

Tracking progress

Evaluating government plans and actions
to reduce greenhouse gas emissions in Canada

Hadrian Mertins-Kirkwood





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Executive summary

CLIMATE POLICY ENCOMPASSES a broad range of government measures to mitigate greenhouse gas emissions and adapt to a changing climate. Through regulation, spending and taxation, governments have the power to reduce emissions inside their jurisdictions and prepare their economies for the challenges and opportunities of a low-carbon future.

From Victoria to Ottawa to St. John's, Canadian governments are taking the issue of climate change increasingly seriously. With few exceptions, phrases like “clean growth” and “responsible development” now feature in every speech, budget and political platform. Dozens of provincial climate change “action plans” have already been published, and a pan-Canadian climate policy framework was recently concluded for the first time.

Rhetoric aside, many governments are taking meaningful steps to reduce emissions. Coal-fired electricity generation has been phased out in some provinces with the rest set to follow. Likewise, provincial initiatives to put a price on carbon pollution will soon be backstopped by federal regulations. Per capita greenhouse gas emissions have fallen steadily across the country as these measures and others have come into effect.

Yet, for all this progress, Canada is still falling short on climate policy. The actions and commitments taken to date do not go far enough to reduce greenhouse gas emissions in Canada or put us on a pathway to a low-carbon economy.

This report breaks down the successes and shortcomings of Canadian climate policy at the federal and provincial level through early 2017. Key findings include:

- **British Columbia** is endorsing the expansion of new fossil fuel infrastructure that will undo any emission reductions achieved in other sectors of the economy.
- **Alberta** is the source of more than a third of the country's emissions, and despite the introduction of a carbon tax the province is not on track to reduce overall emissions.
- **Saskatchewan** has the highest per capita greenhouse gas emissions in the country and the least ambitious climate policies of any province.
- **Ontario** is a leader in climate policy experimentation, but the province still consumes fossil fuels at such a rate that future emission reductions are in question.
- **Québec** has the lowest per capita emissions in the country and has made some of the biggest investments in the low-carbon economy, but overall emissions are still projected to rise in the coming years.
- **Nova Scotia** is the only province on track to meet its medium-term greenhouse gas emission reduction targets.
- **Newfoundland and Labrador** has one of the greatest concentrations of fossil fuel workers of any province, but it has no plan to support those workers as Canada moves toward a low-carbon economy.

The nature and scope of climate policy varies across the country, but three major themes are common to the Canadian climate policy landscape:

1. A significant **ambition gap** exists between the greenhouse gas emission reduction targets that governments have set for themselves and the policies they have put in place to meet them. With the exception of Nova Scotia, no government is on track to meet its 2020 and 2030 emission reduction targets. Overall, Canada is projected to miss its 2030 target by 42%, and fall short of the level of ambition called for by climate scientists.
2. Every part of Canada has a deep **fossil fuel dependence**. Although the extraction and processing of oil, gas and coal is an obvious culprit for greenhouse gas emissions, the consumption of gasoline, nat-

ural gas and other fossil fuels contributes as much or more to Canada's total emissions picture. Even the "cleanest" jurisdictions still get the majority of their energy from fossil fuels, and governments have been slow to tackle emissions from the transportation and building sectors.

3. Canadian climate policy has largely ignored the need for **just transition** planning. Some workers and their communities are put at risk by climate policies and other changes associated with the low-carbon economy, but governments have not been forthcoming with programs to support affected workers and transition them into new jobs. Governments are missing a key opportunity to prepare the workforce for job growth in clean technology, energy efficiency and other industries.

Seriously addressing these issues will require extensive, co-ordinated movement across and within Canadian governments. This paper recommends seven concrete actions that governments at the federal and sub-national level can take in the short term to scale up their climate policy ambition and accelerate the move toward an inclusive and productive low-carbon economy:

1. Set greenhouse gas emission reduction targets that are consistent with a global carbon budget.
2. End all fossil fuel subsidies.
3. Place a moratorium on new fossil fuel infrastructure.
4. Ensure the carbon price increases over time.
5. Recycle carbon pricing revenues into complementary climate policies.
6. Accelerate the electrification of the transportation system.
7. Develop a just transition strategy.

Introduction

AS RECENTLY AS a decade ago, the reduction of greenhouse gas emissions (GHGs) was viewed as a minor environmental concern in many legislatures across Canada. Now, climate change mitigation occupies a central position in policy debates from energy to transportation to industrial strategy at the federal, provincial and territorial level. Concerned citizens, whether they are workers, scientists or economists, have forced Canadian governments to confront the reality that their policy decisions (and indecisions) are directly contributing to a global environmental crisis. Most Canadian politicians now readily acknowledge that addressing the climate challenge will require a transition from our business-as-usual high-carbon economy to a cleaner, greener alternative. The future well-being and prosperity of Canada, and the world, may depend on it.

Yet for all the heady rhetoric coming from politicians of all stripes in all parts of the country, climate policy in Canada is underdeveloped. The introduction of dozens of GHG emission reduction targets and bold claims of sustainable economic development distract from Canadian governments' failure to enact tangible programs, regulations and tax measures designed to reduce emissions on the necessary scale. Furthermore, "all of the above" climate policy, which sees the expansion of fossil fuel infrastructure as compatible with emissions reduction initiatives, remains a dominant narrative in Canadian politics. Consequently, modest emissions reductions in some sectors, such as electricity generation, over the past few decades have been

more than offset by increased emissions from oil and gas extraction, transportation and other sectors reliant on fossil fuels.

With a view to ramping up the ambition of Canadian climate action, this report evaluates past progress and identifies key trends in the climate policies of Canadian governments. First, we summarize and assess the existing climate policy frameworks of the federal, provincial and territorial governments. These profiles highlight where significant policy progress has been made and where policy has come up short — or is missing entirely — including in the critical area of just transition.

Second, we discuss some of the dominant trends in Canadian climate policy. Specifically, we focus on the persistent ambition gap between government policies and promises, Canada's continued dependence on fossil fuel extraction and consumption, and the absence of just transition policies in government climate plans. These problematic trends highlight sticking points in the overall Canadian climate policy framework.

The report concludes that while Canadian climate policy is moving in the right direction, and some jurisdictions should be lauded for their actions so far, progress is too slow to meet the scope of the climate change challenge. Seven policy recommendations are forwarded that would move Canada onto a path of deep greenhouse gas emission reductions while ensuring a just outcome for workers and their communities.

Climate policy profiles

CLIMATE POLICY BROADLY encompasses a variety of government measures to mitigate and adapt to anthropogenic (human-caused) climate change. For the purposes of the present research, climate policy is defined using a matrix (see Appendix for details). On one axis are three categories of policy instrument: (1) regulatory initiatives (e.g., energy efficiency standards); (2) funding, financing and investment programs (e.g., feed-in tariffs); and (3) taxes and tax subsidies (e.g., carbon levies). On the second axis are three categories of intended outcomes: (1) supply-side measures intended to reduce emissions from energy providers (e.g., renewable portfolio standards); (2) demand-side measures intended to reduce emissions from energy consumers (e.g., tax credits for home retrofits); and (3) measures intended to adapt to the environmental and economic effects of a changing climate (e.g., natural disaster insurance). This typology provides a framework for defining and understanding the diversity of climate policy in Canada.

With the preceding definition in mind, this section profiles the climate policy framework of each Canadian government at the federal, provincial and territorial level through early 2017. Each profile includes a set of summary charts and a discussion of key climate policy issues.

All figures are for the year 2015 (unless otherwise indicated), even where more recent data are available, because 2015 is the latest year for which comprehensive GHG emissions data are available for comparison. All sources (unless otherwise indicated) can be found in the Appendix.

What is a just transition?

Economic transformations inevitably affect workers. For example, the automation of assembly line tasks over the past century has dramatically reduced employment in both absolute and relative terms across much of the manufacturing industry. As Canada transitions from a high-carbon to a low-carbon economy, many jobs will similarly become unnecessary or untenable.

In particular, workers in Canada's fossil fuel industry – primarily oil and gas extraction, coal mining and natural gas distribution – are put at risk by climate policies designed to phase out the production and consumption of fossil fuels. Researchers generally agree that the low-carbon transition will ultimately create more jobs than it destroys, but the short-term negative employment impacts may be severe.¹ By extension, communities that are economically dependent on fossil fuel jobs are put at risk of collapse.

The just transition concept was developed by the labour movement to manage the transition from a dirty to a clean economy in a way that minimizes the negative impacts on workers and their communities. Although specific proposals vary, proponents of a just transition generally agree that governments ought to complement their emission reduction initiatives with policies designed to:

1. Enhance income supports for laid-off fossil fuel workers;
2. Provide skills training and re-training programs that prepare the workforce for the low-carbon economy; and
3. Invest in clean technologies and infrastructure projects that create jobs in the regions most affected by climate policies.

It is possible for governments to reduce GHG emissions without implementing complementary employment policies. However, failing to ensure a just transition limits the economic potential of the low-carbon economy and may serve to undermine public confidence in broader climate change action. Therefore, just transition planning is an important component of any comprehensive, long-term climate strategy.

Canada (Federal)

Energy and emissions breakdown

Canada is one of the biggest energy producers in the world due to our large oil, gas and coal extraction industries. Fossil fuels accounts for about 90% of primary energy production in the country, half of which is crude oil. Canada is also one of the biggest global fossil fuel consumers. We are deeply reliant on petroleum products and natural gas for transportation, industrial processes, home heating, electricity generation and other uses.

On a per capita basis Canadians emit four times as much greenhouse gas as the rest of the world. The biggest national emissions sources are oil and gas extraction, which accounts for 26% of total emissions, followed by the combustion of fossil fuels for transportation, which accounts for a further 24%. Electricity, buildings, industry and agriculture each account for about 10% of Canada's total GHG emissions.

Energy production varies significantly between the provinces, but energy consumption is relatively uniform. Every part of the country is dependent on fossil fuels to a certain extent, especially for transportation.

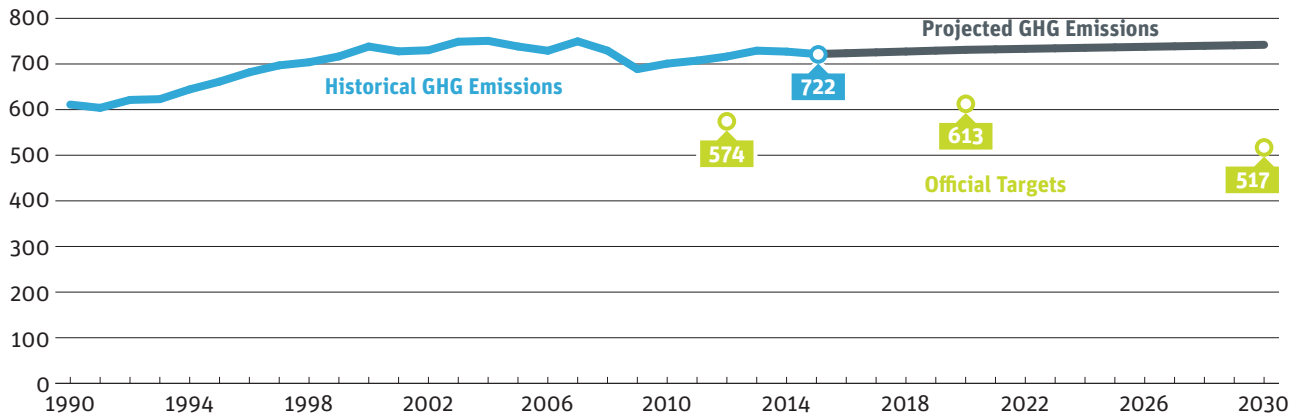
Emission reduction policy highlights

After decades of inaction, the federal government announced a pan-Canadian climate policy framework in December 2016.⁶ The framework's most important elements, in terms of their GHG emission reduction potential, are a new clean fuel standard, new regulations for methane emissions and a national floor price on carbon.⁷ The plan also accelerates the phase-out of coal-fired electricity generation across the country, although most provinces were already doing so on their own.

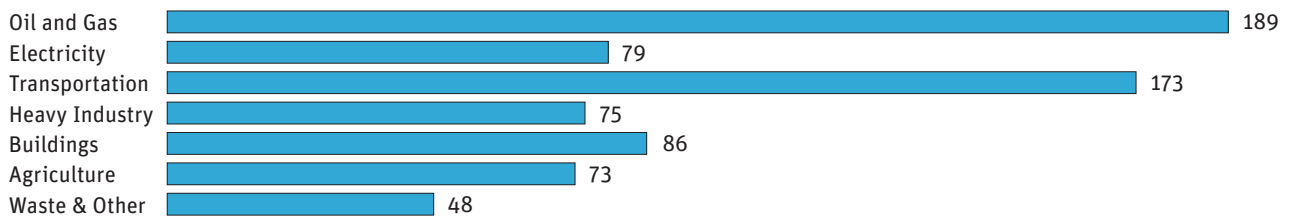
How these policies are implemented in the coming months and years will have a large bearing on their effectiveness. For example, although the framework establishes a national carbon pricing floor, the specific design of the system is left up to each individual province provided they meet a common set of criteria. Higher prices will drive deeper emissions reductions, of course, but there are other important variables. For instance, revenue-neutral pricing systems (as in British Columbia) have less potential to reduce emissions than systems where revenues are recycled into complementary climate policies (as in Alberta or Québec).

FIGURE 1 Canada (Federal)

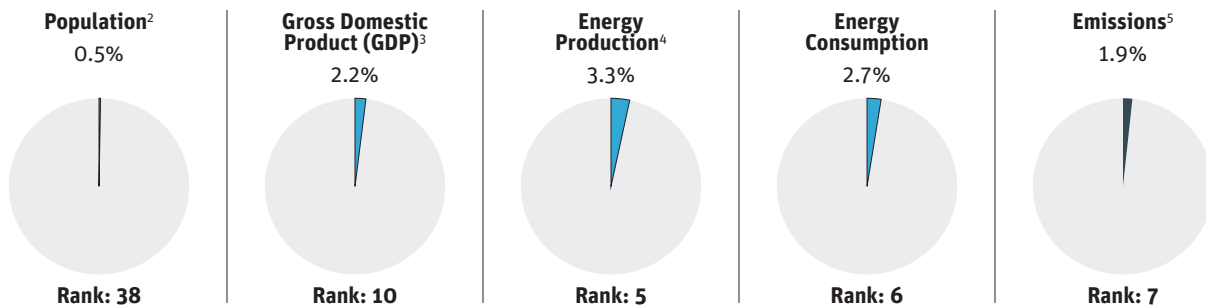
GREENHOUSE GAS EMISSIONS (MT CO₂E) BY YEAR



GREENHOUSE GAS EMISSIONS (MT CO₂E) BY SECTOR



SHARE OF TOTAL GLOBAL...



