CLIMATE ACTION TRACKER

Canada

History: 2017 2016 2015 2014 2013 2012 2011

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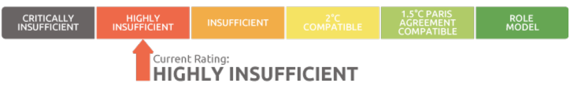
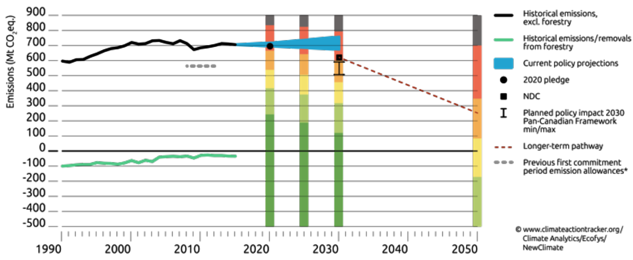
Rating



Basic Intermediate Detailed



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Assessment

Canada’s proposed new climate policy framework will make a big difference to its ability to meet its 2030 Paris Agreement climate commitment. Without it, Canada is likely to miss its Nationally Determined Contribution (NDC)—rated “Highly Insufficient”—by a wide margin.

However, if it fully implements the “Pan-Canadian Framework on Clean Growth and Climate Change,” Canada is likely to overachieve its NDC, and the CAT would upgrade its rating of the resulting emissions levels to “Insufficient.” It is therefore clear that, to get onto a Paris Agreement-compatible emissions pathway, Canada needs to significantly enhance both its NDC and its proposed level of climate action.

Canada’s Nationally Determined Contribution (NDC) is to reduce economy-wide GHG emissions by 30% below 2005 levels by 2030. Canada has also indicated in its NDC that it will explore the use of international mechanisms to meet this target. Under its current policies, Canada will meet its 2020 pledge, (but not its NDC). The Pan-Canadian Framework, announced in 2016, is an overarching strategy document for emission reductions, containing economy-wide measures, including a carbon pricing plan and a plan to phase-out traditional coal plants.

On 11 May 2017, Canada submitted its revised NDC. While the revision does not change Canada’s NDC target, it states that Canada is examining its approach to accounting for emissions in the land use, land use change and forestry (LULUCF) sector. This is a departure from its original NDC submission, which stated that Canada would use a net-net)[1] accounting approach for the LULUCF sector. Canada’s new NDC translates to a target level of 621 $MtCO_2e$ excluding LULUCF in 2030, which is equivalent to a 14% reduction below 2005 levels and a 4% increase above 1990 levels of GHG emissions excluding LULUCF.

Canada is unlikely to meet its NDC target under its current policies. Based on the policies implemented as of November 1, 2016, we estimate that Canada’s GHG emissions (excluding LULUCF) will increase to 17–20% above 1990 levels by 2020. By 2030, emissions are projected to increase by 13–27% above 1990 levels excl. LULUCF.

With planned policies, emissions are expected to reach 507–591 $MtCO_2e$ excl. LULUCF in 2030, which would allow Canada to achieve its NDC target. The planned policies, however, include emissions reductions from international carbon credits, which means that these emissions reductions are not a result of domestic mitigation efforts. But there is no clarity as to how many international credits Canada is planning on using. The emissions level from planned policies is equivalent to a 1–15% reduction from 1990 levels and an 18–30% reduction from 2005 levels excluding LULUCF.

Footnotes

[1] Net/net accounting approach takes the difference between the total net GHG flow from LULUCF in the target year and in the base year which is accounted for in the country’s GHG balance. http://ec.europa.eu/clima/events/docs/0013/info_sheet_lulucf_final_en.pdf

Pledges and targets

Paris Agreement target

Canada states in its NDC that it will pursue an economy-wide target to reduce GHG emissions to 30% below 2005 levels by 2030. Canada has indicated that it may also use international credits to meet its target. Considering the upward trajectory of the upper bound of the current policy projection, Canada may need to use a large quantity of international credits to meet its target.

Canada is currently examining its approach to account for emissions in the LULUCF sector as per the revised NDC (Government of Canada, 2017a). However, it provides a numeric figure of 523 $MtCO_2e$ as its NDC target, which appears to be calculated using emissions including LULUCF in the base year (2005). Therefore, in this CAT assessment, we used a similar approach to calculate Canada’s NDC target.

The revised NDC states that Canada will use “the IPCC production approach” to account for Harvested Wood Products (HWPs). The National Inventory Report (NIR) 1990-2015, therefore, uses the IPCC production approach and reports emissions associated with wood coming from forest harvest and forest conversion activities. Accounting for HWPs must be performed in a consistent and compatible manner across countries so that accounting of imported and exported HWPs is complete, and emissions are not excluded from inventories. The new inventory accounts for emissions due to imports and exports of HWPs. However, it excludes emissions from natural disturbances (e.g. forest fires and insect outbreaks).

