre for Policy Alternatives. https://www.policyalternatives.ca/sites/default/files/uploads/publications/BC%20Office/2015/08/CCPA-BC_CJP_SubmissionClimateLeadershipTeam2015.pdf

egy. Natural gas already accounts for 56% of energy production in BC and is poised to grow, which presents a serious challenge to BC's emissions reduction plan. The province also has six active coal mines, which account for a further 26% of the primary energy produced in the province.²⁰ Most of this gas and coal is exported.

BC is a heavy consumer of oil and natural gas, which account for 46% and 28% of total energy use respectively. Although BC's power grid is very clean—hydro accounts for 90% of electricity generation—it is only responsible for 23% of the total energy consumed in the province.

The Ministry of Environment is chiefly responsible for green policy. It oversees the Climate Action Secretariat, which is responsible for coordinating provincial climate action, and the Climate Investment Branch, which administers the emissions offsets program (see below). The Ministry of Energy and Mines (MEM) supports the development of "clean" energy projects, although it includes natural gas in this category. The Ministry of Finance oversees the carbon tax.

REGULATIONS: BC has passed extensive climate change and clean energy legislation. Through the Ministry of Environment, the government has regulated industrial emissions, vehicle emissions, and GHG emissions reporting standards. BC has enshrined its 2020 and 2050 GHG emissions targets in law. The province has also legislated a 93% minimum renewable electricity standard.

MEM administers the *Clean Energy Act*, which establishes targets and support for clean power generation, the *Renewable and Low Carbon Fuel Requirements Act*, which mandates a minimum renewable content of 4% in diesel fuel and 5% in gasoline (increasing to 10% by 2020), and the *Energy Efficiency Act*.

The province has also passed legislation enabling not only the current carbon tax but also a possible cap-and-trade system in the future.

SUBSIDIES: The province's most notable production subsidy is MEM's Innovative Clean Energy (ICE) Fund, which receives revenue from a dedicated tax (see below). Among other initiatives and investments, the Fund supports clean tech commercialization projects. The Ministry of the Environment's Carbon Neutral Capital Program provides capital investments for energy efficiency and clean tech demonstration projects in government buildings. The related Climate Action Revenue Incentive Program (CARIP) supports local governments that are working to comply with the *Climate Action Charter*. The Ministry of Aboriginal Relations and Reconciliation administers the First Nations Clean Energy Business Fund, which supports First Nations participation in clean energy projects in their territories. The Plug In BC initiative coordinates public and private investment into electric vehicle infrastructure and promotion. BC Hydro offers net metering to small-scale renewable power producers.

The province provides consumption subsidies through its Livesmart BC program and BC Hydro's Power Smart program. Livesmart BC's energy efficiency incentive and rebate programs were ended in 2014, but it continues to offer the SCRAP-IT program, which helps car owners trade in old vehicles for newer, more efficient models. The Power Smart program includes residential rebates and buy backs for energy efficiency improvements, the Sustainable Communities Program for local governments, the Strategic En-

²⁰ Total coal production for British Columbia is suppressed in the Statistics Canada data. The 26% figure is calculated using provincial government sources, which claim 31 million tonnes of coal production in 2013 (equivalent to approximately 639,000 TJ of primary energy production). See British Columbia Geological Survey. (2015). *British Columbia Coal Industry Overview 2014*, Ministry of Energy and Mines. http://www.empr.gov.bc.ca/Mining/Geoscience/PublicationsCatalogue/InformationCirculars/Documents/IC_2015-03.pdf

ergy Management Program for industrial energy efficiency training, and a wide variety of incentives for greater energy efficiency in new home and building construction. The province also offers a \$6,000 rebate on electric and hydrogen fuel cell vehicles through the Clean Energy Vehicle Program, which is a component of the ICE Fund.

The BC Regional Adaptation Collaborative Program conducts climate research with funding from the Government of BC. The province also funds a Community Energy and Emissions Inventory (CEEI), which monitors emissions at the municipal level.

TAXATION: The Ministry of Finance collects a revenue-neutral carbon tax at a rate of \$30 per tonne of CO₂ equivalent emissions, which is by far the highest such tax in North America. All revenue generated through the tax—\$1.2 billion in 2013/14²¹—is returned to taxpayers in the form of personal and business tax credits. The carbon tax has been relatively effective: in its first four years the policy reduced GHG emissions from gasoline consumption alone by 3.5 Mt.²² Importantly, it has been politically popular without being a major drag on economic growth. However, critics worry that the tax is too low to have the intended effect of rapid, economy-wide emissions reductions. For example, at just 6.67¢/L, the carbon tax’s impact on gasoline prices is only a minor disincentive for drivers of gasoline-fuelled vehicles.

The province also collects a 0.4% ICE Fund tax on the purchase of energy products and a Motor Fuel Tax that varies by region. Through its Oil and Gas Commission, BC collects an oil and natural gas royalty, a mineral tax of 11%, and is currently phasing in a liquefied natural gas income tax of up to 3.5% that will increase to 5% by 2037. However, exemptions, allowances, and credits exist for all of these taxes and royalties, mostly to encourage the development and commercialization of new extraction projects.

The province offers a Scientific Research & Experimental Development Tax Credit to energy producers and a Low Income Climate Action Tax Credit (carbon tax refund) to some energy consumers.

SUMMARY: BC’s carbon tax is a model for the rest of Canada—even if it is still too low to effect substantial emissions reductions—and the government is taking significant regulatory actions to encourage a transition to cleaner energy production and more efficient energy consumption. However, BC has not seriously invested in renewable energy RD&D and the province’s commitment to natural gas development—not to mention its foot-dragging on coal production—is undermining its broader climate goals. It may be difficult to reconcile increasing emissions from the gas industry with its ambitious, legislated emissions reduction targets in the long term.

ALBERTA

Compared to the other major provinces, Alberta’s enthusiasm for green policy has been muted. The province published a climate change plan in 2002, which it renewed in 2008, but it calls only for “deep respect for Alberta’s environment” and not for concrete changes to seriously reduce GHG emissions.²³ The province’s energy strategy (2008) speaks highly of clean energy, but mostly in terms of

²¹ Ministry of Finance. (2015). *Budget and Fiscal Plan: 2015/2016 – 2017/18*, Government of British Columbia, p. 60. http://bcbudget.gov.bc.ca/2015/bfp/2015_Budget_and_Fiscal_Plan.pdf

²² Nicholas Rivers and Brandon Schaufele. (2014). “Salience of Carbon Taxes in the Gasoline Market,” Social Science Research Network. <http://ssrn.com/abstract=2131468>

²³ Government of Alberta. (2008). *Alberta’s Climate Change Strategy: Responsibility / Leadership / Action*, p. 4. <http://environment.gov.ab.ca/>

technologies like carbon capture and storage that merely reduce emissions from fossil fuels, rather than replace them with renewable alternatives. The province is not a member of any major intergovernmental climate change initiatives.