EMISSIONS PER CAPITA (TONNES CO₂E PER PERSON)



Employment profile and just transition policies

Upwards of 200,000 people work in Canada’s fossil fuel sector – about 1% of total national employment – but the distribution is highly regional. Alberta alone accounts for three quarters of those jobs. On the other hand, an estimated 730,000 people work as environmental professionals – about 4% of total employment. Those “green jobs” are relatively evenly distributed across the country.

The pan-Canadian framework does not address the potential risk to fossil fuel workers from climate policies, let alone propose a tangible just transition strategy. The framework also fails to promote skills training and workforce development. The 2017 federal budget includes a number of promises to increase support for unemployed workers in general, which will benefit fossil fuel workers indirectly.

Progress toward targets

Canada missed its 2012 Kyoto Protocol target and is on track to miss both its 2020 Copenhagen Accord target and its 2030 Paris Agreement target. Although overall emissions are stabilizing, emissions are not projected to decline enough to meet the country’s goals. Canada has set a long-term emission reduction target of 80% below 2005 levels by 2050, which will likewise be missed without significant new policies.

The bottom line is Canada remains deeply dependent on fossil fuels in every sector of the economy. A true low-carbon transition will require a dramatic restructuring of the current economy in a relatively short period of time.

British Columbia

Energy and emissions breakdown

British Columbia is Canada's biggest energy producer after Alberta. The majority of B.C.'s energy production is in the natural gas industry, which also accounts for a quarter of the province's GHG emissions. That figure is poised to grow as the province facilitates new investments in liquid natural gas facilities. Petronas' proposed Pacific NorthWest terminal has been described as a "carbon bomb" because it alone would create an additional 10 Mt of domestic emissions per year, swallowing up a large portion of B.C.'s long-term carbon budget and creating far more emissions wherever the gas is eventually burned.⁸

The province has an almost entirely non-emitting electricity sector, which in part explains per capita emissions well below the national average. However, B.C. is still a major consumer of natural gas (mostly for home heating and industrial processes) and refined petroleum products (mostly for transportation). The transportation sector accounts for a third of the province's total emissions.

Emission reduction policy highlights

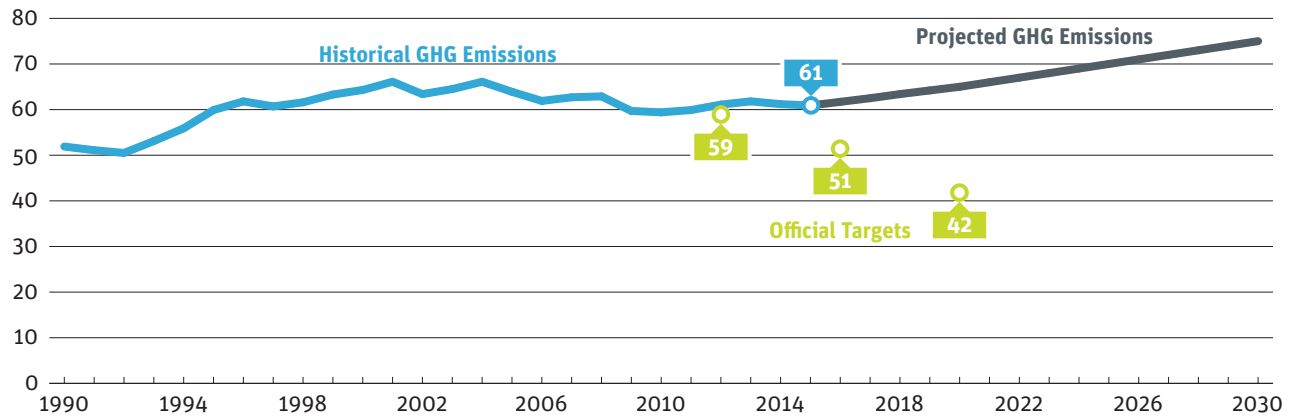
British Columbia's carbon tax was groundbreaking when it first came into effect. The tax rose incrementally from an initial price of \$10 per tonne of CO₂e in 2008 to \$30 per tonne in 2012. Since 2012, a freeze on the price of carbon has undermined earlier momentum and failed to drive deep emissions reductions. In 2015, total provincial emissions were still 17% higher than in 1990.

The tax is revenue neutral, which means all the money it raises is recycled to households and businesses through tax cuts and credits. None of the carbon tax's revenues are allocated to complementary emission reduction initiatives such as energy efficiency investments or clean tech research, development and demonstration (RD&D).

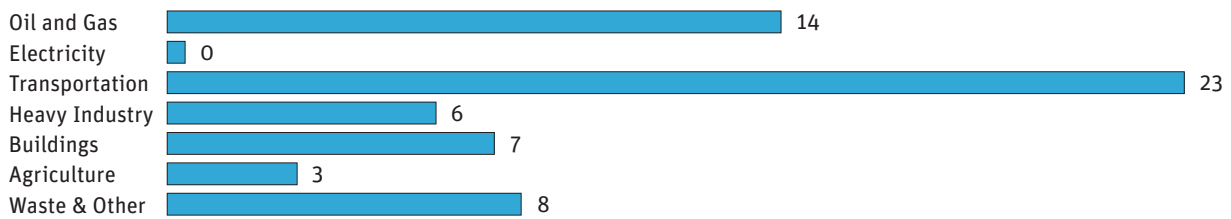
The province's latest climate plan, published in August 2016, includes a few modest new initiatives but no bold vision for getting British Columbia back on track toward its targets.⁹ Ignoring the recommendations of the government's own Climate Leadership Team, the new plan does not increase the carbon tax or implement strategies for public transit, green buildings or the electrification of the broader economy.¹⁰

FIGURE 2 British Columbia

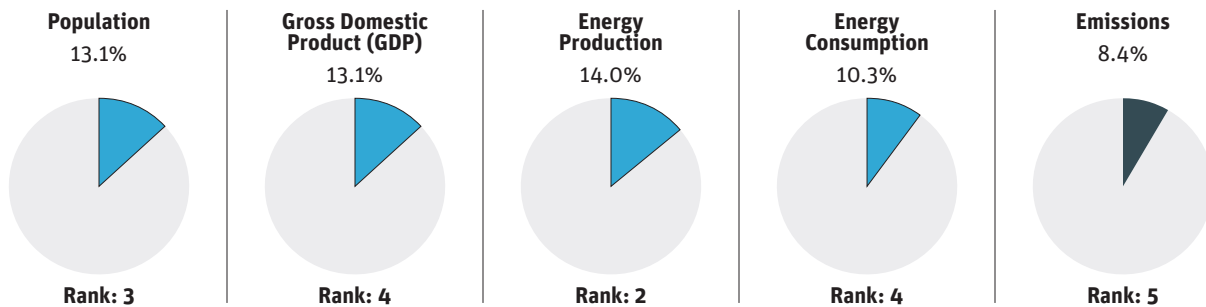
GREENHOUSE GAS EMISSIONS (MT CO₂E) BY YEAR



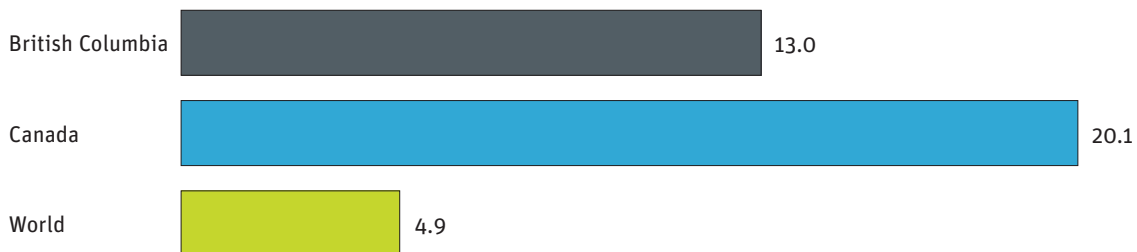
GREENHOUSE GAS EMISSIONS (MT CO₂E) BY SECTOR



SHARE OF TOTAL CANADIAN...



EMISSIONS PER CAPITA (TONNES CO₂E PER PERSON)



Employment profile and just transition policies

An estimated 95,000 workers in British Columbia — about 4% of the workforce — are considered environmental professionals. In comparison, approximately 12,000 people work in B.C.'s fossil fuel sector, which accounts for around 0.5% of total direct employment. About a third of those fossil fuel workers are employed by the province's five active coal mines or in industries supporting coal extraction.

British Columbia has no just transition strategy in place and no apparent plans to create one for the thousands of fossil fuel workers put at risk by climate policies. Research by the CCPA highlights the dire situation facing many coal communities, and makes a number of recommendations to the B.C. government, including the need for advanced skills training programs and enhanced income supports.¹¹

Progress toward targets

British Columbia missed its interim emissions reduction targets in 2012 and 2016 (pending updated GHG data). The province is on track to miss its official, legislated target for 2020 by a wide margin. In the long-term, British Columbia has committed to an 80% reduction below 2007 levels by 2050, which it will not reach without a major shift in policy direction.

B.C. was an early climate leader, but momentum has stalled. To avoid becoming a climate laggard in the face of progress elsewhere, the province must recommit to climate action, starting with an increase to the carbon tax and an end to climate-incompatible fossil fuel extraction and processing.

Alberta

Energy and emissions breakdown

Alberta stands out among the provinces for its massive fossil fuel industry. Alberta alone accounts for two-thirds of Canadian energy production and about 2% of the global total. Half of the energy produced is in the form of crude oil and another third is natural gas. Although Alberta has a burgeoning wind industry and some hydro power, the majority of its electricity is generated in conventional coal-fired and natural gas-fired power plants.

Alberta is by far the biggest provincial GHG emitter, accounting for 38% of Canada's total emissions. The extraction of oil and gas in Alberta – not consuming it, but just getting it out of the ground – accounts for nearly half the province's emissions and 18% of all emissions in the country. The consumption of fossil fuels in electricity generation and transportation together accounts for a further 29% of Alberta's emissions.

Emissions in the province have climbed by 56% since 1990, which does not include the emissions Alberta has exported to other jurisdictions through energy trade. Alberta's per capita emissions are now three times the Canadian average and a staggering 13 times the global average.

Emission reduction policy highlights

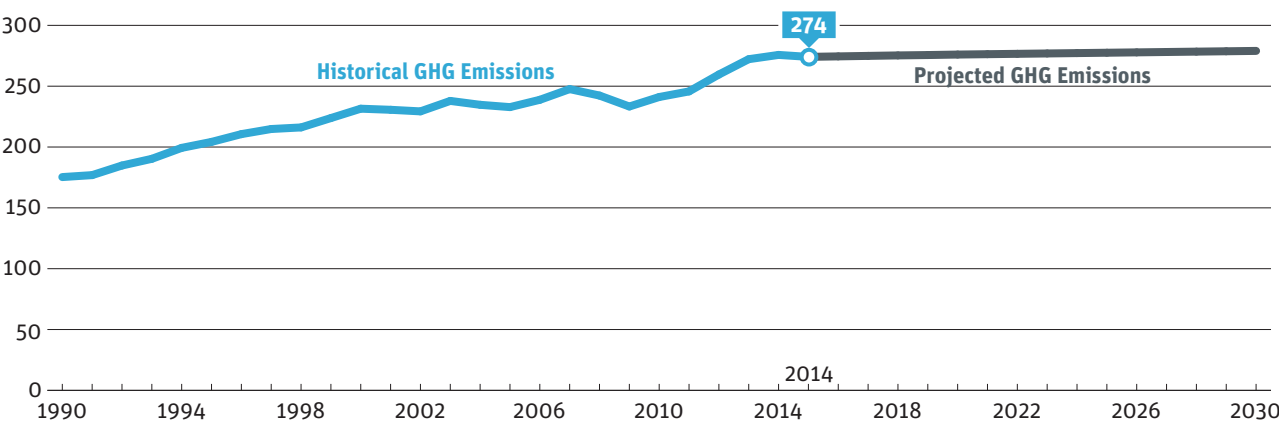
Given its singular contribution to Canadian GHG emissions, Alberta's climate policy is a crucial determinant of national progress. After decades of modest steps, including a small carbon levy on major industrial emitters enacted in 2007, the province committed in 2015 to a comprehensive new climate strategy that began to come into effect in 2016.

The Alberta plan has four pillars. First, it creates an economy-wide carbon tax of \$20 per tonne in 2017 rising to \$30 per tonne in 2018. Second, it commits to phasing out coal-fired electricity generation by 2030 (and commits to 30% renewable power by 2030). Third, it sets a methane reduction target of 45% below current levels by 2025 (consistent with the national target). Finally, it caps emissions from the oil sands at 100 Mt.¹²

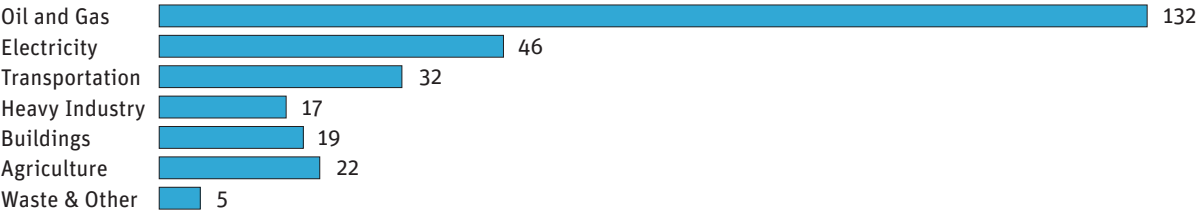
Altogether, the plan is expected to push emissions well below business-as-usual levels by 2030, but further measures will be needed to drive emissions down in absolute terms. Among other issues, the oil sands emissions cap permits 30 Mt of new emissions growth above current levels.

