

Canada's Emissions Trends 2014 Report: Updates, outcomes and reflections

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Introduction

Environment Canada has released its 2014 *Canada's Emissions Trends* report. The report provides information on Canada's greenhouse gas (GHG) emissions in the global context, the country's historical GHG emissions and projections of its emissions out to 2020, the goal year by which Canada has pledged through the Copenhagen Accord to lower its emissions by 17 per cent relative to 2005 levels.¹

Overall, the 2014 *Canada's Emissions Trends* report finds that, due to policies enacted since 2005, emissions are projected to be 130 million tonnes (Mt) lower in 2020 than they would have been otherwise. Nevertheless, a gap of 116 Mt is expected to remain between projected 2020 levels and Canada's Copenhagen pledge of 611 Mt, a gap of nearly 16 per cent of Canada's 2005 emissions. General economic and population growth and growth in the oil sands are the major drivers of projected emissions growth, while federal policies in the transportation sector and provincial policies in the electricity sector are the main drivers of mitigation.

This briefing note summarizes the most important findings of the report, and details the updates and changes made since the 2013 report. It concludes with a brief commentary on the report and the present trajectory of Canada's emissions trends.

¹ All references to the 2014 report refer to Environment Canada (2014).

Emissions Trends

Canada's emissions trends are displayed in the report using both "without measures" and "with measures" scenarios. The former estimates what 2020 emissions would have been in the absence of the federal and provincial emissions mitigation policies instituted since 2005, and the latter includes any policies that have been funded, legislated or tabled in sufficient detail that they can be included in the estimates.² The new policies that have been added to the 2014 report are Nova Scotia's Capping GHG Emissions from the Electricity Sector and Ontario's Greener Diesel Mandate and Ontario Power Authority Contracted Capacity. No new federal measures are included.

As seen in Figure 1, Canada is projected to have emissions of 727 Mt in 2020, compared to last year's projection of 734 Mt. This reduces the Copenhagen gap from the 122 Mt seen in the 2013 report to 116 Mt. In the absence of the mitigation policies put in place since 2005, these emissions would have reached 857 Mt (the 2013 report had projected 862 Mt³). Differences between the two years' reports stem from not only the inclusion of new policies, but from improvements and changes to modelling assumptions and parameters, which are detailed in Annex 5 of the Emissions Trends report.

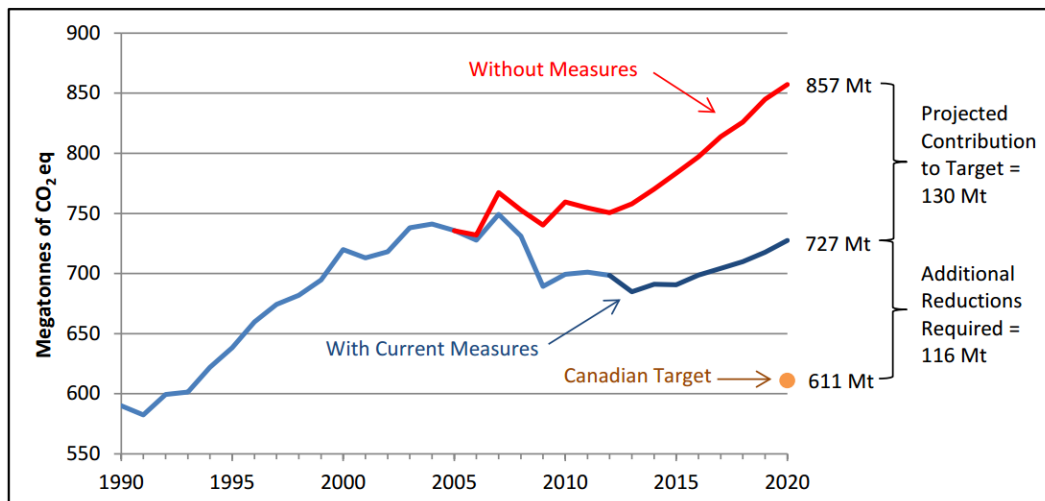


FIGURE 1: PROGRESS ON CANADA'S 2020 TARGET (MT OF CARBON DIOXIDE-EQUIVALENT [CO₂E])

Source: Environment Canada (2014, p. iii).