Alberta's GHG emissions have increased 53% since 1990, and it is by far the biggest emitter in Canada. In 2013, the province was responsible for 267Mt of emissions or 37% of the national total. The province has not set absolute emissions reduction targets. Instead, Alberta aims to reduce emissions relative to "business as usual" levels: 50Mt below projected levels by 2020 and 200Mt below projected levels by 2050. Notably, the province proposes to achieve 70% of those reductions (139Mt) through CCS and only 18% (37Mt) through greener energy production. The province's auditor general says CCS is likely to provide less than 10% of the anticipated reductions.²⁴

Alberta is undoubtedly an energy superpower. It produces 65% of Canada's total energy, half of which comes in the form of crude oil and 38% of which comes from natural gas. Provincial power generation is the dirtiest in the country; although 19% of generation capacity is non-emitting and renewable, only 7% of power actually comes from those sources. The rest comes from fossil fuel combustion.

On the consumption side, natural gas and liquid natural gas account for 62% of provincial energy use, followed by refined petroleum products (oil) with 26%. Alberta consumes far less energy than it produces, although it is still the greatest per capita energy user and trails only Saskatchewan in per capita emissions.

2015 may be a turning point. With the election of a new government, the province has shifted its tone and acknowledged that "climate change is one of the greatest challenges to ever face our planet, our society and our economy."²⁵ The province has promised a new climate change strategy that will be far more ambitious than previous plans. A Climate Change Advisory Panel was appointed in summer 2015 to make recommendations on climate policy moving forward.

The Ministry of Environment and Parks (MEP) and the Ministry of Energy guide green policy in the province. Other ministries and agencies operate specific programs.

REGULATIONS: The heart of Alberta's Greenhouse Gas Reduction Program is its emission intensity-based cap-and-trade system. Under the *Climate Change and Emissions Management Act* (2002) and related *Specified Gas Emitters Regulation* (2007), both administered by MEP, major industrial emitters must reduce their emissions intensity (tonnes of CO₂ equivalent emissions per unit of production) by 12% per year below their 2003-2005 average (new facilities can phase-in their reductions). Emitters that fail to meet their reduction target must compensate in one of three ways: (1) by paying into the Climate Change and Emissions Management Fund (see below) at a rate of \$15/tonne of excess emissions, (2) by purchasing Emissions Performance Credits from firms that have exceeded their targets, or (3) by purchasing Alberta-based offset credits (e.g. from approved CCS projects). The province, in partnership with the Canadian Standards Association, operates the Alberta Emission Performance Credit (EPC) Registry and Alberta Emission Offset Registry (AEOR) to monitor and facilitate the cap-and-trade system.

info/library/7894.pdf

²⁴ Auditor General Alberta. (2014). *Report of the Auditor General of Alberta – July 2014*, July, p. 40. <http://www.oag.ab.ca/webfiles/reports/AGJuly2014Report.pdf>

²⁵ Government of Alberta. (2015). *Climate Leadership Discussion Document*, p. 1. <http://www.alberta.ca/albertacode/images/Climate-Leadership-Discussion-Document.pdf>

The new provincial government has promised to strengthen the carbon levy. Required reductions in emissions intensity will be increased from 12% to 20% by 2017. The \$15/tonne levy will be increased to \$30/tonne over the same time period. It has not indicated it will transition from an intensity-based system to a system designed to reduce absolute emissions.

MEP administers the Integrated Resource Management System (IRMS), which includes the Alberta Energy Regulator and the Alberta Environmental Monitoring, Evaluation and Reporting Agency (AEM-ERA). The IRMS coordinates social, environmental, and economic regulation of energy projects.

The province has few emissions-related regulatory standards, but does require 5% renewable fuel content in gasoline and 2% in diesel.

SUBSIDIES: Alberta's flagship green subsidy is the Climate Change and Emissions Management Fund, which receives revenue from the cap-and-trade system and is administered by the Climate Change and Emissions Management Corporation (CCEMC). In its first five years of operation, the Fund received and allocated almost \$400 million to projects that will result in an estimated reduction of 10.2Mt of GHG emissions by 2020.²⁶ The Fund's focus areas are energy efficiency, carbon capture and storage, and cleaner energy production.

The Ministry of Energy has committed \$1.3 billion over 15 years to directly support two large-scale CCS projects: the Alberta Carbon Trunk Line project and the Quest Project. The Ministry commits more than \$100 million per year to biofuel production through the Bioenergy Producer Credit Program (BPCP), which is ending in 2016.

The Ministry of Transportation supports municipal public transit through the \$2 billion Green Transit Incentives Program (GreenTRIP).

The Alberta Utilities Commission (AUC) administers micro-generation (net metering). Otherwise, since power production is largely private, Alberta offers few consumption subsidies at the provincial level.

Energy RD&D is supported through the Ministry of Innovation and Advanced Education's Alberta Science and Research Investments Program (ASRIP) and the Alberta Energy Research Institute (AERI), which is part of the public-private Alberta Innovates research system.

TAXATION: Alberta disincentivizes GHG emissions through its cap-and-trade system (see above) and a general fuel tax of 13¢/L.

The Ministry of Energy collects royalties on all non-renewable resource production, including on natural gas and oil extraction. The Ministry encourages more environmentally-friendly resource development through the Innovative Energy Technologies Programs (IETP), which provide royalty adjustments of up to 30%.

A Scientific Research and Experimental Development (SR&ED) Tax Credit is available to both clean and dirty energy producers.

SUMMARY: Alberta stands out in Canada as a disproportionate producer of both energy and GHG emissions. The province's deep commitment to fossil fuel production raises serious questions about its

²⁶ Climate Change and Emissions Management Corporation. (2015). *2013/2014 Annual Report*. <http://www.ccemc.ca/annual-report-2014/#5-year-review-2>

ability to meet even modest emissions reduction targets in the long term. In fact, Alberta's major green policy initiatives, such as its intensity-based cap-and-trade system, do not even target total emissions; instead, the province is content to reduce emissions relative to "business as usual" levels through technologies like carbon capture and storage that do little to discourage dirty energy production. Without meaningful action to transition away from fossil fuels, the province may singlehandedly undo any progress on GHG emissions made in the rest of Canada.

SASKATCHEWAN

Of all the provinces and territories in Canada, Saskatchewan has been quietest on climate change. The government published one tentative climate change plan in 2007, but it was vague and never implemented. Moreover, Saskatchewan is not a member of any international or intergovernmental climate change initiatives besides obligatory participation in the Prairies Regional Adaptation Collaborative (PRAC).