FIGURE 3 Alberta

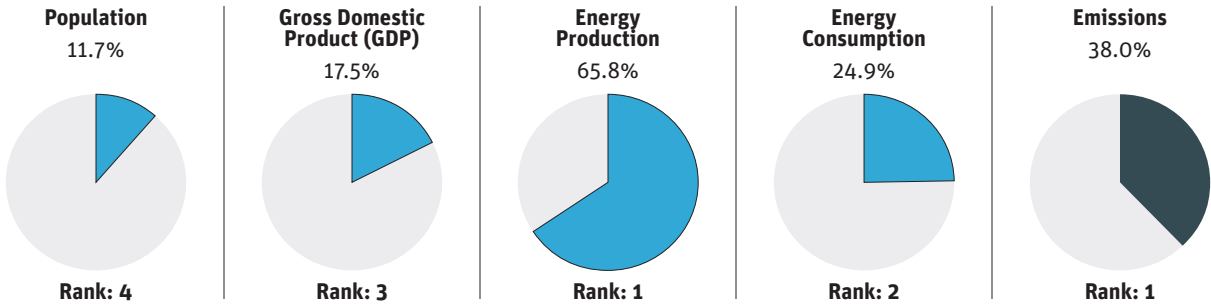
GREENHOUSE GAS EMISSIONS (MT CO₂E) BY YEAR



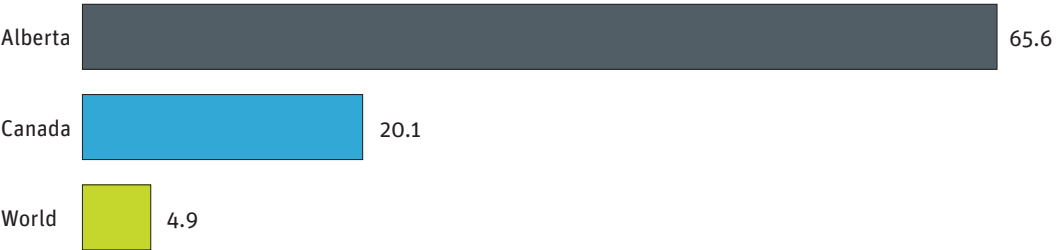
GREENHOUSE GAS EMISSIONS (MT CO₂E) BY SECTOR



SHARE OF TOTAL CANADIAN...



EMISSIONS PER CAPITA (TONNES CO₂E PER PERSON)



Employment profile and just transition policies

An estimated 150,000 people — 6.4% of all workers in Alberta — are employed in the fossil fuel sector, which is by far the greatest share of any province. Alberta’s Climate Leadership Team is aware of the risk its policies pose to those workers and their communities. It recommends a series of just transition measures to minimize negative employment impacts.

For example, the province will use a portion of carbon tax revenues to improve training programs and career supports for laid-off workers. The government has promised \$195 million over five years for measures to assist affected communities.¹³

Alberta is also home to an estimated 91,000 environmental professionals, some of whom may see new opportunities as the province works to reduce emissions. On the other hand, some of those workers are currently employed by fossil fuel companies and are therefore at risk from changes to the industry.

Progress toward targets

Alberta has not officially adopted any emission reduction targets, but the province is implicated in the national goals. For Canada to meet its targets, Alberta will have to reduce its emissions from 274 Mt today to approximately 193 Mt by 2020 and then to 163 Mt by 2030. Even with the province’s coal phase-out, carbon tax and other measures in place, emissions are not projected to fall much below current levels, which means Alberta is not positioned to contribute its fair share to Canada’s emission reduction goals. However, the policy framework is now in place for Alberta to ramp up its ambition as needed. Continuing to raise the carbon tax after 2018, for example, will drive deeper reductions in the long term.

Saskatchewan

Energy and emissions breakdown

After Alberta and British Columbia, Saskatchewan is Canada's largest fossil fuel producer. A sizeable oil extraction industry accounts for three-quarters of the province's energy production. Saskatchewan is also a major fossil fuel consumer. Although it has a small and growing renewable energy sector, more than three-quarters of electricity generation still comes from conventional coal-fired and natural gas-fired power plants. Fossil fuels are also used extensively for transportation and industry, and in buildings.

The extraction of oil and gas accounts for a third of provincial emissions. Fossil fuel-based electricity generation accounts for a further 19% of emissions. The province's other major emissions source is agriculture, which accounts for 24% of the provincial total.

The entrenchment of fossil fuel production and consumption has pushed Saskatchewan's emissions up by 66% since 1990, the largest such increase in the country. Saskatchewan also has the highest per capita emissions in the country: they are more than three times the national average and 13 times the global average.

Emission reduction policy highlights

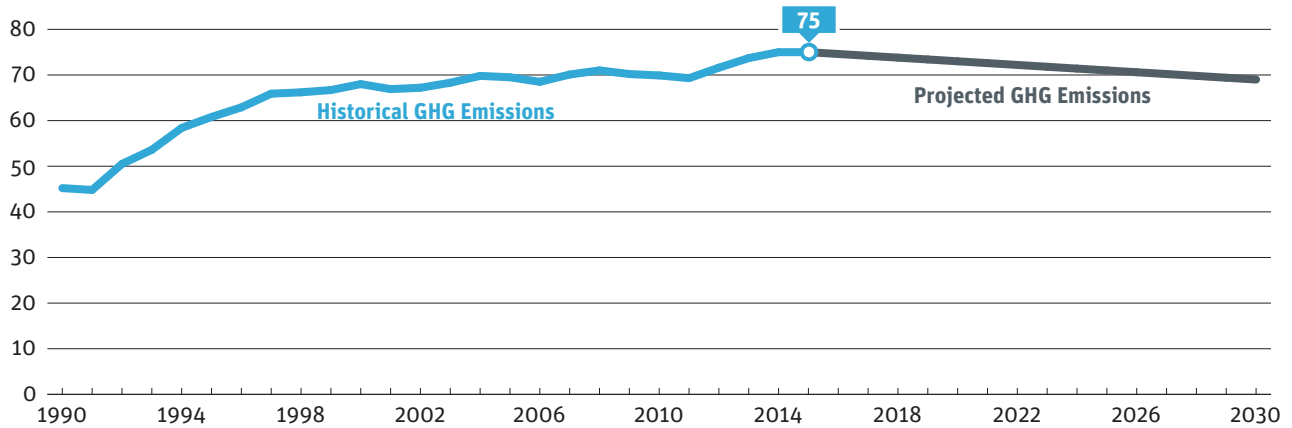
In 2015, Saskatchewan's provincial power utility committed to a renewable portfolio standard of 50% by 2030.¹⁴ It hopes to reach the target largely through new wind capacity.

Otherwise, Saskatchewan has little in the way of climate policy. A 2016 white paper laid out the province's opposition to policies under consideration elsewhere, especially carbon pricing and methane regulations, but failed to lay out a comprehensive alternative strategy.¹⁵

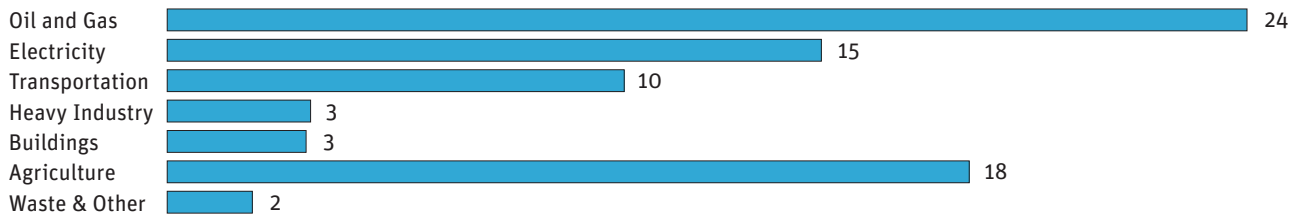
Instead, the province advocates a technology-focused approach to emissions mitigation. Saskatchewan has invested well over a billion dollars in carbon capture and storage/sequestration (CCS) technology pilots it hopes to commercialize and export. In theory, CCS can significantly reduce the climate impact of fossil fuel consumption by preventing carbon emissions from entering the atmosphere. In practice, CCS has a limited impact on emissions and is expensive on a large scale. Importantly, CCS only reduces fossil fuel emissions from certain sources, such as power plants, without addressing other major emissions sources, such as individual vehicles.¹⁶

FIGURE 4 Saskatchewan

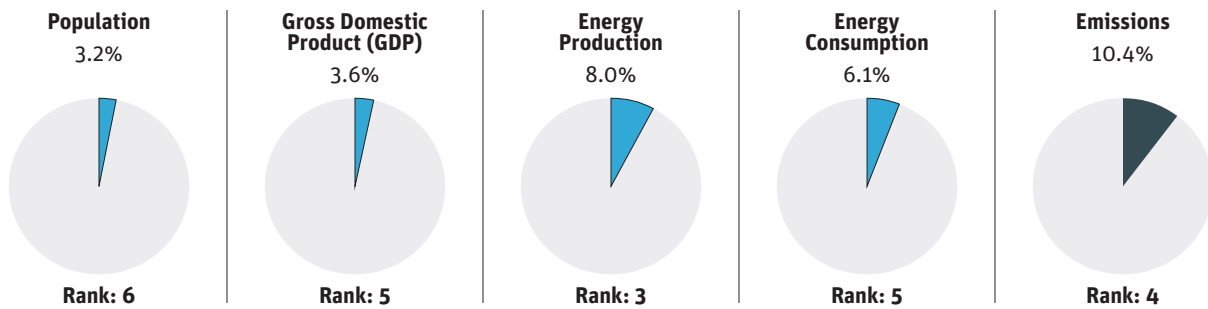
GREENHOUSE GAS EMISSIONS (MT CO₂E) BY YEAR



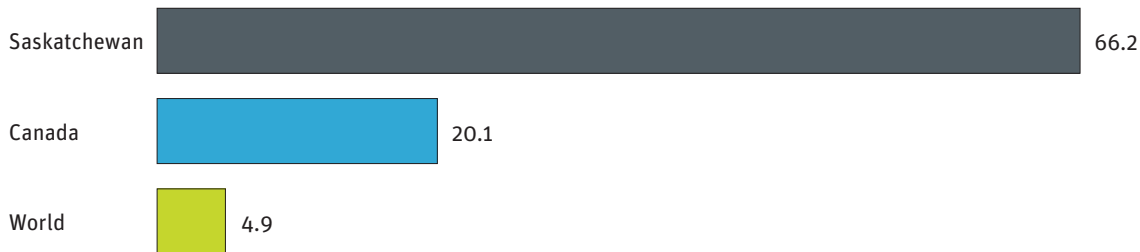
GREENHOUSE GAS EMISSIONS (MT CO₂E) BY SECTOR



SHARE OF TOTAL CANADIAN...



EMISSIONS PER CAPITA (TONNES CO₂E PER PERSON)



Employment profile and just transition policies

An estimated 23,500 workers in the province — 4% of the workforce — are considered environmental professionals. In comparison, about 16,000 people work directly in Saskatchewan’s fossil fuel industry — about 2.7% of total employment.

The province recognizes the threat posed to some workers and their communities by certain climate policies. Rather than proactively address the challenge of transitioning the fossil fuel workforce to a low-carbon economy, however, Saskatchewan has focused its efforts on criticism of policies that may be imposed on the province anyway, such as the federal carbon pricing floor.

Progress toward targets

Like Alberta, Saskatchewan has not officially adopted any emission reduction targets (a proposed target of 20% below 2006 levels by 2020 was abandoned). If the province were to reduce emissions in line with Canada’s national targets, Saskatchewan would need to get from 75 Mt today to approximately 58 Mt by 2020 and then to 49 Mt by 2030. Based on current policies, Saskatchewan will not reduce its emissions nearly far enough to contribute its fair share to the national goal.

Unlike Alberta, Saskatchewan does not have the policy infrastructure in place to drive emissions reductions on the scale required. The longer the province waits, the more expensive the inevitable adjustment costs will be.

Manitoba

Energy and emissions breakdown

Manitoba has a small oil industry but is otherwise not a major fossil fuel producer. The province also sports a very clean power sector (hydro provides 98% of Manitoba's electricity). However, the province remains dependent on imported fossil fuels for transportation and industry, and in buildings. Two-thirds of the energy consumed in the province comes from oil and natural gas.

Agriculture is the leading source of GHG emissions in Manitoba, accounting for more than a third of the provincial total. Animal production (3.5 Mt) produces a greater share of emissions than crop production (3.0 Mt). Transportation accounts for a further third of emissions. Overall, emissions have increased by 12% since 1990. Most of the increase has come in the transportation sector.

Emission reduction policy highlights

Manitoba released a climate plan in late 2015 with ambitious new emission reduction targets and modest policy promises.¹⁷ Among other initiatives, the plan included a new \$5-million Climate Change Action Fund for energy efficiency and renewable energy initiatives and a commitment to implement a cap-and-trade system for pricing carbon.

However, a change of government in 2016 put the climate plan on hold. The new provincial government has promised to release a new “made-in-Manitoba” climate plan, including some form of carbon pricing, in 2017, but further details are not yet available.¹⁸

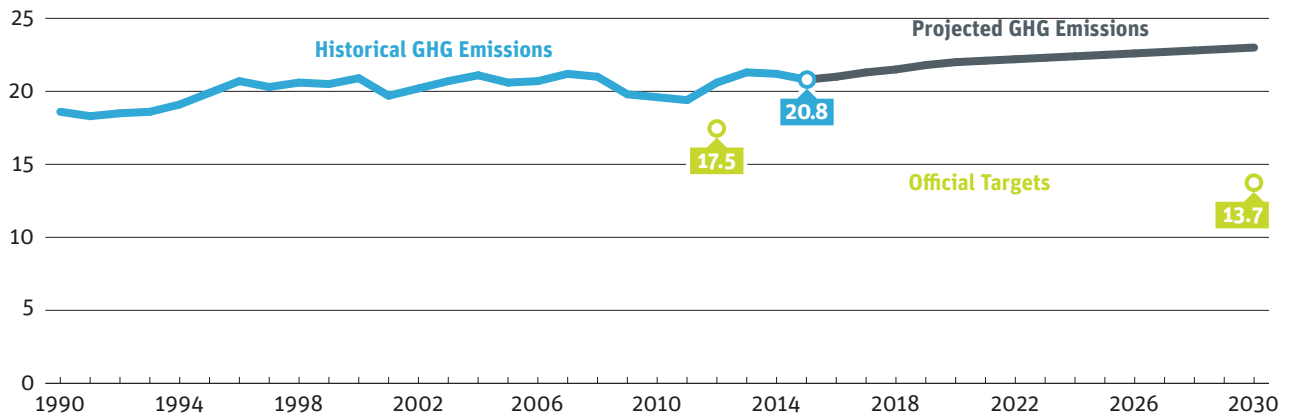
Employment profile and just transition policies

Only a small fraction of the Manitoba workforce is employed directly in the fossil fuel sector — approximately 2,800 people or 0.4% of all workers. In comparison, the province claims 90,000 existing green jobs. Independent estimates for green jobs are significantly lower (around 25,000 workers) but that still puts the share of green jobs in the province at around 4%.