Land Use, Land-Use Change and Forestry Impacts

It is important to note that the 2020 emission projections seen above rely on 19 Mt of net GHG sequestration from the land use, land-use change and forestry (LULUCF) sector,⁴ which is mainly driven by lower-than-expected rates of tree harvesting in forest lands, compared to what was seen in the past. Were this dimension excluded, 2020 emissions would actually be projected to exceed 2005 emissions instead of being slightly below. Inclusion of LULUCF impacts aligns with reporting requirements, but it is important to note that LULUCF accounting excludes the effects of changes

² See Annex 1 for a summary of the policies included in this year's report.

³ All references to the 2013 report refer to Environment Canada (2013).

⁴ The 2013 report had projected 28 Mt of net sequestration; reasons for the change are detailed in Annex 5 of the report.

on unmanaged lands and of natural disturbances (wildfires, insect infestations, etc.), and that, therefore, what is actually happening in terms of total net impacts from LULUCF may differ significantly from what is seen in the projections. Notably, no sensitivity analysis was performed for LULUCF impacts.

Progress Toward the Copenhagen Goal

As seen in Figure 1 above, Canada has a large gap of 116 Mt between its projected 2020 emission levels and its Copenhagen target. The fall report of the Office of the Auditor General of Canada (2014) found that “there is strong evidence that Canada will not meet its international 2020 greenhouse gas emission reduction target,” but the *Emissions Trends* report does not provide any commentary on or analysis of the likelihood of meeting the target. It simply states that the gap “indicates the need for further efforts from all Canadians” (Environment Canada, 2014, p. iii). The report does not offer any commentary or analysis with respect to how the gap might be closed.

Alternative Scenarios

The results seen above reflect expected values, but in its analysis, Environment Canada also ran scenarios that reflected other possible economic growth and fuel price scenarios. The scenarios reflecting a low world oil price are particularly noteworthy given the recent decline in oil prices. Figure 2 conveys the range of different outcomes that are possible under the scenarios considered.

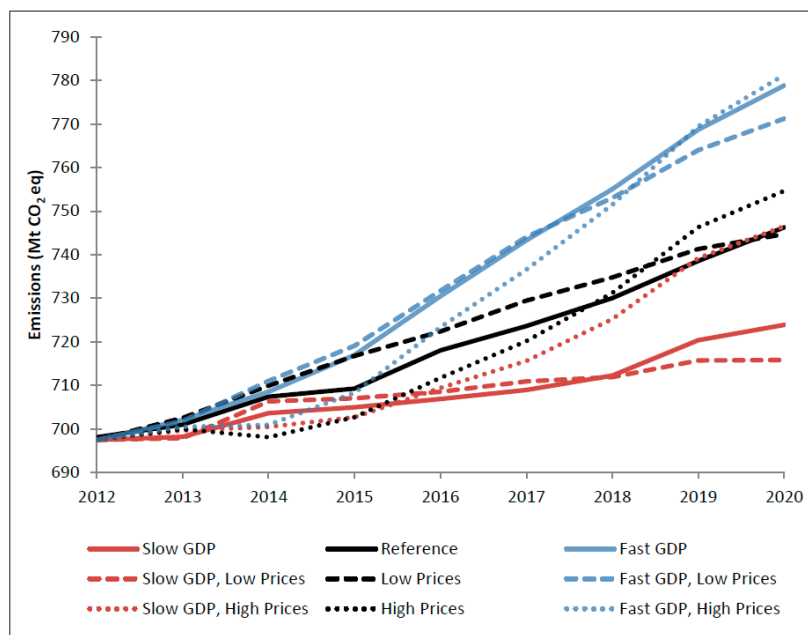


FIGURE 2: PROJECTED GHG EMISSIONS UNDER A FULL RANGE OF ALTERNATIVE ASSUMPTIONS (EXCLUDING LULUCF)*

*"Prices" refer to global oil prices

Source: Environment Canada (2014, p. 51).

Emissions by Economic Sector

A sectoral breakdown of the trend presented in Figure 1 is provided in Table 1. Significant changes from the 2013 *Canada's Emissions Trends* report include transportation being changed from a 8 Mt increase between 2005 and 2020 to a 1 Mt decrease; oil and gas moving from 38 Mt of growth to 45 Mt; and electricity going from 39 Mt of mitigation to 50 Mt. Since there are relatively few additional policies being modelled, most of these changes are being driven by adjustments to modelling assumptions and parameters, including projections for economic growth and resource development.