The province set a GHG emissions target in 2009: using 2006 as a baseline (70 Mt), it hopes to reduce emissions by 20% by 2020 (56 Mt).²⁷ Even this modest goal may prove challenging. The province has seen the greatest rise in GHG emissions since 1990 (66%) and now accounts for 10% of Canada's total. With just 3% of the population, Saskatchewan is the greatest per capita emitter.

Saskatchewan's disproportionately high emissions are due in part to heavy fossil fuel development and consumption. Crude oil accounts for 75% of energy production in Saskatchewan and natural gas accounts for a further 14%. Electricity generation is among the dirtiest in the country: 44% of the province's power comes from coal and another 30% comes from other fossil fuels. The province consumes 46% of its energy in the form of refined petroleum products (oil) and 36% in the form of natural gas.

Saskatchewan has promised a new and more ambitious climate change plan centred on some form of carbon tax or cap-and-trade system. The government conducted widespread consultations on a proposed emissions reductions framework in 2010 but has yet to proceed with implementation.

To the extent it already exists, Saskatchewan's green policy is primarily the responsibility of the Ministry of Environment, the Ministry of the Economy, and SaskPower, the provincial electric utility.

REGULATIONS: The province passed *The Management and Reduction of Greenhouse Gases Act* in 2010. The Act gives the Ministry of Environment the power to regulate GHG emissions for major emitters through a carbon tax or other measures, although it has not yet done so. The Act also created four Crown corporations to conduct and fund energy R&D: the Saskatchewan Technology Fund Corporation, the Saskatchewan Climate Change Research and Development Corporation, the Saskatchewan Climate Change Foundation, and the Saskatchewan Environment Corporation. None of these corporations have yet begun operating.

The province has no other legislation specifically designed to combat climate change.

SUBSIDIES: Besides the funds and organizations that were promised in 2010 but never created, the province's main clean energy subsidy was the Ministry of Environment's Go Green Fund. The Fund

²⁷ Figures in megatonnes (Mt) are based on the National Inventory Report. The Government of Saskatchewan has not stated its baseline or target in terms of absolute GHG emissions

allocated less than \$100 million to clean energy and energy efficiency projects before it was ended in 2013.

SaskPower provides the biggest supports for energy producers. The public utility spent \$1.4 billion on the Boundary Dam carbon capture and storage project. SaskPower also supports small and medium-sized oil producers with the Flare Gas Power Generation Program. For small-scale clean energy producers, SaskPower offers net metering and the Small Power Producers Program.

The Ministry of the Economy supports biofuels through the Saskatchewan Renewable Diesel Incentive Program and the now-defunct Saskatchewan Ethanol Fuel Program. The Ministry also funds dirty energy R&D with the Saskatchewan Petroleum Research Incentive (SPRI).

TAXATION: Saskatchewan collects a fuel tax of 15¢/L and collects a royalty on natural gas and oil production but doesn't otherwise disincentivize GHG emissions.

The Ministry of Finance offers a Research & Development Tax Credit, which is available to energy producers.

SUMMARY: On green policy, Saskatchewan is a clear outlier. Government policy fails to acknowledge the severity of climate change or the scale of necessary interventions. Not only is the province the greatest per capita emitter in Canada, but it has also doubled down on fossil fuel production by focusing its climate change response on carbon capture and storage technology. The province is dragging its feet on structural change and is poorly positioned to meet its 2020 GHG emissions target.

MANITOBA

According to the latest edition of its *Tomorrow Now Green Plan*, Manitoba's goal is "to be one of the most sustainable places to live on earth."²⁸ The claim is not without precedent; Manitoba has published two climate change plans (2002, 2008), a clean energy strategy (2012), and two comprehensive green plans (2005, 2012/2014), all of which acknowledge the severity of climate change and the necessity of meaningful interventions. Manitoba is also a member of the Western Climate Initiative and other intergovernmental initiatives. The Department of Conservation and Water Stewardship (CWS), which is chiefly responsible for provincial green policy, is currently working on an updated climate change plan to guide policy until 2020.

In 2006, Manitoba became the first province in Canada to legislate its GHG emissions reduction target: using 1990 levels (18 Mt) as a baseline, the province committed to a 6% reduction by 2012 (17 Mt). But while Manitoba is certainly a rhetorical leader in green policy, progress on actual emissions reductions has been relatively poor. Although it accounts for only 3% of Canada's total emissions, Manitoba is one of only four provinces to see emissions increase in the past two decades (they were 14% higher in 2013 than in 1990). The province consequently missed its 2012 target and has not yet set a new target for emissions reductions.

This failure is due in part to dirty energy production in the province. Although electricity generation is very clean—98% of power comes from hydro—Manitoba still produces nearly half of its energy in the

²⁸ Government of Manitoba. (2014). *Tomorrow Now: Manitoba's Green Plan* (2nd Edition), p. 6. http://www.gov.mb.ca/conservation/tomorrownowgreenplan/pdf/tomorrownow_v2.pdf

form of crude oil. On the consumption side, refined petroleum products (oil) account for 43% of energy use in the province and natural gas accounts for a further 27%. In other words, Manitoba exports a lot of oil for refinement and imports a lot of refined oil for transportation use, both of which contribute to rising emissions regardless of clean power generation or energy efficiency improvements.

REGULATIONS: The *Climate Change and Emissions Reductions Act* (2008) legislated Manitoba's 2012 emissions target, set green building standards, set fuel efficiency standards for government vehicles, regulated landfill emissions, and confirmed a ban on coal power generation. The government also implemented a Sustainable Development Code of Practice and Sustainable Development Procurement Guidelines as part of the *Sustainable Development Act* (1997).

The *Biofuels Act* (2003) led to the creation of the Biodiesel Fund Grant and Ethanol Fund Grant (see below), as well as mandating 2% renewable content in diesel fuel.

SUBSIDIES: Manitoba Hydro is planning to invest \$20 billion to develop a handful of hydroelectricity and transmission projects. The Energy Opportunities Office in the Energy Division of the Department of Municipal Government administers the \$30 million Energy Jobs Fund to attract international investment in these new energy projects. The Energy Division also administers the Biodiesel Grant Program and Ethanol Fund, which both support renewable fuels.

CWS administers the Manitoba Climate Change Action Fund (MCCAF), which is part of the broader Sustainable Development Innovations Fund (SDIF). SDIF allocates approximately \$3 million per year to sustainability projects. CWS also oversees the \$250,000 Manitoba Climate Investment Pilot Program (MCIP) to assist businesses and not-for-profits in reducing GHG emissions.

Manitoba Hydro offers a number of subsidies to energy producers and users. In addition to Customer Owned Generation (net metering), Manitoba Hydro's Power Smart programs provide dozens of industrial incentives and residential rebates for energy efficiency improvements. The Affordable Energy Program targets low-income households in particular for energy efficiency upgrades.