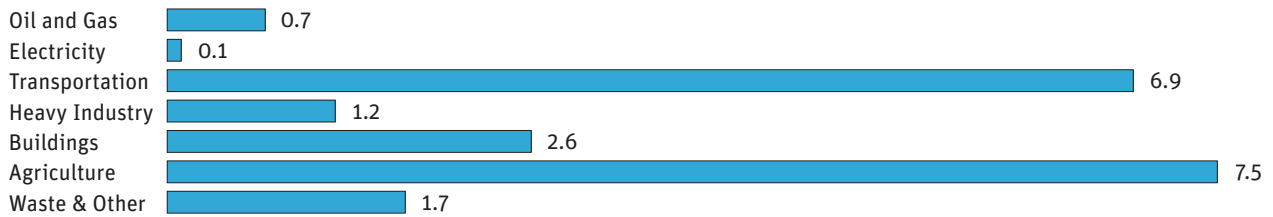
The climate plan Manitoba proposed in 2015 was heavily focused on job creation and included half a dozen new programs designed to prepare the domestic workforce for new opportunities in the clean tech sector. Promises to deliver training and skills development to youth, Indigenous commu-

FIGURE 5 Manitoba

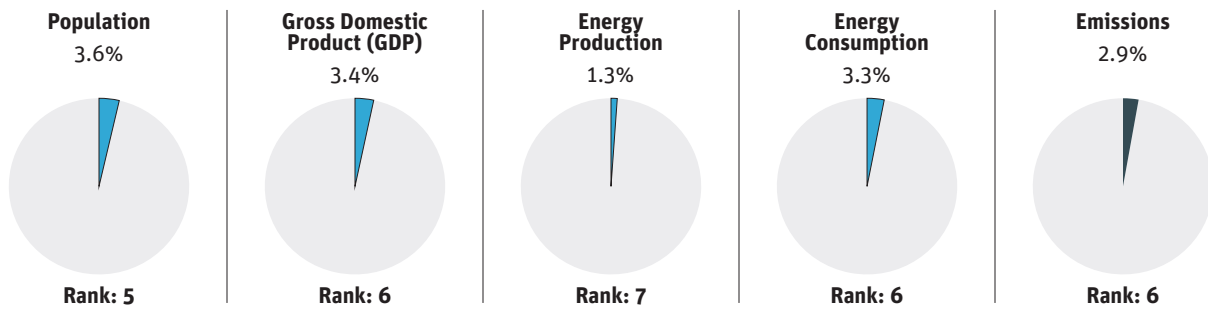
GREENHOUSE GAS EMISSIONS (MT CO₂E) BY YEAR



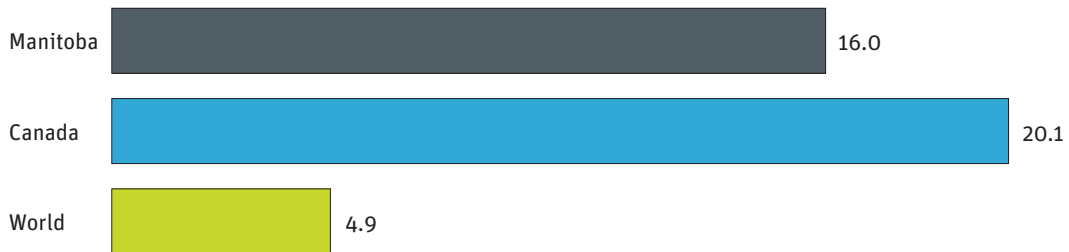
GREENHOUSE GAS EMISSIONS (MT CO₂E) BY SECTOR



SHARE OF TOTAL CANADIAN...



EMISSIONS PER CAPITA (TONNES CO₂E PER PERSON)



ities and other targeted stakeholder groups were especially promising, but the new government has not indicated if it will follow through with them.¹⁹

Progress toward targets

Manitoba missed its legislated 2012 GHG target and is on track to miss its 2030 target as well. Ambitious new emission reduction targets set by the previous provincial government — 50% below 2005 levels by 2050 and carbon neutrality by 2080 — have been put on hold by the new provincial government.

Manitoba has a history of taking climate change seriously and showing government leadership to reduce emissions (e.g., Manitoba was the first province to legislate an emission reduction target). The new provincial government has an opportunity to build on this legacy with its new climate plan. If it comes up short, Manitoba risks greater long-term pain as the inevitable costs of the low-carbon transition are pushed further down the road.

Ontario

Energy and emissions breakdown

Ontario is Canada's biggest energy consumer (consistent with its large population and economy) but one of its smaller energy producers. The province generates enough hydro and nuclear power for the domestic electricity grid but must import fossil fuels for use in transportation, buildings and industry. Refined petroleum products and natural gas together account for three-quarters of the energy consumed in the province.

Due to its heavy fossil fuel consumption, Ontario accounts for nearly a quarter of Canada's total GHG emissions, trailing only Alberta. A third of Ontario's emissions come from the transportation sector, followed by 22% from buildings (largely due to natural gas burned for home and commercial heating), while 18% come from industry.

However, on a per capita basis Ontario's emissions are well below the Canadian average, in part due to early climate change initiatives. Notably, the phase-out of coal-fired electricity generation reduced emissions from the province's electricity sector sixfold between 2005 and 2015.

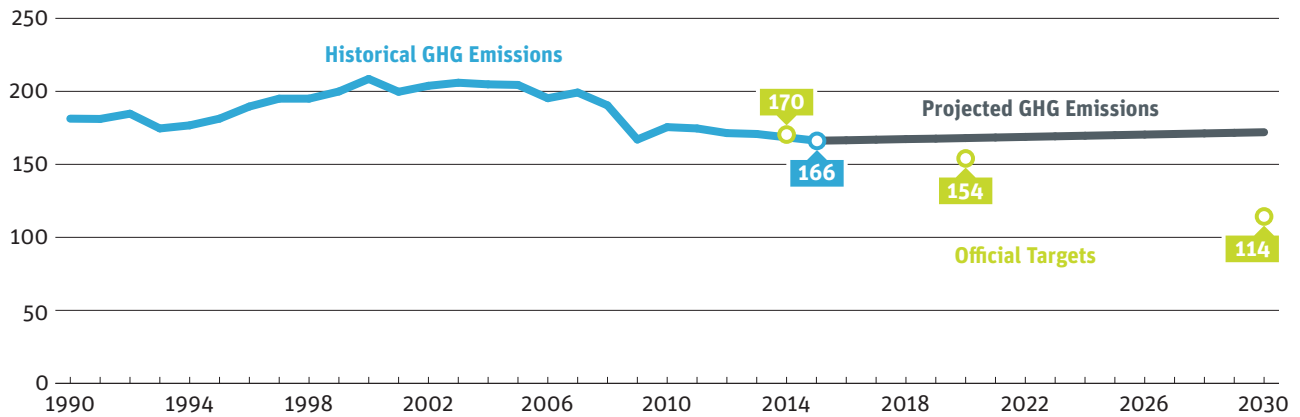
Emission reduction policy highlights

Ontario is a Canadian leader in climate policy experimentation. The province has tried a number of subsidy programs (e.g., a feed-in tariff to incentivize renewable energy) and regulatory initiatives (e.g., an updated building code to encourage energy efficiency) with varying degrees of success. The coal phase-out was particularly effective in driving GHG emission reductions, whereas a regulatory measure to promote green jobs was challenged through the World Trade Organization and ultimately scrapped.²⁰

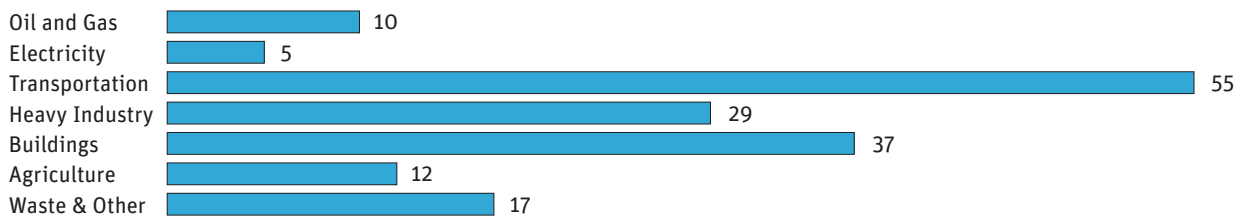
The province implemented a cap-and-trade system this year, which it intends to link up with the carbon markets in Québec and California in 2018. Ontario's initial permit auction sold out, raising over \$470 million.²¹ The province expects total annual revenues in the range of \$1.8–1.9 billion. Ontario's latest climate plan, released in June 2016, outlines how those revenues will be spent.²² In addition to carbon rebates for lower-income households and some businesses, the province will allocate \$3 billion over four years to energy efficiency subsidies for buildings and \$1.6 billion over four years for electric vehicle infrastructure and consumer incentives. A new provincewide target of 5% electric vehicle sales by 2020 may benefit Ontario's auto and steel industries while reducing transportation sector emissions.

FIGURE 6 Ontario

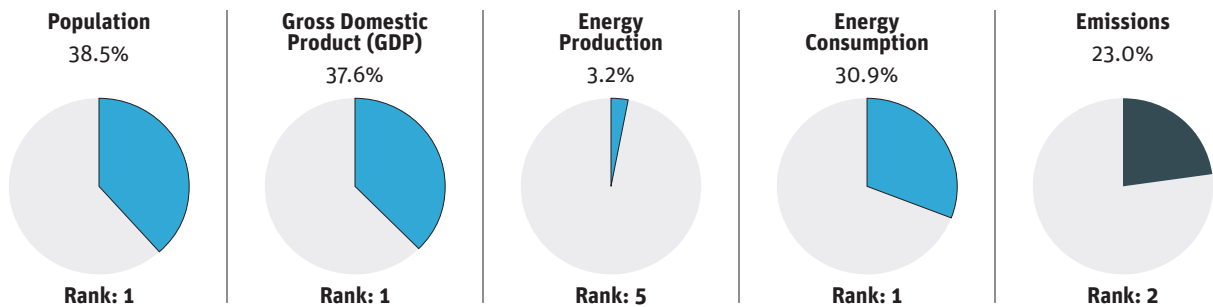
GREENHOUSE GAS EMISSIONS (MT CO₂E) BY YEAR



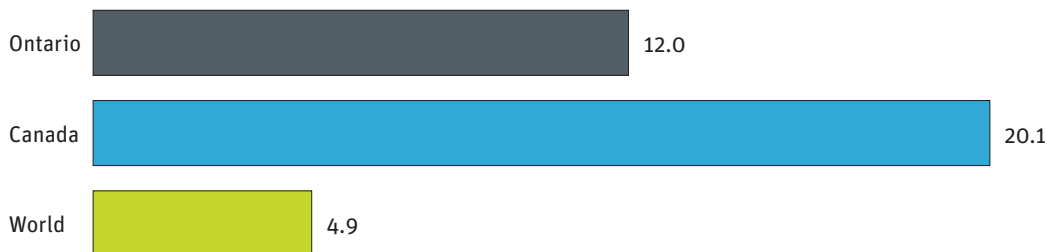
GREENHOUSE GAS EMISSIONS (MT CO₂E) BY SECTOR



SHARE OF TOTAL CANADIAN...



EMISSIONS PER CAPITA (TONNES CO₂E PER PERSON)



Employment profile and just transition policies

Ontario has more green jobs than any other province; estimates based on employer surveys put the number of environmental professionals at 285,000 or about 4.3% of the provincial workforce. Ontario also employs about 11,000 people in the fossil fuel sector (0.2% of all jobs), with the largest portion in natural gas distribution (4,600 jobs).

The latest Ontario climate change plan includes some just transition language but few tangible policies for moving workers out of fossil fuel jobs and into green jobs. The province promises to create new training programs for the building trades and energy management industries but has no immediate plans for the workers and communities put at risk by the low-carbon transition.

Progress toward targets

Ontario met its 2014 GHG emissions reduction target of 6% below 1990 levels thanks in large part to the phase out of coal-fired electricity generation. Ontario remains deeply dependent on fossil fuel consumption, however, which means further reductions are not guaranteed. In fact, the province will miss its 2020 and 2030 targets under current plans. The province's long-term emissions reduction target of 80% below 1990 levels by 2050 is even further out of reach.

Ontario's new measures to price carbon emissions, improve energy efficiency and electrify the economy are tangible steps in the right direction, but the success of the province's climate policy will ultimately be determined by the extent of actual emission reductions. Ongoing political will is required for Ontario to meet its targets and grow the low-carbon economy at the same time.

Québec

Energy and emissions breakdown

Québec is a modest energy producer and a major energy consumer. The province generates enough hydro power to meet domestic demand for electricity, but it must import significant amounts of fossil fuels to meet demand in transportation, industry and other sectors. About 60% of the energy consumed in the province comes from refined petroleum products and natural gas. Those fuels are the source of most of the province's GHG emissions: transportation accounts for 39% of emissions (mostly from gasoline and diesel combustion) and heavy industry accounts for 20% (mostly from natural gas combustion).

Yet compared to the rest of Canada, Québec is clearly an energy and emissions leader. Per capita emissions in the province are half the national average — the lowest in the country. Québec also has the cleanest power grid in Canada and is a net exporter of clean energy to neighbouring jurisdictions.