TABLE 1: CHANGE IN GHG EMISSIONS BY ECONOMIC SECTOR (MT CO₂E)

	2005	2012	2020	Change 2005 to 2020
Transportation	168	165	167	-1
Oil and Gas	159	173	204	45
Electricity	121	86	71	-50
Buildings	84	80	98	14
Emissions-intensive and Trade-exposed Industries	89	78	90	1
Agriculture	68	69	70	2
Waste and Others	47	47	46	-1
Expected LULUCF Contribution	-	-	-19	-
Total with LULUCF Contribution	736	699	727	-9

Source: Environment Canada (2014, p. 16).

Transportation

Broadly speaking, fuel-efficiency improvements in the electricity sector are offsetting the increases in the number of vehicles on the road. This trend is expected to continue to 2020, with little change in sectoral emissions between 2005 and 2020. The government's GHG emission regulations for cars and light- and heavy-duty trucks (LDV1, LDV2 and HDV1) are driving reduced emissions in passenger transport (-8 Mt between 2005 and 2020), while the freight subsector is the only part of the sector in which emissions are growing (+10 Mt between 2005 and 2020), driven largely by economic growth leading to greater use of heavy-duty trucks and rail. Recreational, commercial and residential transport subsectors are expected to fall by 2 Mt between 2005 and 2020.

Oil and Gas

The 2014 *Emissions Trends* report officially presents Canada's 2012 emissions figures for the first time, and, according to the report, in 2012 the oil and gas sector replaced transportation as Canada's largest source of emissions, reaching 25 per cent of the total national inventory. The sector's growth from 159 Mt to 173 Mt of annual emissions between 2005 and 2012 was almost entirely due to growth in the oil sands, growth that has been partially offset by depletion

of conventional oil and gas resources and a decline in refining emissions. Oil sands emissions are projected to increase by 69 Mt between 2005 and 2020 (last year's report estimated 67 Mt), and liquid natural gas (LNG) growth is expected to contribute 3 Mt (projected at 2 Mt in the 2013 report). Reductions in conventional oil and gas production and refining emissions will continue to partially offset the growth in oil sands and LNG emissions between now and 2020, and total projected sectoral emissions are expected to grow by 45 Mt between 2005 and 2020, compared to last year's report's projection of 38 Mt.

Electricity

Canada's electricity sector relies strongly on non-emitting sources, primarily hydro, and, compared to other countries, therefore represents limited opportunities for mitigation. Nevertheless, significant mitigation of 50 Mt is expected in the sector between 2005 and 2020 (the 2013 report projected 39 Mt), mostly driven by emissions reductions from coal-fired power plants, which are projected to account for 46 Mt of the sector's 50 Mt of mitigation. Policies like renewable portfolio standards in New Brunswick and Nova Scotia, a net zero GHG standard for new generation in British Columbia and, particularly, Ontario's coal phase-out are driving these reductions. The federal coal policy is also a modest driver, projected to deliver 3.1 Mt of mitigation by 2020 (Government of Canada, 2012).

Buildings

The report notes that building emissions are projected to climb by 14 Mt between 2005 and 2020 (revised up from 11 Mt in the 2013 report) due to aggregate expansion of floor space as well as expected increase in use of hydrofluorocarbons (HFCs). Emissions from HFCs, a powerful GHG, have increased from 5 to 8 MT between 2005 and 2012, and are expected to climb to 15 Mt by 2020 as their use increases due to HFCs' phase-out under the Montreal Protocol. The federal government has signalled that it intends to regulate the use of HFCs soon.

Emissions by Province

Table 2 provides an overview of emission trajectories for Canada's provinces and territories. As seen in the table, much of the emission reductions are coming from Ontario, at 37 Mt of mitigation between 2005 and 2020 due to its coal phase-out and other mitigation policies, as well as the decline of the manufacturing sector there.⁵ Most of the country's emissions growth is expected in Alberta, where 2020 emissions are projected to be 55 Mt higher than 2005's due primarily to growth in the oil sands sector.⁶ Some growth is also expected in British Columbia, likely due to its LNG development plans.

⁵ The 2013 report projected Ontario's emission reductions to be 29 Mt, with the change at least being partly driven by the introduction of two new policies.

⁶ The 2013 report had projected 63 Mt of growth in Alberta.