The government of Manitoba supports climate change research and education through the Manitoba Sustainability Initiatives Directory (MSID), Climate Change Connection portal, and the Manitoba Round Table for Sustainable Development.

Subsidies available exclusively to the extractive industry include the Manitoba Prospectors Assistance Program (MPAP) and Mineral Exploration Assistance Program (MEAP), both administered by the Department of Mineral Resources.

TAXATION: Manitoba offers a Green Energy Equipment Tax Credit of up to 15% for the installation of biomass, solar, and geothermal systems. The Manitoba Research and Development Tax Credit and Manitoba Manufacturing Investment Tax Credit are both available to clean energy producers.

Dirty energy producers are subject to a natural gas royalty and an oil royalty. The province also collects an Emissions Tax on Coal and Petroleum Coke that ranges from \$14.27/tonne of lignite to \$31.90/tonne of petroleum coke. Some taxes and royalties on the extractive industry can be offset through the Manitoba Drilling Incentive Program (MDIP) and the Manitoba Mineral Exploration Tax Credit (MMETC).

The province collects a fuel tax of 14¢/L.

SUMMARY: Manitoba occupies a curious place in the Canadian green policy landscape. On the one hand, the province was the first to legislate GHG emissions reduction targets and has consistently spoken up for meaningful action on climate change. Manitoba has pioneered several innovative green policies, such as its Energy Jobs Fund, and is active in intergovernmental climate change initiatives. On the other hand, Manitoba is one of the few provinces to see emissions increase in the past two decades—it was forced to abandon its legislated emissions target—which casts doubt on the government’s willingness to tackle the real problem: fossil fuels. Production and consumption of oil continue to rise in the province, spurred in part by Manitoba’s fossil fuel subsidies.

ONTARIO

In a recent discussion paper, Ontario’s Minister of the Environment and Climate Change called climate change “the *critical issue* of our time.”²⁹ The provincial government takes the issue seriously and considers itself a climate change leader at the national and international level. It has published a number of climate change plans (2007, 2011) and long-term energy strategies (2010, 2013).

Consistent with the Kyoto Protocol, Ontario uses 1990 as a baseline year for GHG emissions (177 Mt). Ontario met its 2014 emissions target of 6% below 1990 levels (167 Mt) but the province is not on track to meet its 2020 target of 15% below 1990 levels (151 Mt) or its 2050 target of 80% below 1990 levels (36 Mt). The province currently accounts for 24% of Canada’s total emissions.

The Ministry of the Environment and Climate Change (MOECC) and Ministry of Energy are primarily responsible for green policy in the province, although at least five other ministries and several provincial agencies have policies that directly or indirectly influence GHG emissions. Ontario is a member of the Western Climate Initiative and party to the UNFCCC’s “Under 2” Memorandum of Understanding.

Ontario’s energy production profile is extremely low-emitting. Nuclear power accounts for 65% of total electricity generation and hydro power accounts for a further 25%. However, Ontario consumes far more energy than it produces—in 2013, the ratio was 5.4:1—and most of the energy consumed comes from imported dirty sources. Refined petroleum products (oil) account for 42% of total energy use in the province and natural gas accounts for another 36%. The low-carbon electricity that the province produces makes up only 17% of total consumption. Put simply, a green electricity grid has not stopped people from using oil and gas to fuel vehicles and heat buildings.

REGULATIONS: In 2007, Ontario passed a regulation under the *Environmental Protection Act* to end coal-fired electricity generation in the province. The phase-out was completed in 2014. Also under the Act, the province has regulated a 2% renewable fuel content for diesel (increasing to 4% by 2017), eased the approval process for biofuels, and mandated GHG emissions reporting.

In 2009, Ontario passed the *Green Energy and Green Economy Act* (GEA), which created a number of subsidy programs (see below). The GEA also included energy efficiency regulations, such as an updated building code and new standards for appliances. The domestic content requirements in the GEA were removed in 2013 after Canada lost a dispute with Japan at the World Trade Organization.

²⁹ Ministry of the Environment and Climate Change. (2015). *Climate Change Discussion Paper 2015*, Government of Ontario, p.3. http://www.downloads.ene.gov.on.ca/envision/env_reg/er/documents/2015/012-3452.pdf

In 2015, Ontario announced that it would implement the Western Climate Initiative's cap-and-trade system, which is already in effect in Québec and California. The government has said it will reinvest all revenues from permit auctions—upwards of \$2 billion³⁰—into GHG reduction initiatives and green business development.

SUBSIDIES: Ontario's flagship production subsidies under the *Green Energy Act* are the Feed-in Tariff (FIT) and MicroFIT programs, which provide long-term, fixed-price contracts to renewable energy producers. Both programs are administered by the Independent Electricity Systems Operator (IESO), a Crown corporation, which merged with the Ontario Power Authority in 2015. The FIT program is limited to projects of up to 500kW (it was unlimited until 2013) and the MicroFIT program is limited to projects of up to 10kW. Under Ontario's long-term energy plan, the MicroFIT program is being transitioned to a net metering system. Whereas a feed-in-tariff is a "generation purchasing program" for electricity produced from renewable sources, net metering merely provides producers with credits on their electricity bill. The Large Renewable Procurement (LRP) Program exists for projects bigger than 500kW. The LRP Program was created to help Ontario reach 50% renewable power generation capacity by 2025.

Other supports for renewable energy projects come from the IESO's recently-consolidated Energy Partnerships Program (EPP), which includes the Aboriginal Renewable Energy Fund (AREF) and Community Energy Partnerships Program (CEPP). The Ministry of Energy invests in electricity transmission projects through the Smart Grid Fund, supports community-level energy planning through the Municipal Energy Plan (MEP) program, facilitates renewable energy education through the Renewable Energy Facilitation Office (REFO), and funds renewable energy RD&D through the public-private MaRS Advanced Energy Centre (AEC).

The Ministry of Energy's Conservation First Framework means funds for conservation efforts are prioritized over new generating capacity. IESO offers a wide range of consumption subsidies, including the Industrial Accelerator Program (IAP) for large-scale conservation projects and the Conservation Fund for small-scale conservation projects. Subsidies offered under IESO's "saveONenergy" label include energy audit funding, a retrofitting rebate for businesses, and home energy efficiency incentives and coupons. The Peaksaver Plus program incentivizes residential smart meters that automatically reduce energy use during peak hours.

The Ministry of Energy administers the Ontario Clean Energy Benefit (OCEB), which is a rebate to electricity consumers designed to offset increased costs associated with the province's transition to renewable energy, especially upgrading aging infrastructure. The OCEB will be replaced by the Ontario Electricity Support Program (OESP) in 2016. Unlike the OCEB, the OESP will be limited to low-income electricity consumers.