Emission reduction policy highlights

Québec has been more proactive on climate policy than most other Canadian governments. The province started collecting a nominal carbon levy in 2007 before implementing the Western Climate Initiative's cap-and-trade system in 2014. All the revenues generated through carbon pricing — about \$1.4 billion in total between 2013 and 2016²³ — are recycled into the province's Green Fund, which exists solely to implement climate change initiatives described in the province's climate plan.²⁴

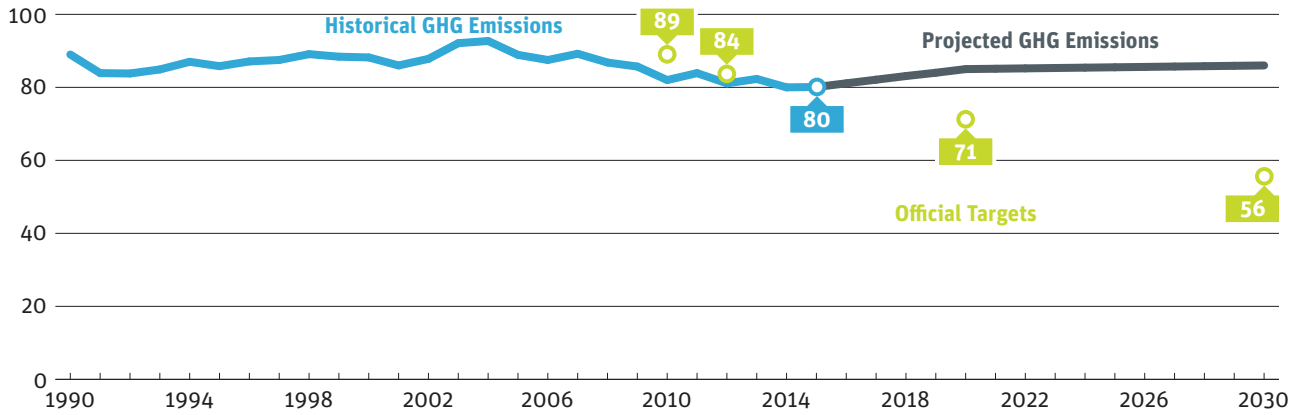
Using money from the fund, Québec has invested in numerous large- and small-scale renewable energy projects. It has created subsidies and consumer incentives for electric vehicles, industrial energy efficiency and clean technology research and development. The province's new transportation electrification plan uses money from the Green Fund to promote public transit and electric vehicles.²⁵

Employment profile and just transition policies

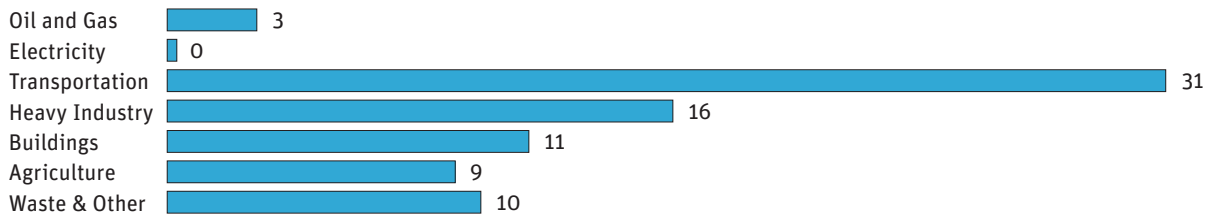
Québec has no explicit just transition policy in place — the phrase does not appear in the province's climate plans — but it also has less need than other provinces. About 4,000 people are employed in the province's fossil fuel sector, which amounts to just 0.1% of the provincial workforce. In comparison,

FIGURE 7 Québec

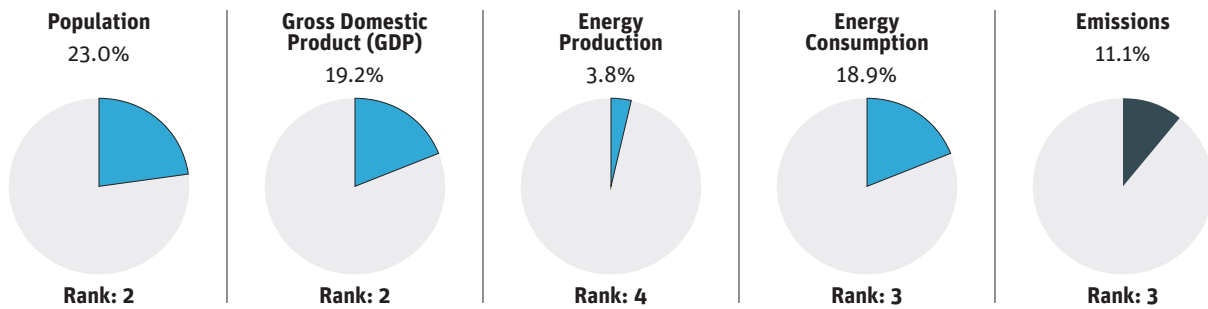
GREENHOUSE GAS EMISSIONS (MT CO₂E) BY YEAR



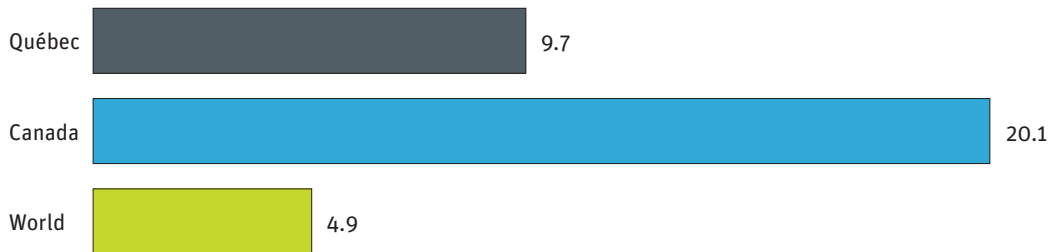
GREENHOUSE GAS EMISSIONS (MT CO₂E) BY SECTOR



SHARE OF TOTAL CANADIAN...



EMISSIONS PER CAPITA (TONNES CO₂E PER PERSON)



about 162,000 workers are considered environmental professionals — more than 4% of total employment.

Rather than create new social supports for workers hurt by climate policies, the province is focusing on upskilling the existing workforce for a low-carbon economy. In particular, Québec has outlined proposals for improving energy efficiency training in the building trades and for training new workers in vehicle electrification.

Progress toward targets

Québec is a member of the New England Governors/Eastern Canadian Premiers (NEG/ECP) group, which has committed to a number of regional emission reduction goals. Québec met the first NEG/ECP target of returning emissions to 1990 levels by 2010 and then met its own target of 6% below 1990 levels by 2012. Unfortunately, despite significant progress to date, Québec's emissions are projected to rise slightly in the next two decades, which would cause the province to miss its 2020 and 2030 targets as well as the regional target for 2050.

Getting Québec on a pathway to meeting its targets will require deeper economic restructuring than is currently on the table. Emissions from the transportation sector and from industrial processes in general must be reduced dramatically. Québec has the policy infrastructure in place to drive further reductions, but the province requires the political will to ramp up its policy ambition moving forward.

New Brunswick

Energy and emissions breakdown

New Brunswick is generally reliant on fossil fuels. Natural gas and petroleum account for two-thirds of the energy consumed in the province. Fossil fuels are used mostly in the electricity sector, which accounts for 27% of the province's emissions, and the transportation sector, which accounts for 28% of emissions. Petroleum refining accounts for a further 19% of emissions.

The province has increased the share of non-emitting energy in its electricity mix in the past decade. New Brunswick now has one active nuclear power plant and a number of hydro facilities that collectively provide half of the province's electricity. Since peaking at 23 Mt in 2001, total emissions fell 38% to 14.1 Mt in 2015, driven largely by reductions in the electricity sector. Emissions per capita have declined by more than a third in that time, bringing the province down to the national average.

Emission reduction policy highlights

In 2011, the government established a modest target for electricity consumption from renewable sources of 40% by 2020 (up from 30% at the time). Including all non-emitting sources (i.e., nuclear power), the target is 75% by 2020 (up from 65%).²⁶ Although the renewable portfolio standard has encouraged some energy efficiency improvements and renewable investments in the province, it only applies to in-province electricity sales, which means the standard does not discourage the continued export of fossil fuel-generated electricity to other jurisdictions.

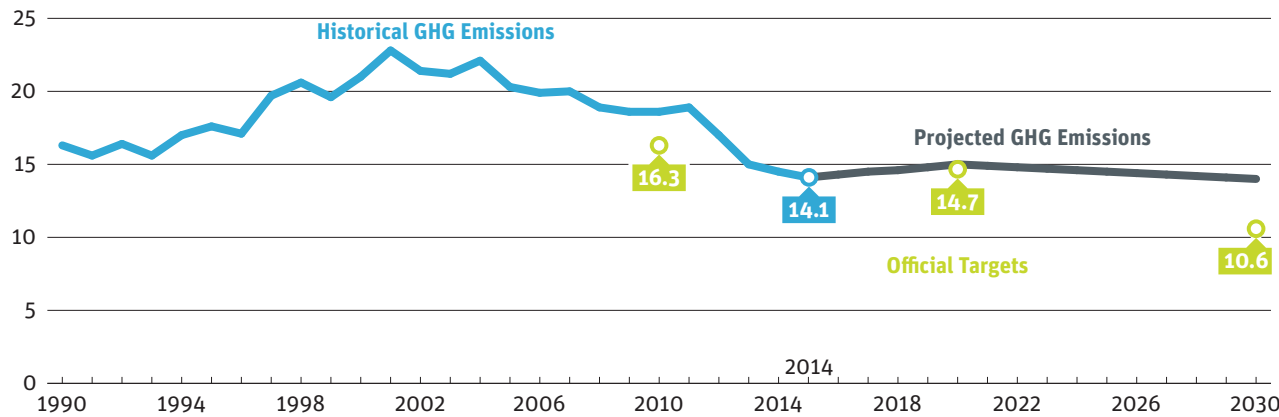
New Brunswick's latest climate plan, published in December 2016, includes more direct policy interventions.²⁷ It commits to the complete phase-out of coal-fired electricity generation by 2040 (or by 2030 if federal support is provided). The plan also promises to implement a "made-in-New Brunswick" carbon price by 2018 in line with the federal framework. In contrast to British Columbia, New Brunswick has promised that a portion of carbon pricing revenues will be recycled into climate change initiatives.

Employment profile and just transition policies

New Brunswick has about 13,000 environmental professionals, which account for 3.8% of the provincial workforce. In comparison, there are about 1,800 jobs in the fossil fuel sector, which account for 0.5% of total employment.

FIGURE 8 New Brunswick

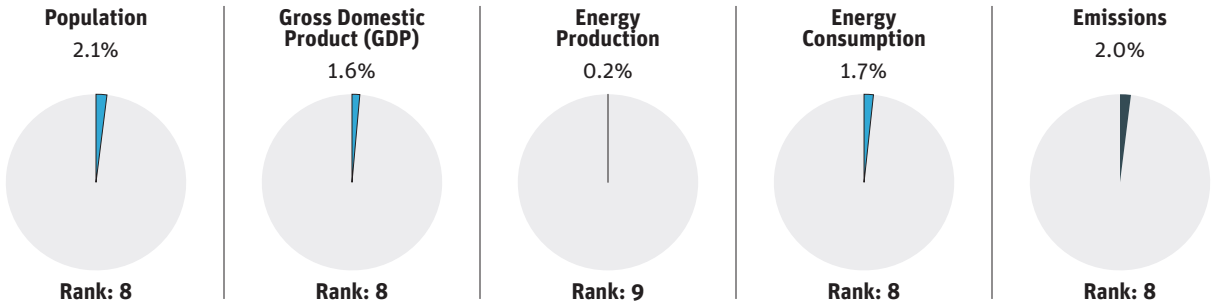
GREENHOUSE GAS EMISSIONS (MT CO₂E) BY YEAR



GREENHOUSE GAS EMISSIONS (MT CO₂E) BY SECTOR



SHARE OF TOTAL CANADIAN...



EMISSIONS PER CAPITA (TONNES CO₂E PER PERSON)



The province's latest climate plan is light on just transition policy. It includes some modest commitments to worker training, particularly in the skilled trades, but otherwise assumes growth in the clean tech sector will generate employment without direct government interventions.

Progress toward targets

New Brunswick missed the 2010 NEG/ECP regional GHG target of a return to 1990 levels, but the province is on track to meet its own 2020 emissions target of 14.7 Mt. Achieving New Brunswick's 2030 target of 10.6 Mt or its 2050 target of 5 Mt will not be easy given the province's deep dependence on fossil fuels, but the province is certainly heading in the right direction. More than most provinces, New Brunswick has succeeded in driving significant GHG emission reductions in the past, and the province's new climate plan lays the groundwork for further progress, especially if a robust carbon pricing scheme is enacted.

Nova Scotia

Energy and emissions breakdown

Nova Scotia produces natural gas, liquid natural gas and refined petroleum products, but not on a large enough scale to release significant GHG emissions in the process. On the other hand, the province imports a large amount of coal and petroleum for electricity generation and transportation use. More than three-quarters of the province's power is generated using fossil fuels, which is the source of 42% of the province's total emissions. Fossil fuels burned for transportation account for a further 28% of emissions.

Although Nova Scotia remains as dependent on fossil fuels as anywhere else in Canada, the emissions situation is quickly improving. Emissions have declined by an impressive 32% since peaking in 2004, driven by reductions in every sector but especially from improvements in electricity generation.

Emission reduction policy highlights

In 2009, Nova Scotia introduced a hard cap on electricity sector emissions, with which the industry has so far complied.²⁸ In 2010, the province enacted a renewable portfolio standard of 25% by 2015, which it met, and of 40% by 2020, which it is on track to meet.²⁹ Imports of hydro power from neighbouring jurisdictions are needed to comply with the standard.

Nova Scotia has publicly committed to implementing a cap-and-trade system in 2018 in line with the federal framework. The province will also phase out coal-fired electricity generation, but not on the same timeline as the rest of Canada. The province negotiated an equivalency deal with the federal government to recognize the emissions reductions made by Nova Scotia already, allowing coal to remain part of the energy mix until at least 2040.³⁰

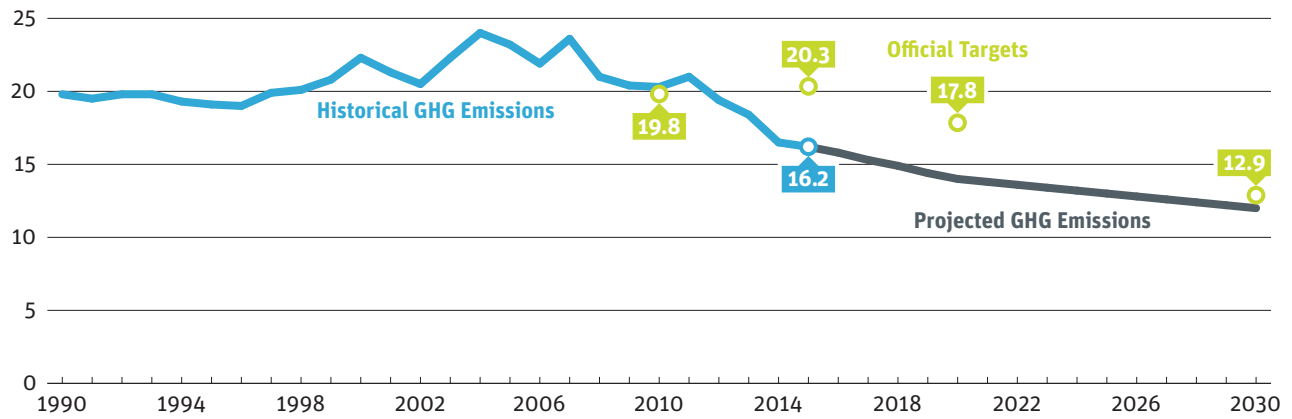
Efficiency Nova Scotia is an independent organization created by the government that has reduced provincial emissions by 0.5 Mt since 2009. Despite the model's success, the province's 2014 energy plan capped government funding for the organization.³¹ Efficiency Nova Scotia now operates in competition with traditional energy suppliers by selling efficiency improvements to the grid.