Kyoto Protocol (KP)	
Member of KP CP1 (2008–2012)	withdrawn
Member of KP CP2 (2013–2020)	no
KP CP1 target (below base year)	6% below 1990
KP CP2 target (below base year)	none
Copenhagen pledge	
2020 target	17% below 2005 by 2020 [17% above 1990 by 2020 excl. LULUCF]
Paris Agreement target	
Ratified	Yes
2030 unconditional target	30% below 2005 by 2030 [4% above 1990 by 2030 excl. LULUCF]
Coverage	Economy wide, incl. LULUCF
LULUCF	Currently examining its approach for LULUCF accounting
Long term goal	
Long-term goal	80% net emission reductions below 2005 levels by 2050

We estimate that the emissions level under the 2030 target is 479 $MtCO_2e$ including LULUCF, which translates in to 621 $MtCO_2e$, excluding LULUCF. The current target was calculated using LULUCF projections for 2030 from Canada’s Sixth National Communication (Envionment Canada, 2014). The NDC target excluding LULUCF is equivalent to a 14% reduction from 2005 and 4% increase above 1990 levels of GHG emissions.

The target emissions level calculated in the CAT assessment is different from the target of 523 $MtCO_2e$ stated in the revised NDC because it is based on 2017 inventory data and uses different global warming potential factors (GWPs) (see Assumptions).

Canada’s 2017 inventory report changed compared to previously calculated emissions for all the IPCC sectors. Overall emissions excluding LULUCF have decreased slightly for all years between 1990–2014. To calculate LULUCF emissions and removals, Canada has developed a new methodology that accounts for emissions due to human activity—excluding the impacts of natural disturbances in managed forests (Government of Canada, 2017c). The inventory also includes the new British Colombia forest inventory. Data has also been updated and some model parameters in other LULUCF sub-sectors have been revised (Government of Canada, 2017c). The National Inventory Report (NIR) states that Canada is temporarily excluding emissions from forested areas that are dominated by natural disturbances. The excluded emissions will be included once these forested areas attain commercial maturity and are affected by forest management activities. At the moment, it is not clear whether countries may exclude emissions due to natural disturbances from their inventories under IPCC guidelines.

2020 pledge and Kyoto target

Canada's Kyoto Protocol target for the first commitment period 2008–2012 was a reduction of 6% below 1990 levels. However, in December 2011, Canada withdrew from the Kyoto Protocol. In 2012, Canada subsequently reported an emissions increase of 16% above 1990 levels.

Canada's Copenhagen pledge aims to reduce emissions by 17% below 2005 levels by 2020 (17% above 1990 levels excl. LULUCF) (Government of Canada, 2010). The Copenhagen commitment, based on 2005 levels, aligned Canada’s level of ambition to the United States, which also targets a 17% reduction in emissions from 2005 levels by 2020.

Long-term goal

In 2016, Canada proposed a mid-century, long term low greenhouse gas development strategy (Government of Canada, 2016a). This strategy contains an emissions reduction pathway that is consistent with net emissions falling by 80% in 2005 from 2005 levels. The strategy documentation indicates that this target equates to a 65% reduction in emissions below 2005 levels when LULUCF credits are taken into account (Government of Canada, 2016a). Canada intends to regularly update this long-term strategy as national circumstances change and low-GHG technologies evolve.

Fair share

Canada revised its NDC in May 2017, providing additional information and clarity. Based on this, we rate Canada’s NDC “Highly Insufficient”.

The “Highly insufficient” rating indicates that Canada’s climate commitment in 2030 is not consistent with holding warming to below 2°C, let alone limiting it to 1.5°C as required under the Paris Agreement, and is instead consistent with warming between 3°C and 4°C: if all countries were to follow Canada’s approach, warming could reach over 3°C and up to 4°C. This means Canada’s climate commitment is not in line with any interpretation of a “fair” approach to the former 2°C goal, let alone the Paris Agreement’s 1.5°C limit.

If the CAT were to rate Canada’s projected emissions levels in 2030 under current policies, Canada would also be rated “Highly insufficient.”

For further information about the risks and impacts associated with the temperature levels of each of the categories click here.

Current policy projections

With policies implemented as of 1st November 2016, Canada will reach GHG emissions excluding LULUCF of 696–718 $MtCO_2e$ in 2020: an increase of 17–20% from 1990 levels. In 2030, emissions are projected to increase by 13–27% above 1990 levels to 674–757 $MtCO_2e$. New policies included in the current policy projection, which have been implemented between September 2015 and 1st November 2016, include an emissions trading system in Ontario, Alberta’s Climate Leadership Plan, British Columbia’s Clean Energy Act and Quebec’s Eco performance programme for industry.

Canada’s emissions have shown an upward trend from 1990–2007, reaching at 732 $MtCO_2e$ in 2007. At the beginning of the financial crisis of 2008/9, emissions dropped significantly. In the period from 2010–2013, emissions started to increase again but showed a short decline in 2014 and 2015. However, with currently implemented policies, emissions could either continue to decrease - or follow an upward trend - depending on GDP growth and the development of oil and natural gas prices.

In October 2016, Canada announced its national mandatory carbon pricing plan, which requires all Canadian provinces and territories to either introduce a cap and trade system, or an explicit price-based system like a carbon tax or a carbon levy and performance-based emissions system by 2018 (Government of Canada, 2016d). For provinces with a carbon tax, the rate should meet the federal benchmark or floor price, which starts at C$10/tonne in 2018 and reaches C$50/tonne by 2022.