The Ministry of Transportation introduced the Electric Vehicle Incentive Program in 2010. It provides rebates to individuals and business of up to \$8,500 for the purchase or lease of an electric vehicle.

TAXATION: The Ontario Tax Exemption for Commercialization supports tech start-ups in a few specific industries, including clean energy technologies. Several other tax incentives are available to both clean

³⁰Dave Sawyer. (2015). "The Cost and GHG Implications of WCI Cap and Trade in Ontario," *EnviroEconomics*, April 13. <http://www.enviroeconomics.org/#!The-Cost-and-GHG-Implications-of-WCI-Cap-and-Trade-in-Ontario/c1uze/552bd8930cf21933cd596d58>

energy and dirty energy companies: the Ontario Research and Development Tax Credit (ORDTC), the Ontario Innovation Tax Credit (OITC), and the Ontario Business-Research Institute Tax Credit (OBRITC).

Besides a gasoline tax of 14.7¢/L, Ontario does not have any taxes specifically designed to reduce GHG emissions. Ontario does have a Mining Tax, but energy extraction makes up only a very small proportion of the extractive industry in the province.

SUMMARY: Ontario has taken a strong rhetorical position on climate change and has undertaken some meaningful steps to reduce GHG emissions, but progress has been uneven. On the one hand, the coal phase-out was generally successful, and the province is pushing ahead with renewable energy subsidies and several energy efficiency programs. On the other, the ambitious *Green Energy Act* and its flagship Feed-in Tariff program have been reworked in response to cost overruns and external pressure. Moreover, despite its clean power grid, the province continues to consume a substantial amount of imported dirty energy, largely in the form of transportation fuel.

QUÉBEC

Like Ontario, Québec considers itself to be a climate change leader. The province acknowledges both the necessity of action on climate change and the opportunities created by the transition to a green economy. To that end, Québec has published comprehensive climate change plans (2008, 2012), an energy strategy (2006), a strategy specific to biomass (2009), plans for northern energy development (2011, 2015), and a Transportation Electrification Action Plan (2015). Québec is a member of the Western Climate Initiative and party to the UNFCCC's "Under 2" Memorandum of Understanding.

Québec follows the Kyoto Protocol standard of using 1990 as a baseline year for GHG emissions (83.9 Mt). Québec met its 2012 GHG emissions reduction target of 6% below 1990 levels (79 Mt) and has committed to a reduction of 20% below 1990 levels by 2020 (67 Mt). The province currently accounts for 11% of Canada's emissions.

Energy production in Québec is very clean because the province extracts few fossil fuels and power comes almost exclusively from hydro. Québec produces more than half of Canada's total hydro power. This clean power grid accounts for 40% of total energy consumption in the province, although, like Ontario, Québec also consumes substantial amounts of imported dirty energy: 42% of total energy use is oil-based and 16% comes from natural gas.

The Ministry of Sustainable Development, Environment and the Fight against Climate Change (MD-DELCC) is chiefly responsible for climate change initiatives with important contributions coming from the Ministry of Energy and Natural Resources (MERN). Écotech Québec is a government-supported NGO that facilitates coordination among the provincial clean tech sector.

REGULATIONS: Québec was the first Canadian province to adopt the Western Climate Initiative cap-and-trade system, which it implemented in 2013. The system initially covered only major industrial and electricity emitters but is being expanded to include major emitters in the transportation sector and other "fossil fuel distributors." If a regulated emitter exceeds their prescribed emissions cap, they can purchase credits on the carbon market or directly from the government. In practice, that means almost all emitters must purchase credits, which will increasingly be the case as the cap is reduced every year.

Revenues from permit auctions, estimated to reach \$425 million annually³¹, go directly into the province's Green Fund (see below).

Under the *Environment Quality Act*, MDDELCC has implemented clean air regulations, emissions reporting requirements, and regulations specifically aimed at motor vehicle emissions. Amendments to strengthen several these regulations are currently being considered.

SUBSIDIES: The Green Fund exists solely to implement actions outlined in Québec's 2012 climate change action plan. It has four target areas: transportation, energy efficiency and green energy, residual materials, and research and innovation. MDDELCC is responsible for the fund but MERN administers a number of its key programs, including Technoclimat (for renewable RD&D), ÉcoPerformance (for industrial energy efficiency), and the Residual Forest Biomass Program.

The Québec Action Fund for Sustainable Development (FAQDD), a government-supported NGO, invests in sustainable development projects through its Climate Action Program, iDDées Contest, and capital investment funds. The Ministry of Economy, Innovation and Exports finances commercialization and energy exports. Québec also subsidizes climate change research through the Consortium on Regional Climatology and Adaptation to Climate Change (Ouranos).

On the consumption side, MERN offers a number of subsidies for industrial and residential energy efficiency upgrades, including Rénoclimat, Novoclimat (and Novoclimat 2.0), Éconologis, and the Heating with Green Power program. All of these programs provide financial assistance in the form of free services or retrofitting rebates. Hydro-Québec also offers net metering to its customers.

TAXATION: The government collected an annual emissions duty ("carbon levy") from 2007 until 2014, which generated about \$200 million annually³², but ended it with the introduction of the C&T system. The only other general emissions disincentive is a fuel tax of 20.2¢/L.

Tax credits for ethanol production are available as well as a general Scientific Research and Experimental Development Tax Credit. A Mining Tax exists but is offset by various allowances and a general tax credit for resources.

For consumers, Revenu Québec offers a rebate of up to \$8,000 on the purchase or lease of an electric vehicle. The LogiRÉnov Home Renovation Tax Credit and EcoRenov Tax Credit for Eco-Friendly Home Renovation both incentivize residential energy efficiency upgrades.

SUMMARY: In addition to taking a strong political position on climate change, Québec has made perhaps the greatest strides in green policy among the provinces, due mainly to its functional cap-and-trade system. The system reduces GHG emissions and all the revenue it generates is invested directly into renewable energy and energy efficiency projects. Québec already has the cleanest power generation in the country—99% of its electricity comes from hydro—and it is taking steps to strengthen renewable energy production. Nevertheless, like all provinces, Québec consumes a substantial amount of imported oil in the form of transportation fuel, which undermines its GHG emissions reduction plans.