Employment profile and just transition policies

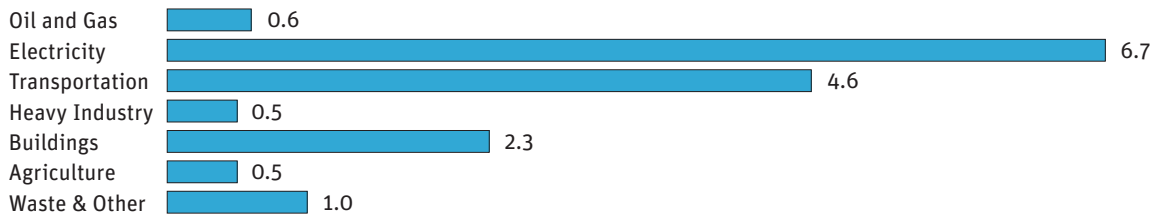
Nova Scotia has not updated its climate plan since 2009 and has no policies in place to specifically address just transition issues. The number of workers

FIGURE 9 Nova Scotia

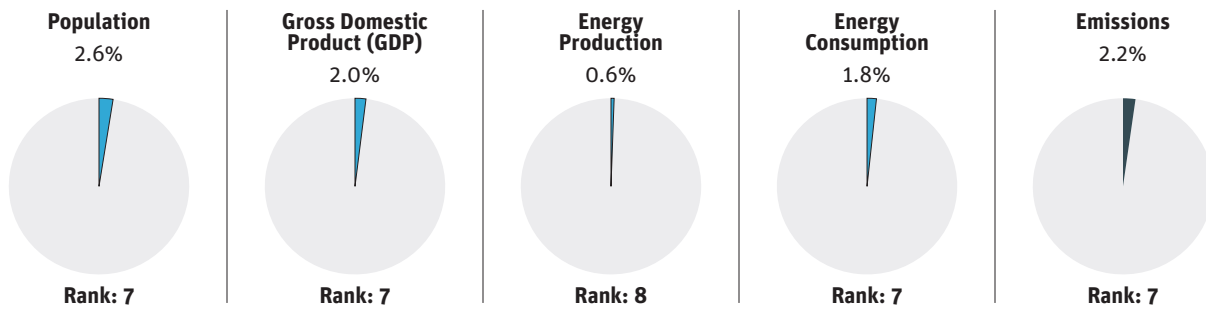
GREENHOUSE GAS EMISSIONS (MT CO₂E) BY YEAR



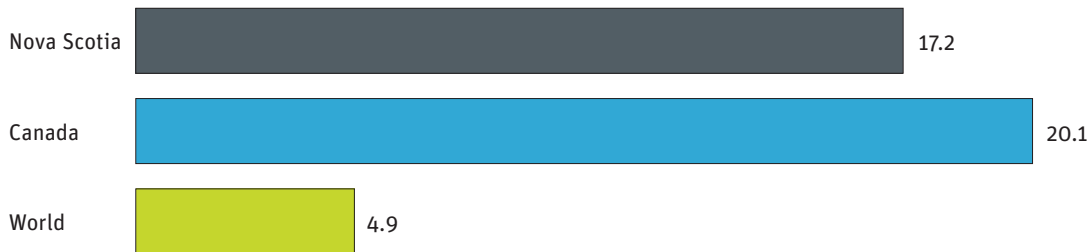
GREENHOUSE GAS EMISSIONS (MT CO₂E) BY SECTOR



SHARE OF TOTAL CANADIAN...



EMISSIONS PER CAPITA (TONNES CO₂E PER PERSON)



directly employed in the fossil fuel sector is in the hundreds, not the thousands, so climate-related worker programs may not be essential. But some resource-based rural communities are still put at risk by new climate policies. In particular, energy-intensive sectors such as pulp and paper will be affected by any changes to energy prices.

There were an estimated 18,800 environmental professionals working in Nova Scotia in 2013 — about 4% of the workforce.

Progress toward targets

Alone among the provinces, Nova Scotia is on track to meet or exceed all of its medium-term GHG emission reduction targets: the 2010 NEG/ECP target was roughly matched, the province's own 2015 goal was easily met, and the province's 2020 goal and the regional 2030 goal appear to be well in hand. The province's long-term emissions goal of 80% below 2009 levels by 2050 will be more difficult to meet, but it is certainly still achievable if Nova Scotia's emissions trajectory continues to slope downward.

Once the carbon price comes into effect, the province will have all the tools it needs to drive even deeper emissions reductions. To meet the 2050 target, the province must ensure that the carbon price is ramped up quickly and consistently beyond 2022. Crucially, Nova Scotia cannot shy away from past efforts to reduce fossil fuel use in the electricity sector.

Prince Edward Island

Energy and emissions breakdown

Nearly all energy produced on Prince Edward Island comes from wind power, but it only supplies a quarter of domestic demand. The remainder is met by imports, mostly from conventional power plants in New Brunswick. P.E.I. also has two small oil- and diesel-fired power stations of its own. In addition to consuming electricity generated from fossil fuels, the province imports fossil fuels, mostly gasoline, for use in transportation. Petroleum accounts for two-thirds of the energy consumed in P.E.I. and the transportation sector consequently accounts for nearly half of emissions. Buildings and agriculture each account for a further fifth of provincial GHG emissions.

As a net electricity importer and non-producer of fossil fuels, P.E.I. is spared most of the emissions associated with energy production in other jurisdictions. P.E.I.'s emissions have declined slightly over the past two decades and per capita emissions are well below the national average.

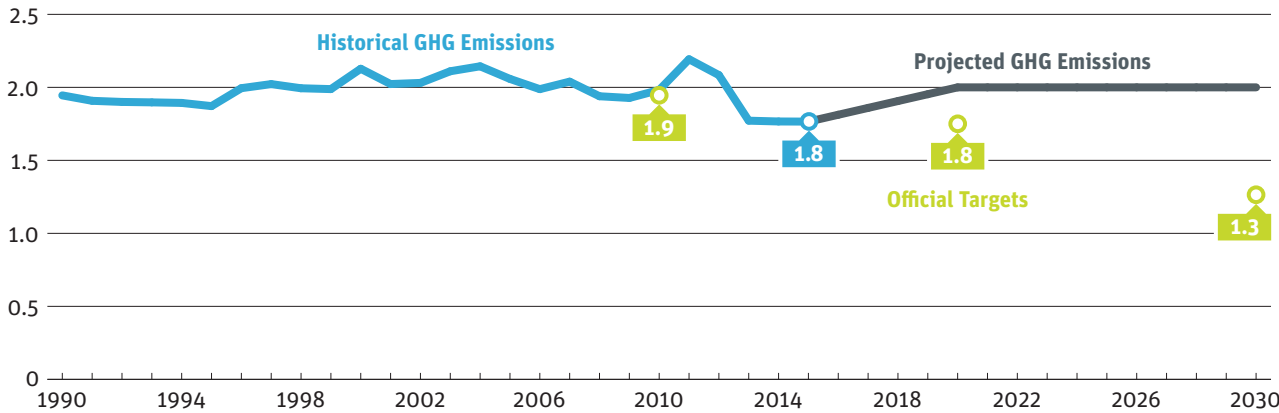
Emission reduction policy highlights

The government of P.E.I. released a series of climate and energy plans in 2008 that laid out dozens of emissions mitigation and climate adaptation measures.³² Efforts so far have focused on improving energy efficiency in buildings and increasing the share of renewable electricity in the provincial power grid. P.E.I. was one of the first provinces to establish a renewable portfolio standard for provincial utilities, and the government has invested more than \$100 million in new wind energy capacity in support of this policy.³³ The Wind Energy Institute, a P.E.I.-based leader in wind-related research and development, has been a major beneficiary of provincial support.

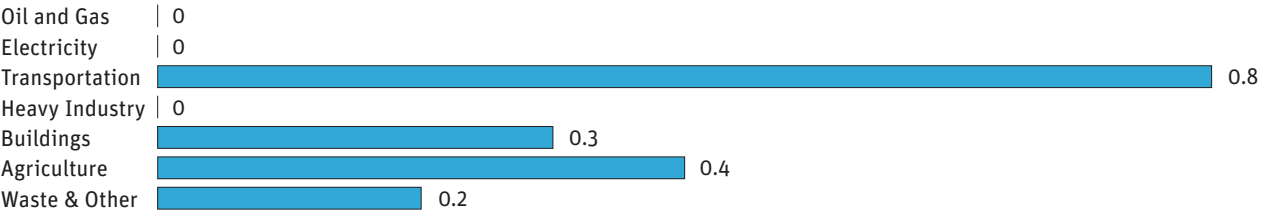
Consultations toward a revised climate and energy plan ended in 2016 with a new plan likely to be released in 2017. A recommendation report commissioned by the government suggests only modest new policies may be forthcoming.³⁴ For example, the report calls for greater use of biofuels and other lower-carbon fuels in home heating and transportation but sidesteps the issue of carbon pricing. By its own admission, the report's recommendations would only get P.E.I. halfway to its long-term emission reduction targets.

FIGURE 10 Prince Edward Island

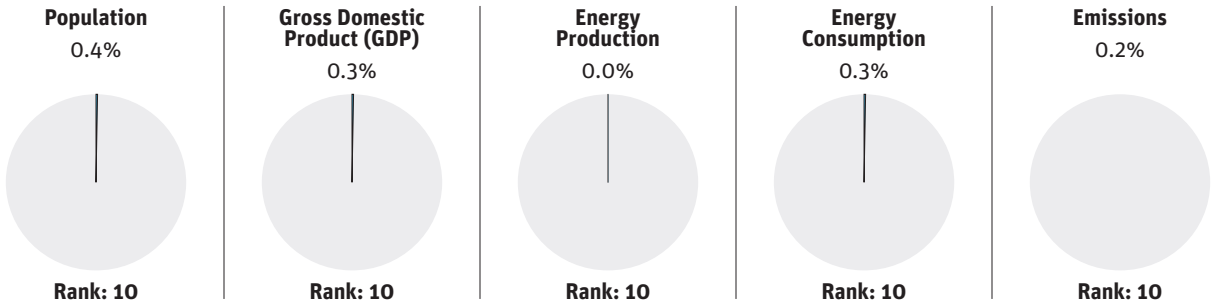
GREENHOUSE GAS EMISSIONS (MT CO₂E) BY YEAR



GREENHOUSE GAS EMISSIONS (MT CO₂E) BY SECTOR



SHARE OF TOTAL CANADIAN...



EMISSIONS PER CAPITA (TONNES CO₂E PER PERSON)



Employment profile and just transition policies

P.E.I. has no just transition strategy but also little pressing need for one. The province has no fossil fuel industry, so the only fossil fuel workers are those that commute to neighbouring jurisdictions. In contrast, an estimated 3,200 people — 4.8% of the workforce — are environmental professionals. Opportunities to create new green jobs present themselves to the province, especially in its burgeoning wind industry.

Progress toward targets

Prince Edward Island has not set individual provincial GHG targets, but it subscribes to the NEG/ECP regional targets: return emissions to 1990 levels by 2010, to 10% below 1990 levels by 2020 and to 35–45% below 1990 levels by 2030. P.E.I. met the 2010 target and may meet the 2020 target — the GHG forecasts are not granular enough to say — but the 2030 target looks unlikely based on existing policies or those currently being considered.

As the smallest province in Canada, P.E.I. may be able to implement the greatest structural changes toward a low-carbon economy, but it also has the fewest resources to do so. Federal support for climate initiatives, such as the electrification of the transportation system, will be essential.

Newfoundland and Labrador

Energy and emissions breakdown

Newfoundland and Labrador is a net energy exporter. The province has a large oil industry, both in extraction and refining, which produces about three-quarters of the province's primary energy and accounts for about a fifth of the province's GHG emissions. Electricity generated in the province comes predominantly from non-emitting hydro facilities, but the electricity sector still accounts for 13% of total emissions due to the continued use of some fossil fuel-burning power plants.

On the consumption side, Newfoundland and Labrador is reliant on fossil fuels for transportation and industry. Refined petroleum products, mostly gasoline and diesel, account for two-thirds of the energy consumed in the province. As a result, the transportation sector is the largest source of GHG emissions in the province, accounting for a third of the total.

Emission reduction policy highlights

Newfoundland and Labrador released a climate plan in 2011 with an emphasis on energy efficiency and new renewable energy infrastructure.³⁵ A follow-up "greening government" plan emphasized leading by example through green procurement and other public sector initiatives.³⁶ In general, the province's climate policy commitments are narrow and modest. The province has yet to address the transportation or fossil fuel sectors with tangible policies, even though they account for most emissions. Moreover, the province directly subsidizes the oil industry with tax breaks for new exploration.

The province has focused its climate policy efforts on the Muskrat Falls hydro project. However, the project has faced lengthy delays and cost overruns in the face of significant public opposition. It may not be operational until 2019, if ever.