TABLE 2: PROVINCIAL AND TERRITORIAL GHG EMISSIONS: 2005 TO 2020 (MT CO₂E)

	2005	2012	2020	Change 2005 to 2020
Newfoundland and Labrador	10	9	8	-2
Prince Edward Island	2	2	2	0
Nova Scotia	23	19	15	-8
New Brunswick	20	16	16	-4
Quebec	86	78	80	-6
Ontario	207	167	170	-37
Manitoba	21	21	23	2
Saskatchewan	71	75	73	2
Alberta	232	249	287	55
British Columbia	62	60	69	7
Territories	2	2	2	0
LULUCF	-	-	-19	-
Canada	736	699	727	-9

Source: Environment Canada (2014, p. 29).

Conclusion

Broadly speaking, the projections seen in the 2014 *Canada's Emissions Trends* report support the view taken in the fall report of the Auditor General that Canada will not meet its Copenhagen target, although the report does not provide any commentary or analysis on this.

The report emphasizes the significance of federal regulations on transport and electricity. However, transportation mitigation occurs only against business-as-usual emissions rates, and the sector is not expected to see a significant change in emissions between 2005 and 2020, as growth in vehicle fleets offsets efficiency gains. For the electricity sector, provincial policies are the dominant driver of mitigation but receive a disproportionate amount of coverage in the section dealing with electricity sector projections. No breakdown of policies' relative contributions is provided in the report, since it takes the position that "due to the interactive effects between federal and provincial/territorial measures, it is not possible to accurately split aggregate emission reductions into federal, provincial, or territorial measures" (Environment Canada, 2014, p. 47)

Finally, no discussion is provided in the report on limiting emissions from the oil and gas sector, Canada's largest and fastest growing source of emissions. This is not a surprise given recent positions taken by the federal government on adopting such a policy, but without regulation of this sector, it is not clear how Canada will be able to meaningfully limit its emissions going forward.

References

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Annex 1: Federal and Provincial/Territorial Policies Included in Emission Projections

Policies highlighted in yellow indicate new policies that were not included in the 2013 report's projections.

Provincial/Territorial Measures	
Alberta	<ul style="list-style-type: none"> Specified gas emitters regulation (assumed to be renewed)
British Columbia	<ul style="list-style-type: none"> B.C. carbon tax Renewable fuels tax exemptions for minimum ethanol and biodiesel content B.C. emissions offsets regulation Landfill gas management regulation
Manitoba	<ul style="list-style-type: none"> Renewable fuels provincial tax credit/exemption for minimum ethanol content
Nova Scotia	<ul style="list-style-type: none"> Renewable portfolio standard for electricity generation Electricity demand-side management policies Solid waste management resources management strategy Capping GHG emissions from the electricity sector
Ontario	<ul style="list-style-type: none"> Ontario residential electricity peak savings (time-of-use pricing) Ontario feed-in tariff program Provincial commercial building code changes for process efficiency improvements Landfill gas regulation (O. Reg. 216/08 and 217/08) Ontario coal phase-out program Ontario Power Authority contracted capacity (March 2014) Ontario's greener diesel mandate (April 2014)
Quebec	<ul style="list-style-type: none"> Renewable fuels tax reimbursement/income tax credit Quebec and California cap and trade system Quebec's carbon levy Landfill gas regulation
Saskatchewan	<ul style="list-style-type: none"> Renewable fuels distributor tax credit for ethanol produced and consumed in the province

Source: Environment Canada (2014, p. 47).

Federal Measures

- Electricity performance standard for coal-fired generation
- Residential building code changes to incorporate energy efficiency for adoption by provinces across Canada
- Renewable fuel content regulation
- Adoption of the National Energy Code for Buildings of Canada 2011 or its equivalent, by all provinces and territories, except Northwest Territories, by 2016
- Commercial appliance efficiency improvements (excludes lighting)
- Residential appliance efficiency improvements, includes refrigeration, freezers, ranges and dryers
- Industry expansion of Canadian industry program for energy conservation including International Organization for Standardization (ISO) and Canadian Standards Association (CSA) certification programs
- Light duty vehicles 1 (LDV-1) GHG emissions standards for the light-duty vehicle model years 2011 to 2016
- Light duty vehicles 2 (LDV-2) GHG emissions standards increases stringency for model years 2017 to 2025
- Heavy duty vehicles (HDV) GHG emissions standards for heavy-duty vehicle model years 2014 to 2018
- The pulp and paper green transformation program, to improve environmental performance of mills including GHG emissions reductions; the program ended in 2012 but will result in ongoing emission reductions
- Public transit subsidy income tax credit for transit passes and subsidy to all levels of government to improve public transit service in communities, includes standards for renewable fuels
- Incandescent lighting phase-out

Source: Environment Canada (2014, p. 48).

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