³¹ Government of Québec. (2012). *Québec and Climate Change: A Greener Environment*, Bibliothèque et Archives nationales du Québec, p. 10. <http://www.budget.finances.gouv.qc.ca/Budget/2012-2013/en/documents/climate.pdf>

³² Government of Québec. (2012). *Québec in Action: Greener by 2020 – 2013-2020 Climate Change Action Plan*, Bibliothèque et Archives nationales du Québec, p. 43. http://www.mdelcc.gouv.qc.ca/changements/plan_action/pacc2020-en.pdf

ATLANTIC PROVINCES

As a share of Canada's total, the four Atlantic provinces account for 7% of population, 6% of GHG emissions, 5% of energy production, and 5% of energy consumption. Altogether, they are minor players in the Canadian clean energy transition. Nevertheless, New Brunswick, Nova Scotia, Prince Edward Island (PEI), and Newfoundland and Labrador (N&L) have been at the forefront of green policy dialogues in the country. Between them, the four provinces have published six climate change action plans and nearly a dozen clean energy and energy efficiency strategies. They coordinate climate policy through the Council of Atlantic Premiers and are actively involved in regional climate and energy initiatives like the Atlantic Climate Adaptation Solutions Association (ACASA) and the Atlantic Energy Gateway (AEG) project.

In addition to individual environmental goals, the four provinces share an emissions reduction target of 10% below 1990 levels by 2020, which all four are on track to meet. The Atlantic provinces have already reduced GHG emissions by 8% below 1990 levels (N&L has seen an 11% reduction in that time). The longer-term regional goal is 35-45% below 1990 levels by 2030.

Energy and electric power production varies significantly within the region. Crude oil accounts for 75% of the total energy produced in N&L³³, although 96% of its power comes from hydro. Nova Scotia produces 66% of its energy in the form of natural gas and gets 85% of its power from fossil fuel combustion. New Brunswick produces 90% of its energy for provincial consumption; 45% of this power comes from fossil fuels and 30% is nuclear power. PEI imports most of its energy and power, although all of the power it does produce comes from wind turbines.

Energy consumption is more consistent. The Atlantic provinces get between 49% and 72% of their energy from refined petroleum products. In general, they are heavy users of fossil fuels for transportation, home heating, and, in New Brunswick and Nova Scotia's cases, power production.

REGULATIONS: Rather than take direct regulatory action, New Brunswick has expressed support for the federal government's proposed sector-by-sector GHG emissions regulations. New Brunswick has promised a renewable portfolio standard for power production as well as an energy efficiency building code, but has otherwise taken little legislative action.

Nova Scotia passed the *Environmental Goals and Sustainable Prosperity Act* (EGSPA) in 2007 and updated it in 2012. The Act legislated the province's GHG emissions reduction target and enacted the first North American hard cap on electricity sector GHG emissions. The province implemented GHG emissions regulations under the *Environment Act* in 2009. Nova Scotia is phasing in a renewable electricity standard for provincial producers that will increase to 40% by 2020.

Prince Edward Island requires 15% of the power consumed in the province to come from renewable sources. This target is easily met: 30% of the province's power consumption comes from domestic wind generation. PEI doesn't otherwise take a regulatory approach to green policy.

Like New Brunswick, Newfoundland and Labrador has implemented no GHG emissions regulations of

³³ Total crude oil production for Newfoundland and Labrador is suppressed in the Statistics Canada data. The 75% figure is calculated using provincial government sources, which claim 83 million barrels of oil production in 2013 (equivalent to approximately 519,000 TJ of primary energy production). See Economics and Statistics Branch. [2015]. "Total Oil Production, Barrels," Newfoundland & Labrador Statistics Agency, August 14. http://www.stats.gov.nl.ca/Statistics/Industry/PDF/Oil_Production.pdf

its own and is instead waiting on federal leadership.

SUBSIDIES: All four Atlantic provinces offer direct subsidies to renewable energy producers. Programs include New Brunswick’s Large Industrial Renewable Energy Purchase Program; Nova Scotia’s Climate Change Adaptation Fund (CCAF) and Developmental Tidal Feed-in Tariff (FIT) Program; PEI’s Commercial Sector and Institutional Buildings Program for Energy Incentives (CSIPEI); and N&L’s Green Fund and Biogas Electricity Generation Pilot Program. Net metering is available throughout the region.

Subsidies are also available to dirty energy producers, including the Petroleum Exploration Enhancement Program available in both New Brunswick and N&L.

On the consumption side, energy efficiency incentives and rebates are available through the provinces’ public utilities and some government-supported agencies such as Efficiency Nova Scotia.

The provinces fund climate change research and coordination through a number of government agencies, including New Brunswick’s Climate Change Secretariat, PEI’s Office of Energy Efficiency, and N&L’s Office of Climate Change and Energy Efficiency (CCEE).

TAXATION: There are no specific tax measures in the Atlantic provinces to discourage GHG emissions or to support clean energy. Generic disincentives include a fuel tax of around 15¢/L in each province. All four provinces collect oil and gas royalties at varying rates. All four provinces also offer an R&D tax credit for energy industry innovation.

SUMMARY: Taken together, the four Atlantic provinces have promised and implemented meaningful green policies that have resulted in some of the greatest GHG emissions reductions in Canada. The provinces have shown a willingness to cooperate on climate change mitigation, which bodes well for future regional initiatives. Unfortunately, like the rest of the country, a deep reliance on imported fossil fuel consumption remains an outstanding problem that will not be addressed simply through cleaner power production and more efficient energy use.

TERRITORIES

The Canadian territories of Nunavut, Northwest Territories (NWT), and Yukon have so few people (0.3% of the Canadian total) and emit so few greenhouse gases (also 0.3% of the total) that their action or inaction on climate change has a negligible impact. However, the territories are especially vulnerable to a warming climate and their governments take the issue very seriously. In addition to the 2011 *Pan-Territorial Adaptation Strategy* the territories have collectively published six climate change plans and six energy strategies. These strategies tend to focus on climate change adaptation rather than climate change mitigation.

The territories’ GHG emissions reduction targets are mild. NWT hopes to stabilize emissions at 2005 levels in 2015. Yukon has committed to a carbon-neutral government by 2020, although it hasn’t set economy-wide targets. Nunavut has not committed to any measureable targets. Overall, GHG emissions from the territories are almost exactly where they were in 1990—there has been only a 0.4% increase in total emissions.

NWT produces a small amount of crude oil and natural gas but otherwise all energy in the territories is

imported. Fossil fuels are used overwhelmingly to produce electricity, heat homes, and fuel vehicles.

REGULATIONS: Other than their respective Environment Acts, the territories have not taken a regulatory approach to green policy.

SUBSIDIES: The NWT Department of Environment and Natural Resources offers a number of subsidies to energy users and small-scale producers, including the Community Renewable Energy Program (CREP), Commercial Energy Conservation and Efficiency Program (CECEP), Energy Efficiency Incentive Program (EEIP), Alternative Energy Technologies Program (AETP), Energy Conservation Program (ECP), and Grid-Connect Micro Generation Project (net metering).

Nunavut's public utility, the Qulliq Energy Corporation (QEC), offers net metering and the Nunavut Electricity Subsidy Program.

In the Yukon, the Department of Energy, Mines and Resources' Energy Solutions Centre administers the Good Energy Program, which provides energy efficiency incentives. The centre also facilitates micro-generation (net metering).