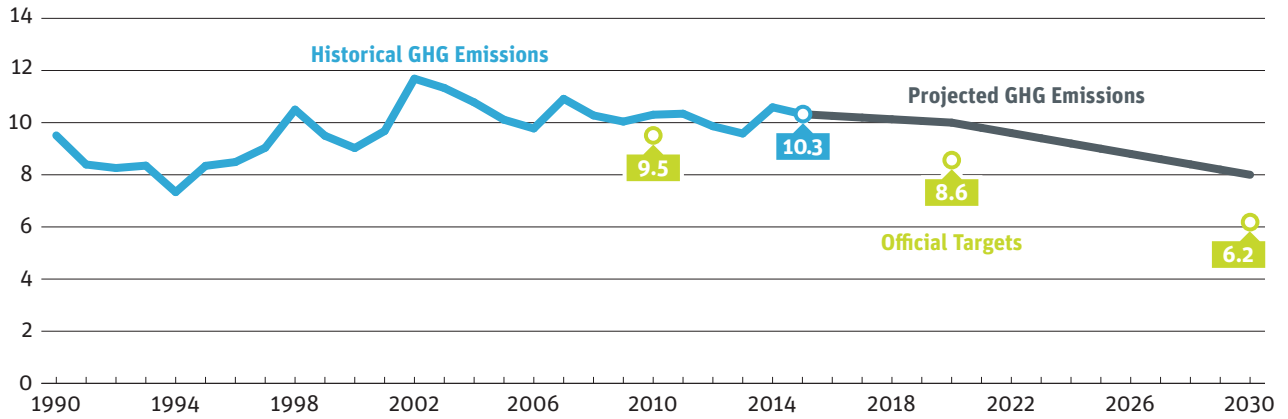
Newfoundland and Labrador has concluded consultations toward a new climate change plan to be released in 2017. There are few early indications of how ambitious the plan will be.

Employment profile and just transition policies

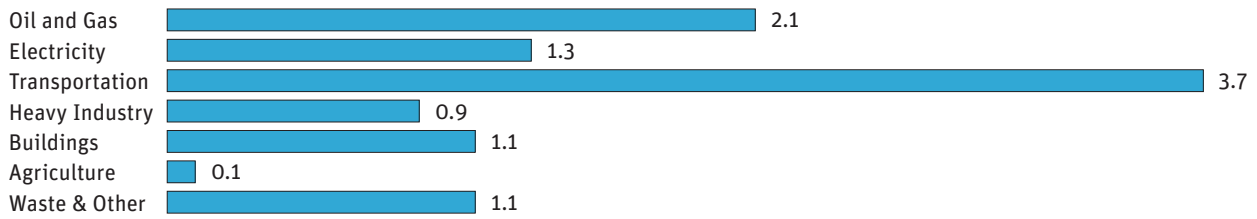
An estimated 9,100 environmental professionals (3.8% of total employment) work in Newfoundland and Labrador compared to about 3,600 fossil fuel workers (1.6%), which is the greatest share of fossil fuel workers of

FIGURE 11 Newfoundland and Labrador

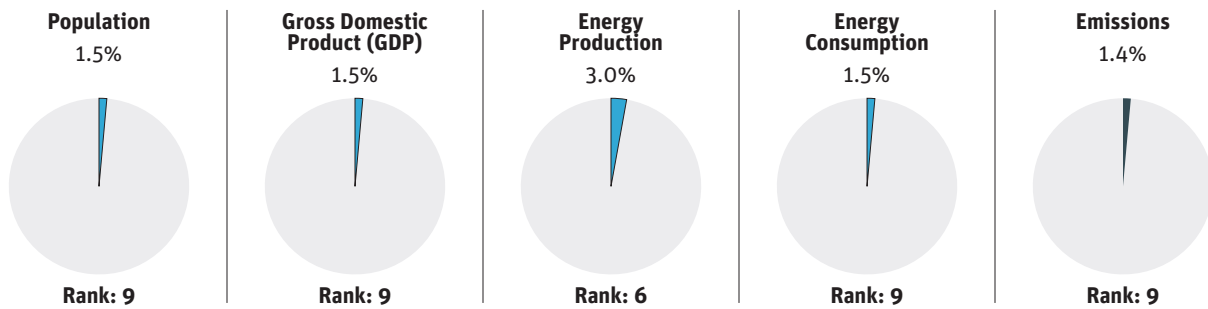
GREENHOUSE GAS EMISSIONS (MT CO₂E) BY YEAR



GREENHOUSE GAS EMISSIONS (MT CO₂E) BY SECTOR



SHARE OF TOTAL CANADIAN...



EMISSIONS PER CAPITA (TONNES CO₂E PER PERSON)



any province except Alberta and Saskatchewan. Like those provinces, there is dire need for a just transition strategy in Newfoundland and Labrador, but unlike Alberta no policy has so far been proposed. Atlantic oil workers are so concerned about how they will fare in a low-carbon transition that they are calling directly on the government for the creation of a just transition strategy.³⁷

Progress toward targets

Despite emissions declining from their peak in 2002, Newfoundland and Labrador missed the 2010 NEG/ECP target and is not on track to meet the regional targets for 2020, 2030 or 2050. Emissions are projected to curve downward but not far enough to meet the province's targets.

Much will hinge on the province's new climate plan. If it follows the federal lead on carbon pricing, and includes policies targeted at the oil industry and transportation sector, Newfoundland and Labrador can meet its targets. A just transition strategy will be essential for the many fossil fuel workers put at risk by those policies.

Yukon, Northwest Territories and Nunavut

Energy and emissions breakdown

The territories constitute a negligible portion of Canada's energy and emissions profile. What little energy they produce comes mostly from crude oil extraction in the Northwest Territories, and what little energy they consume comes mostly from imported diesel fuel. The territories rely on diesel-powered generators for electricity to a greater extent than any Canadian province.

Emissions have remained relatively stable across the territories over the past two decades and per capita emissions are in line with the national average.

Emission reduction policy highlights

All three territories have published climate plans, but they focus more on adaptation to climate change than on emissions mitigation.³⁸ The territories are among the most vulnerable regions in Canada to a warming world. A shortened winter road season, coastal erosion and invasive species are already having a negative impact on the environment and economy in the north, among other issues.³⁹

At present, the territories' adaptation plans focus on sharing knowledge and building capacity to address long-term challenges. There are few tangible climate policies in place.

Employment profile and just transition policies

An estimated 3,100 environmental professionals work in the territories, which accounts for about 4.5% of total employment. The number of fossil fuel jobs is too small to estimate.

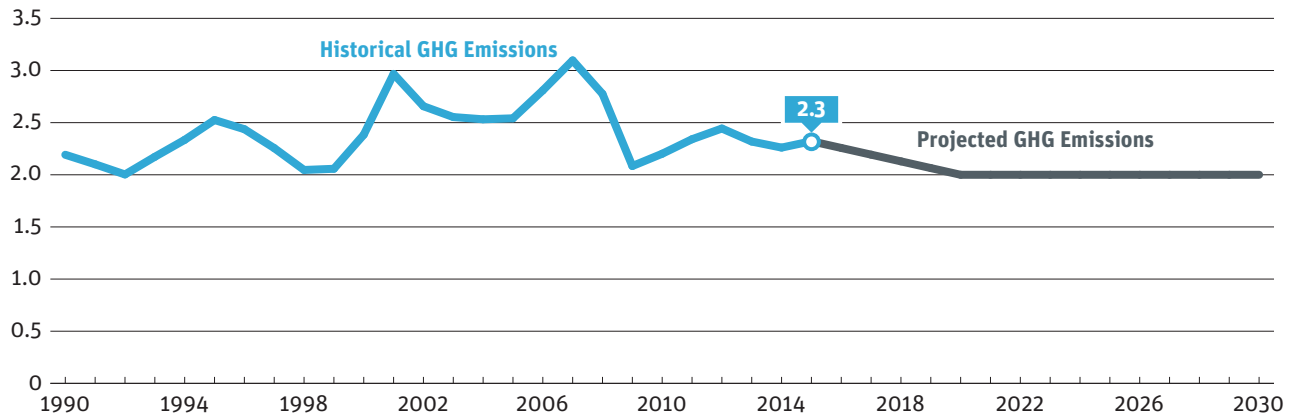
The territories have some workforce development initiatives in place, such as energy efficiency training in Yukon's construction sector, but no major just transition policies.

Progress toward targets

Among the territories, only the Northwest Territories has set an economy-wide GHG goal. It aims to stabilize emissions at 2005 levels in the long-term. Otherwise, the territories are more focused on adapting to a changing climate than reducing their emissions.

FIGURE 12 Yukon, Northwest Territories and Nunavut

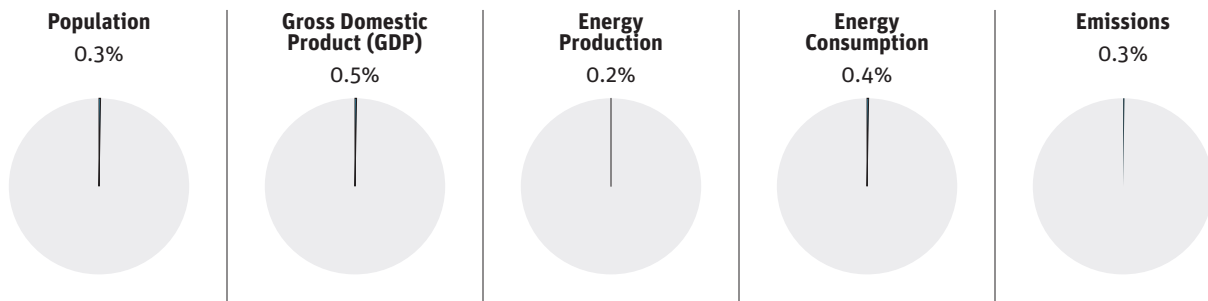
GREENHOUSE GAS EMISSIONS (MT CO₂E) BY YEAR



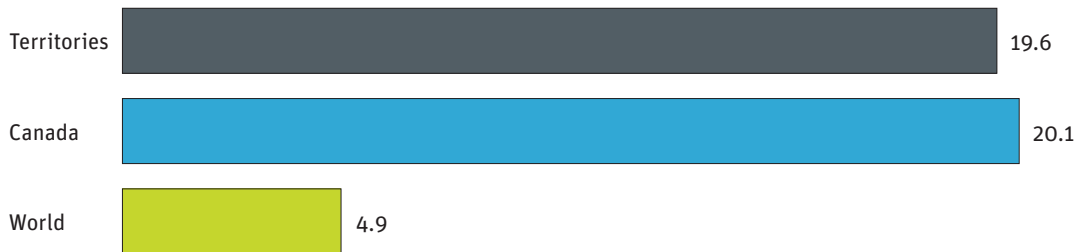
GREENHOUSE GAS EMISSIONS (MT CO₂E) BY SECTOR



SHARE OF TOTAL CANADIAN...



EMISSIONS PER CAPITA (TONNES CO₂E PER PERSON)



Major themes in Canadian climate policy

AS THE PRECEDING profiles illustrate, climate policy varies considerably between the federal, provincial and territorial governments. Emissions reduction policies are inconsistent, targets vary widely, and some jurisdictions are actually reducing their emissions while elsewhere they continue to rise. There are some clear similarities across the country, too. In this section, we discuss three common themes in Canadian climate policy: (1) the ambition gap between promises and policies; (2) the widespread dependence on and continued promotion of fossil fuels; and (3) the absence of workforce transition policies. These three themes are worth highlighting because they represent key sticking points in Canadian climate policy. They are the high-level policy areas where progress has been difficult to achieve so far and therefore where major opportunities for progress remain.

The ambition gap

Canadian governments take climate change seriously insofar as they generally recognize the risk it presents and are taking steps to mitigate emissions. However, collectively Canadian governments do not take climate

change seriously enough to act with the necessary level of ambition. Even the provincial leaders on climate policy, such as British Columbia and Québec, have taken only modest steps forward to reduce emissions (with occasional steps backward). No government has made moves to dramatically restructure their economy for a low-carbon future.

Consequently, with the exception of Nova Scotia, every jurisdiction has either already missed its GHG emission reduction targets or will in the future. In some cases, the ambition gap between targets and projections is staggering. Ontario, for example, is on track to exceed its 2030 GHG target by 57 Mt, or 50%. Five other provinces are projected to emit more GHGs in 2030 than they did in 2015. Overall, Canada is projected to exceed its 2030 Paris Agreement target by 218 Mt, or 42%.

To make matters worse, Canada's GHG targets fall well short of what climate scientists believe is necessary to prevent catastrophic global warming. If every country aspired to Canada's level of ambition — and succeeded in reducing emissions to those levels — global temperatures would still likely rise 3–4°C by the end of the century.⁴⁰ Although no amount of global warming can be called safe, the international community has committed to limiting warming to 2°C (with an aspirational target of 1.5°C) to avoid the most catastrophic effects of climate change.⁴¹

The ambition gap between Canada's emissions reduction targets and our emission reduction policies, not to mention the gap between our targets and the scientific consensus, is a key issue in Canadian climate policy. Not only are our ambitions too modest, but we are not doing enough to achieve them. Canadian governments need to be more honest with themselves in setting and pursuing targets and more honest with the public in explaining the long-term costs of both action and inaction.

Fossil fuel dependence

The largest and most direct cause of climate change is the production and consumption of fossil fuels. In Canada, the provinces that produce fossil fuels by extracting and processing crude oil, natural gas and coal are also the largest emitters of greenhouse gases. The Alberta oil sands alone account for 10% of Canada's total emissions — and that's only getting the oil out of the ground, not processing or consuming it.

Whereas fossil fuel production is confined mainly to Western Canada and Newfoundland, every province and territory is a major consumer of fossil

fuels. Even the “cleanest” jurisdictions, such as Québec and Prince Edward Island, still get much of their energy from gasoline, diesel and other petroleum products. In the “dirtiest” jurisdictions, such as Saskatchewan, fossil fuels account for as much as 90% of all energy consumption. Reducing fossil fuel use in the transportation sector is a challenge shared by every jurisdiction, since so much infrastructure — the road network, suburban housing, land for parking, etc. — is intended to move people and goods around using gas-burning cars and diesel-burning trucks.

The bottom line is that fossil fuels drive carbon emissions; consequently, climate policy must also be energy policy. Initiatives to reduce the production and delivery of fossil fuels (supply-side mitigation measures) and initiatives to reduce the consumption of fossil fuels and related products (demand-side mitigation measures) are necessary for Canada to meet its emission reduction targets.

The failure of Canadian governments on this front are twofold. First, governments have done little to discourage fossil fuel production and consumption. Although the introduction of carbon pricing across the country will make it more expensive to extract and burn oil, gas and coal, the price is too low to drive large-scale economic changes. Alberta’s new oil sands emissions cap is another clear example of weak regulation, because it permits a 30% expansion of oil sands emissions above current levels before penalties kick in. Furthermore, in the absence of measures to expand alternative infrastructure (e.g., building walkable cities with improved public transit), most households will simply be forced to pay more to sustain their current lifestyles.