Climate change research and planning is funded through the Northwest Territories Association of Communities' (NWTAC) Climate Change Working Group, the Nunavut Climate Change Centre (NC3), and the Yukon Department of Environment's Climate Change Secretariat.

TAXATION: The territories each collect a fuel tax and natural resources royalties but do not otherwise incentivize clean energy or directly disincentivize GHG emissions through tax policy.

SUMMARY: The territories are bit players in Canada's GHG emissions picture, but they are among the most vulnerable to the effects of climate change. The territorial governments take the issue of climate change adaptation very seriously.

Discussion

Canadian green policy is a complex topic, but the preceding analysis suggests a number of important patterns. The first is an across-the-board recognition of the severity of climate change and the necessity of action. There are certainly exceptions; some governments (especially Saskatchewan and the federal government) have not advanced or articulated ambitious green policy visions. However, most governments in Canada have made the transition to a lower-carbon economy a rhetorical priority. They frequently describe climate change as a "crisis" and view action on climate change as a "crucial" or "defining" challenge.

The second major pattern is a general lack of cohesion and cooperation at all levels of government. Most notably, the federal government makes commitments internationally but does not provide guidance or an overarching framework for achieving those goals domestically. The provinces have made some attempts to overcome a lack of federal leadership by discussing green policy amongst themselves, either regionally or through the Council of the Federation. Unfortunately, coordination in principle has not yet produced nationally coherent policy. The provinces still disagree on very basic issues,

such as how to measure GHG emissions reductions or the definition of “clean” versus “dirty” energy.

Third, direct subsidies for clean energy and energy efficiency are more prominent than direct subsidies for dirty energy. Canadian governments give billions of dollars to clean energy producers and encourage clean energy consumption through more than a hundred different programs at the federal and provincial/territorial levels. Clean energy producers also receive widespread regulatory subsidies (e.g. renewable content standards for gasoline). Dirty energy producers receive far fewer of these visible subsidies; however, governments at all levels continue to provide significant dirty energy subsidies through government RD&D and industry tax breaks. This practical support for high-carbon, non-renewable energy is often at odds with governments’ stated support for a clean energy transition.

A fourth pattern in Canadian green policy is a heavy focus on “the low-hanging fruit” — i.e. reducing emissions from the sectors that are most politically palatable but not necessarily the most important. For example, government programs focus overwhelmingly on cleaner power generation, but power generation only accounts for 12% of Canada’s total emissions. Many government programs also target energy efficiency improvements for homes and offices, but buildings only account for a further 12% of Canada’s total emissions. In comparison, oil and gas production alone accounts for 25% of Canada’s emissions, but governments are unwilling to undermine what is viewed as a key driver of economic growth. Emissions from personal and industrial transportation account for a further 23% of Canada’s emissions, but Governments have been hesitant to impose regulations on the scale necessary because they might prove unpopular with drivers.

In sum, Canadian governments acknowledge the necessity of acting on climate change, but have so far proven unable or unwilling to tackle the root cause: a deep-seated, widespread dependence on fossil fuels. The actions taken so far have not been insignificant, but they reveal major oversights and misplaced priorities in Canadian governments’ collective response to climate change. Progress on the transition to carbon neutrality is slow, uneven, and seriously undermined by inaction on fossil fuel production and consumption. Consequently, while Canadian green policy is generally moving in the right direction, total GHG emissions continue to rise. Future emissions reduction targets simply will not be met based on the current trajectory.

GAPS IN GREEN POLICY

The Canadian green policy discussed above largely ignores two important areas that are relevant to this report: green jobs policy and nuclear policy.

On jobs policy, every government makes bold promises. One of the key objectives of the provinces’ 2015 *Canadian Energy Strategy* is to “strengthen our economy and create jobs.”³⁴ Similar claims to create “jobs and opportunities” are made in essentially every single provincial climate change plan and energy strategy. However, across the country, there are only a few tangible policies and programs to actually support job creation and professional development in the context of a green energy transition.³⁵ Instead, most governments see the creation of green jobs as a consequences of transitioning to a cleaner economy, rather than a policy target in and of itself. This passive approach to “green-

³⁴ *Canadian Energy Strategy*, p. 11.

³⁵ The most obvious is Manitoba’s \$30 million Energy Jobs Fund, which is designed to create jobs in the renewable sector by providing flexible loans to energy companies. Ontario’s Green Energy Act included local development requirements that were intended to spur job creation (and early evidence suggests it did), but those requirements were eliminated as a consequence of the WTO challenge.

ing” the workforce is made explicit in Newfoundland & Labrador’s *Climate Change Action Plan*, which states that “as the green economy grows and develops over time, the characteristics of ‘green’ jobs and jobs in more traditional sectors will become increasingly similar.”³⁶

On nuclear energy, most governments say very little. In part this is because only two provinces (Ontario and New Brunswick) operate nuclear power plants. Moreover, nuclear policy falls clearly under federal jurisdiction. Nevertheless, for a non-emitting energy source that provides 17% of Canada’s power, it receives inadequate attention. The 2015 *Canadian Energy Strategy* does not discuss nuclear power at all. There is no clear sense from the provinces or from the federal government of where nuclear power fits into Canada’s long-term approach to either climate change or energy production.

POLICY RECOMMENDATIONS

The most glaring gap in Canada’s green policy landscape is strong federal leadership. The provinces and territories are veritable testing grounds for policies to encourage low carbon emitting industrial activity and otherwise transition to a cleaner economy; however, without greater guidance and cooperation across the country, the provincial approaches do not amount to a comprehensive national climate change strategy. In addition to setting binding, absolute targets for GHG emissions reductions in Canada, the federal government should facilitate greater policy coordination and consolidation. For example, the various provincial carbon pricing schemes would be more efficient and more effective if amalgamated. To be clear, consolidation does not mean nationalization. The provinces are in most cases better-positioned to implement effective energy policies. Yet without coherent federal guidance, the provinces will continue to work at cross purposes. The federal government needs to develop a comprehensive climate change action plan and a national energy strategy.

More important—and more difficult—is greater international cooperation. Canada alone will not decide the future of global climate change, but Canada can still be a global leader in the transition to a low carbon future. Effective leadership on this front requires two things: (1) a strong rhetorical position on the necessity of action, articulated at the UNFCCC, WTO, and other fora, and (2) the implementation of meaningful, practical measures to reduce GHG emissions domestically as a model for other countries to follow. Canada is increasingly viewed as a laggard on climate change, but it need not be. The federal government should acknowledge and build on the provinces’ innovative green policies and project them internationally.