Second, and more insidiously, many Canadian governments continue to promote the expansion of the fossil fuel industry. The federal government recently approved a series of oil pipelines that threaten to completely undo the emissions reduction progress made in other sectors.⁴² British Columbia is pushing ahead with liquid natural gas facilities that will produce huge amounts of upstream and downstream greenhouse gases.⁴³ The federal and some provincial governments also directly prop up the fossil fuel industry through tax credits and other subsidies on the order of \$1.5 billion per year.⁴⁴

The continued protection and promotion of fossil fuel interests in Canada is a major sticking point in Canadian climate policy. Without directly addressing the root cause of greenhouse gas emissions, namely, the production and consumption of fossil fuels, Canada has little chance of meeting our emission reduction goals.

Workforce transitions

Climate policy in Canada is generally concerned with climate change mitigation. Reducing the amount of greenhouse gases we emit into the atmosphere is crucial for contributing our fair share to global climate goals. However, adapting to climate change — and adapting to the side-effects of climate policies — is an urgent task in its own right. Canadian governments have so far been hesitant to tackle the potential dislocations created by their mitigation policies. Specifically, the potentially negative impacts of climate policies on fossil fuel workers and their communities has generally been underappreciated.

If the goal of climate policy is to build a low-carbon economy, and not simply to reduce GHG emissions, then a just transition strategy is essential. Governments must not only provide adequate social supports to the workers and communities most directly at risk, such as B.C.'s coal towns or Alberta's oil communities, but they must also prepare the current workforce for the opportunities and challenges created by a low-carbon economy. Investing in renewable energy projects to create jobs, for example, is a missed opportunity if Canadian workers are not trained to fill them.

A well-designed just transition approach can promote clean, inclusive growth that benefits both workers and the environment, but Canadian governments have so far failed to implement one. The absence of a robust just transition strategy is another key issue in Canadian climate policy. Without one, the economic costs of climate action will be higher than necessary. Furthermore, public support for emissions mitigation measures is undermined when jobs are lost in the process.

Conclusions and recommendations

OPTIMISTS CAN FIND plenty to celebrate in Canadian climate policy. Nearly every government now acknowledges the threat posed by climate change, has set a series of greenhouse gas emission reduction targets, and has laid out a plan to reach its goals. Renewable energy makes up a large and growing share of the electricity grid, energy efficiency initiatives are steadily reducing per capita emissions, and every jurisdiction in Canada is expected to have some form of carbon pricing in place by 2018.

Some provinces, especially in Atlantic Canada, have already significantly reduced economy-wide emissions, with further reductions projected in the coming decades. The ongoing nationwide phase-out of coal-fired electricity generation has been especially important. The push for better transportation and building standards will make a big difference moving forward. Overall, compared to even five years ago, Canada's climate policy progress is remarkable.

Yet, for all our apparent progress, Canada remains a climate policy laggard. Our emission reduction targets, though numerous, are inadequate for contributing our fair share to global climate goals. In almost every province and nationally we are projected to miss those targets anyway. In comparison, our peers, such as the United Kingdom, are achieving significant emission reductions and are on track to meet their goals.⁴⁵

The chief cause of Canada's foot-dragging is a deep dependence on fossil fuels that governments have failed to seriously address. The federal government and the governments of several provinces continue to promote fossil fuel development by endorsing new oil infrastructure and offering subsidies to producers. Meanwhile, Canadian businesses and households continue to consume fossil fuels at rates far above the global average.

Furthermore, efforts to transition Canada to a low-carbon economy lack ambition or teeth. For example, the proposed national carbon price is modest, with no commitment past 2022. Initiatives specifically aimed at industrial emissions are almost nonexistent. Moreover, little consideration has been given to the potential impacts of climate change and climate policies on workers and their communities.

Clearly, Canada needs to increase its commitment to climate change action. Ramping up our climate policy ambition will not be simple or easy, but there are tangible steps our federal, provincial and territorial governments can take immediately to reduce emissions and begin restructuring our economy for a low-carbon future.

Recommendations

The following recommendations are designed to address the problems and patterns identified in this report. These recommendations are not comprehensive, but they address major outstanding issues in the Canadian climate policy landscape and are equally applicable at the federal and sub-national levels.

Set GHG emission reduction targets that are consistent with a global carbon budget

Canada's flagship emission reduction target — 30% below 2005 levels by 2030 — is both arbitrary and inadequate. The federal government and each of the provinces should set new emission reduction targets consistent with a global carbon budget, which is a useful measure of how much carbon dioxide can still be emitted into the atmosphere with a reasonable chance of avoiding catastrophic climate change. The exact targets will depend on how the budget is calculated and divided, but in any case they will be significantly more ambitious than the current targets set by Canadian governments.⁴⁶

End fossil fuel subsidies

Fossil fuel subsidies include tax breaks for oil exploration, tax breaks for mining expenses, direct funding for fossil fuel research and development, and other measures. In total, these subsidies cost Canadian governments \$1.5 billion per year. The federal government has committed to phasing out all fossil fuel subsidies in the “medium term,” consistent with the 2015 G7 leaders’ declaration, but has yet to do so.⁴⁷ In fact, the federal government has in the past two years extended one such subsidy, the Mineral Exploration Tax Credit, on two separate occasions.⁴⁸ Fossil fuel subsidies act as a negative price on carbon by encouraging high-emitting activity. They should be eliminated immediately and in full.

Place a moratorium on new fossil fuel infrastructure

For the world to meet its emission reduction goals, a significant proportion of known fossil fuel reserves can never be extracted and burned.⁴⁹ Consequently, if Canadian governments are serious about fighting global warming they cannot take measures to actively expand the fossil fuel industry. Encouraging the production and export of fossil fuels by approving pipelines and processing facilities leads to additional emissions both domestically and wherever those fuels are eventually consumed. A moratorium on new fossil fuel infrastructure is the first necessary step in a broader phase-out of the fossil fuel industry.

Ensure the carbon price increases over time

Carbon pricing works by disincentivizing activities that generate greenhouse gas emissions. It is considered by many economists across the political spectrum to be the most efficient policy tool for reducing emissions.⁵⁰ However, a static carbon price becomes less effective over time as the economy adapts and the price signal is muted by inflation and other economic forces. All carbon pricing policies in Canada should be designed to ramp up indefinitely. A predictable, annual increase in the carbon price is a simple way to ensure the policy continues to drive emission reductions over the long term.

Recycle carbon pricing revenues into complementary climate policies

Carbon pricing has the potential to generate substantial government revenues. Some governments, such as British Columbia, have committed to recycling 100% of carbon revenues into tax cuts and other measures intended to make the tax revenue-neutral. However, a revenue-neutral carbon price is not the most effective way to reduce emissions. A portion of revenues should certainly be allocated to assisting vulnerable workers, households and industries with their adjustment costs, but the remainder should be invested into complementary emission reduction policies. Recycling carbon pricing revenues into green infrastructure and clean technology investments, for example, has a more positive environmental impact than pricing alone.⁵¹

Accelerate the electrification of the transportation system

Fossil fuels burned in the transportation sector are a significant contributor to greenhouse gas emissions across Canada. Clean fuel standards and improved vehicle efficiency can both contribute to emission reductions in the short term, but ultimately the transportation system needs to be completely transitioned off fossil fuels. Most importantly, both intra-city and inter-city public transit and shipping options need to be expanded to reduce the need for individual vehicles. Since passenger vehicles and commercial trucks will not disappear completely, policies to encourage electric vehicle adoption, including an expanded network of charging stations, are also necessary.

Develop a just transition strategy

The specifics of a just transition strategy will be determined by the challenges and opportunities facing each jurisdiction, but the need for a just transition strategy applies everywhere. Climate policies pose risks to certain workers and their communities. Governments need to be proactive in addressing those risks, whether through income supports, retraining programs or other policies. In jurisdictions without many fossil fuel workers, policies to prepare the workforce for emerging opportunities in the clean tech sector are just as vital for realizing the potential of the low-carbon economy.

Appendix

THE PRESENT REPORT summarizes and expands on four papers published by the ACW's Domestic Policy Working Group between October 2015 and January 2017:

- Hadrian Mertins-Kirkwood, *Baseline Report on Domestic Policy*, Adapting Canadian Work and Workplaces to Respond to Climate Change, Canadian Centre for Policy Alternatives and York University, October 2015, <http://www.adaptingcanadianwork.ca/domestic-policy-baseline-report>.
- Hadrian Mertins-Kirkwood, *Evaluating government plans and actions to reduce GHG emissions in Canada: Federal progress through June 2016*, Adapting Canadian Work and Workplaces to Respond to Climate Change, Canadian Centre for Policy Alternatives and York University, July 2016, <http://www.adaptingcanadianwork.ca/canadas-evolving-domestic-climate-policy-landscape/>.
- Hadrian Mertins-Kirkwood, *Evaluating government plans and actions to reduce GHG emissions in Canada: Provincial and territorial progress through October 2016*, Adapting Canadian Work and Workplaces to Respond to Climate Change, Canadian Centre for Policy Alternatives and York University, November 2016, <http://www.adaptingcanadianwork.ca/canadas-evolving-domestic-climate-policy-landscape/>.

- Hadrian Mertins-Kirkwood, *Evaluating government plans and actions to reduce GHG emissions in Canada: Just transition policies*, Adapting Canadian Work and Workplaces to Respond to Climate Change, Canadian Centre for Policy Alternatives and York University, January 2017, <http://www.adaptingcanadianwork.ca/canadas-evolving-domestic-climate-policy-landscape/>.

Sources and methodology for climate policy profiles

The typology of climate policies used in this report is updated from the typology first developed in the *Baseline Report* (pp. 2–4) and summarized in *Table 1*.

Historical GHG emissions and GHG emissions by sector

- Environment and Climate Change Canada, “National and Provincial/Territorial Greenhouse Gas Emission Tables,” *Environment Canada Data*, Government of Canada, last modified April 13, 2017, <http://open.canada.ca/data/en/dataset/779c7bcf-4982-47eb-af1b-a33618a05e5b>.

Because 2015 is the latest year for which GHG emissions data are available, that is the reference year for all data comparisons and analysis (e.g., 2015 energy production/consumption data are used even where more recent data are available). Note the term “heavy industry” is used in place of “emissions-intensive and trade-exposed industries” throughout this report.

Projected GHG emissions through 2030

- Environment and Climate Change Canada, “Canada’s 2016 greenhouse gas emissions Reference Case,” Government of Canada, last modified January 5, 2017, <https://www.ec.gc.ca/ges-ghg/default.asp?lang=En&n=1F24D9EE-1&offset=3&toc=show#tab24>.

Population

- Statistics Canada, “*Table 051-0001: Estimates of population, by age group and sex for July 1, Canada, provinces and territories*,” *CAN-SIM*, last updated September 28, 2016.

Per capita emissions are calculated by dividing total GHG emissions by population in the reference year.

TABLE 1 Typology of climate policies

| | Supply-side mitigation measures | Demand-side mitigation measures | Adaptation measures |
|---|---|--|---|
| Regulatory initiatives | Standards, codes and other regulatory requirements designed to reduce GHG emissions from energy producers by reducing higher-emitting energy production (e.g., coal-fired power phase-outs), increasing the use of lower-emitting alternatives (e.g., renewable portfolio standards) or improving emissions intensity (e.g., performance standards) | Standards, codes and other regulations designed to reduce GHG emissions from energy consumers by reducing consumption of higher-emitting energy sources (e.g., electric vehicle sales targets) or by increasing energy efficiency (e.g., green building codes) | Standards, codes and other regulations designed to minimize the damage from climate change (e.g., climate-resilient building codes) or maximize potential social and economic benefits (e.g., local hiring requirements for clean technology investments) |
| Funding, financing & investment programs | Programs designed to reduce GHG emissions by supporting new low-emitting infrastructure (e.g., feed-in-tariff programs) and innovation (e.g., clean technology RD&D grants) | Programs designed to reduce GHG emissions by supporting energy efficiency improvements (e.g., building retrofitting programs) or lower-emitting consumer choices (e.g., public transit expansion) | Programs designed to minimize the damage from climate change (e.g., disaster response funds) or maximize potential social and economic benefits (e.g., retraining programs for fossil fuel workers) |
| Taxes and tax subsidies | Disincentives for higher-emitting energy production (e.g., carbon levies) or incentives for lower-emitting activities and innovation (e.g., clean technology RD&D tax credits) | Disincentives for higher-emitting consumption patterns (e.g., gasoline taxes) or incentives for lower-emitting alternatives (e.g., industrial energy efficiency tax credits) | Disincentives for activities that reduce adaptive capacity (e.g., increased royalties for exploitation of natural carbon sinks) or incentives for activities that increase adaptive capacity (e.g., tax credits for ecosystem protection) |

Gross domestic product

- Statistics Canada, “*Table 384-0038: Gross domestic product, expenditure-based, provincial and territorial,*” *CANSIM*, last updated November 9, 2016.

Energy production and consumption

- Statistics Canada, “*Table 128-0016: Supply and demand of primary and secondary energy in terajoules,*” *CANSIM*, last updated January 16, 2017.
- Statistics Canada, “*Table 127-0002: Electric power generation, by class of electricity producer,*” *CANSIM*, last updated February 26, 2016.

Fossil fuel employment

- Statistics Canada, “*Table 383-0031: Labour statistics consistent with the System of National Accounts (SNA), by province and territory,*” *CANSIM*, last updated February 26, 2016.

job category and North American Industry Classification System (NAICS),” *CANSIM*, last updated February 9, 2017.

There is no definitive source for total fossil fuel industry employment at the provincial level. To arrive at our estimates, we modify Marc Lee and Amanda Card’s 2012 methodology for estimating total fossil fuel jobs in Canada.⁵² Whereas Lee and Card reference the Survey of Employment, Payroll and Hours (SEPH), we compile figures from Statistics Canada’s annual provincial program of Canadian Productivity Accounts, which provides comprehensive estimates for the total number of jobs in each province by NAICS category.

The following NAICS categories are included in our calculations to derive total fossil fuel employment: oil and gas extraction (211), mining and quarrying (except oil and gas) (212), coal mining (2121), support activities for oil and gas extraction (21311A), support activities for mining (21311B), natural gas distribution (2212), petroleum refineries (32411), petroleum and coal products manufacturing (except petroleum refineries) (3241A), and pipeline transportation (486).

Environmental employment

- ECO Canada, *Environmental Employment by Province*, Calgary: February 2016.

ECO Canada’s data is based on extensive employer surveys conducted in 2013 (results from ECO Canada’s latest survey will be published in 2017). “Environmental professionals” are defined as workers who spend more than half of their time engaged in environmental activities. In this report, environmental professionals are also referred to as “green jobs.” ECO Canada estimates the total number of workers and the share of the total workforce based on Labour Force Survey data.

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