At a more practical level, there are several specific policies that would have a significant impact on Canada’s GHG emissions. First, the elimination of fossil fuel subsidies, both direct and indirect, is clearly necessary. The federal government and many provincial and territorial governments artificially prop up the dirty energy industry, which already accounts for a quarter of the country’s GHG emissions. Second, governments need to tackle the widespread consumption of fossil fuels for transportation, which accounts for another quarter of total emissions. High carbon taxes and massive investment in public transit are two possibilities (and one could pay for the other). Third, governments need to recognize and maximize Canada’s capacity for clean power generation. Most provinces already get the majority of their power from hydro, and coal-fired generation is being phased out in most of the

³⁶ Government of Newfoundland and Labrador. (2011). *Charting Our Course: Climate Change Action Plan 2011*, p. 47. http://www.exec.gov.nl.ca/exec/ccee/publications/climate_change.pdf

country. Policies that support further renewable power development and incentivize electricity use over fossil fuel use (e.g. electric vehicle subsidies and electric home heating) would go a long way to wearing Canada off its dirty energy dependency.

FURTHER RESEARCH

Further qualitative research could investigate in more depth the policy visions of Canadian governments. Which phrases and ideas receive the most attention? Which are systematically ignored? Where do governments differ on their fundamental understandings of climate change? How willing are provinces to sacrifice other policy priorities for a reduction in greenhouse gases?

Further quantitative research could take the results of provincial green policies (e.g. BC's carbon tax) and project them onto other jurisdictions. How effective could provincial programs be if implemented nationally? Although direct cost comparisons are extremely difficult, further research could analyze the total spending—direct and indirect; historical and projected—by governments on policies to encourage or discourage different kinds of energy production.

In sum, this report is just a snapshot of the green policy landscape in Canada. There is much more we can learn from the regulations, subsidies, and tax policies pursued and promised by Canadian governments. Further research could investigate in more detail any one of these angles or any of these jurisdictions, especially in the form of policy case studies.

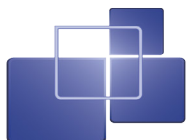
APPENDIX:

APPENDIX A: PROVINCIAL/TERRITORIAL CLIMATE CHANGE AND ENERGY STRATEGIES

Note: please contact the report author for PDF copies of listed documents

	Climate Change Strategies	Energy Strategies
Alberta	Albertans & Climate Change: Taking Action (2002) Alberta's Climate Change Strategy: Responsibility / Leadership / Action (2008)	Nine-Point Bioenergy Plan (2006) Launching Alberta's Energy Future: Provincial Energy Strategy (2008) Responsible Actions: A Plan for Alberta's Oil Sands (2009)
British Columbia	Weather, Climate and the Future: B.C.'s Plan (2004) Climate Action Plan (2008)	The BC Energy Plan: A Vision for Clean Energy Leadership (2007) BC Bioenergy Strategy: Growing Our Natural Energy Advantage (2009)
Manitoba	Kyoto and Beyond: A plan of action to meet and exceed Manitoba's Kyoto targets – Province of Manitoba Climate Change Action Plan (2002) Green and Growing: Building a Green and Prosperous Future for Manitoba Families (2005) Next Steps: 2008 Action on Climate Change (2008) Tomorrow Now: Manitoba's Green Plan (2012; 2nd ed. 2014)	Focused on What Matters Most: Manitoba's Clean Energy Strategy (2012)
New Brunswick	Climate Change Action Plan 2007-2012 (2007) Climate Change Action Plan 2014-2020 (2014)	The New Brunswick Energy Blueprint (2011)
Newfoundland and Labrador	Climate Change Action Plan 2005 (2005) Charting Our Course: Climate Change Action Plan 2011 (2011) Greening Government Action Plan (2015)	Focusing our Energy: Newfoundland and Labrador Energy Plan (2007) Moving Forward: Energy Efficiency Action Plan 2011 (2011)
Northwest Territories	Northwest Territories Greenhouse Gas Strategy (2001) Northwest Territories Greenhouse Gas Strategy 2007-2011: A Strategy to Control Greenhouse Gas Emissions in the NWT (2007) A Greenhouse Gas Strategy for the Northwest Territories 2011-2015 (2011)	Energy for the Future: An Energy Plan for the Northwest Territories (2007) Northwest Territories Biomass Energy Strategy (2010) Northwest Territories Biomass Energy Strategy 2012-2015 (2012) Northwest Territories Solar Energy Strategy 2012-2017 (2012)

	Climate Change Strategies	Energy Strategies
Nova Scotia	Toward a Greener Future: Nova Scotia's Climate Change Action Plan (2009)	Toward a Greener Future: Nova Scotia's 2009 Energy Strategy (2009) Renewable Electricity Plan: A Path to Good Jobs, Stable Prices, and a Cleaner Environment (2010) Nova Scotia Marine Renewable Energy Strategy (2012)
Nunavut	Nunavut Climate Change Strategy (2003)	Ikummatit: The Government of Nunavut Energy Strategy (2007)
Ontario	Go Green: Ontario's Action Plan on Climate Change (2007) Climate Ready: Ontario's Adaptation Strategy and Action Plan 2011-2014 (2011)	Ontario's Long-Term Energy Plan: Building Our Clean Energy Future (2010) Achieving Balance: Ontario's Long-Term Energy Plan (2013)
Prince Edward Island	Prince Edward Island and Climate Change: A Strategy for Reducing the Impacts of Global Warming (2008)	Energy Framework and Renewable Energy Strategy (2004) Prince Edward Island Energy Strategy – Securing Our Future: Energy Efficiency and Conservation (2008) Island Wind Energy – Securing Our Future: The 10 Point Plan (2008)
Quebec	Québec and Climate Change: A Challenge for the Future – 2006-2012 Action Plan (2008) Québec in Action: Greener by 2020 – 2013-2020 Climate Change Action Plan (2012) Propelling Québec Forward with Electricity: Transportation Electrification Action Plan – 2015>2020 (2015)	Using Energy to Build the Québec of Tomorrow: Québec Energy Strategy 2006-2015 (2006) Developing the Value of Forest Biomass: An Action Plan (2009) Plan Nord toward 2035: 2015-2020 Action Plan (2015)
Saskatchewan	Saskatchewan Energy and Climate Change Plan (2007)	Saskatchewan Energy and Climate Change Plan (2007)
Yukon	Government of Yukon Climate Change Strategy (2006) Yukon Government Climate Change Action Plan (2009)	Energy Strategy for Yukon (2009)
Intergovernmental	New England Governors/Eastern Canadian Premiers – Climate Change Action Plan 2001 (2001) Northern Premiers' Forum – Pan-Territorial Adaptation Strategy: Moving Forward on Climate Change Adaptation in Canada's North (2011) Québec Summit on Climate Change – Declaration of the Premiers of Canada (2015)	Council of the Federation – A Shared Vision for Energy in Canada (2007) Council of the Federation – Canadian Energy Strategy (2015)



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