The range of carbon prices across existing initiatives globally is very broad; spanning from less than US$1/tCO2e to US$131/tCO_2e with about 75% of the covered emissions priced below US$10/tCO2e (World Bank, 2016). The 2018 Canadian price looks high in comparison and becomes increasingly ambitious towards 2022. For provinces and territories that do not adopt a carbon pricing initiative by 2018 or fail to meet the benchmark, the federal backstop system will apply, imposing an explicit price-based carbon pricing mechanism (Government of Canada, 2016d). The enabling act for a federal backstop system is under consultation (Government of Canada, 2017b). This is a positive development that could result in emission reductions. However, more details are required to allow quantification of the actual impact.

Policies are also under development to drive further emissions reductions. These policies will target emissions reductions from natural gas-fired electricity, chemicals and nitrogen fertilisers, and methane emissions from the oil and gas sector (Government of Canada, 2015). In October 2016, Canada signed the Kigali Amendment to the Montreal Protocol and proposed new regulations to substantially reduce HFC emissions (Government of Canada, 2016d). This is a significant move, as HFC emissions in Canada have increased tenfold over the period from 1990–2012.

In 2016 Canada published the Pan-Canadian Framework on Clean Growth and Climate Change[1] to effectively combat climate change and grow its economy away from fossil fuels (Government of Canada, 2016c). While the carbon pricing plan holds a central importance in this framework, it proposes complementary actions to further reduce emissions across the economy to allow Canada to meet its 2030 target.

The Framework also suggests measures to build climate resilience, accelerate innovation, support clean technology and create jobs (Government of Canada, 2016c). The Framework document also quantifies the impact of planned policies on emission reductions (policies announced as of 1st November 2016 and the measures listed in the Pan-Canadian Framework). With these announced policies, Canada is expected to reduce emissions by 12% in 2030 compared to its current policy pathway. These reductions include international carbon credits in addition to domestic reductions through regulations on HFCs, heavy duty vehicles, and methane, among others.

A further reduction of 12% from the current policy pathway is expected from the measures listed in the Pan-Canadian Framework for the electricity sector (this includes the accelerated phase-out of traditional coal fired plants discussed above), buildings, transport and industry. In addition to these planned policies, the Framework estimates that further emission reductions of 6% from current policy pathway are needed to reach the 2030 NDC target.

The CAT estimates that under these planned policies, Canada would reach GHG emissions excluding LULUCF of 507–591 $MtCO_2e$, in 2030 - well below its NDC target of 621 $MtCO_2e$ excl. LULUCF. The CAT would rate the emissions from planned policies “Insufficient.” Therefore, additional measures for a further 6% in emissions reduction, as stated in the Pan-Canadian Framework, from the current policies are not needed to reach the NDC target as per CAT assessment. The planned policies, however, include emission reductions from international carbon credits, which means that these emission reductions are not a result of mitigation efforts in Canada. However, we have nonetheless included these in our quantification of emission reductions due to the lack of clarity on how many international credits will be used.

An important part of the Pan-Canadian Framework is the Low Carbon Fund (Environment and Climate Change Canada, 2017a) which will provide C$2 billion (or approx. US$1.6billion) to support projects that contribute to meeting Canada’s climate targets. The fund has two components: (i) C$1.4 billion will be allocated to support the leadership commitments from provinces and territories on their emission reduction priorities and the commitments they outlined in the Pan-Canadian Framework, (ii) C$0.6 billion will be available for provinces and territories, municipalities, indigenous governments and organisations, businesses and both not-for-profit as well as for-profit organisations to undertake projects that reduce Canada’s GHGs and contribute to clean growth.

In 2017, Environment and Climate Change Canada (ECCC) prepared a strategy to reduce Short-Lived Climate Pollutants (SLCPs) (Environment and Climate Change Canada, 2017b). This strategy aims to complement the actions outlined in the Pan-Canadian Framework for SLCPs mitigation. Canada’s revised NDC also mentions that Canada is taking actions to reduce SCLPs as they contribute locally to Arctic warming. The strategy by ECCC includes enhanced domestic mitigation and scientific work, engagement with the international community, improved coordination between ECCC and the Canadian Government’s activities on the subject as well as collaboration with provincial and territorial governments.

Energy supply

A performance standard for new coal-fired power plants came into force on July 1, 2015, limiting emissions intensity to 420 tCO_2/GWh. The standard also applies to plants that have reached their useful end of life. In general, this means ageing, ~50-year old units - the first of the currently operating power plants commissioned before 1975 - will reach the end of their useful life after 2020, and will therefore not be subject to the performance standard until then. Given this age profile, and the current poor investment environment for new coal power, the performance standard will not contribute to any significant emissions reduction below business as usual by 2020.

In November 2016, Canada announced it would amend its existing coal-fired electricity regulation and accelerate the phase out of traditional[2] coal-fired power plants by 2030 (Government of Canada, 2016e). Since the phase out may pose challenges for some provinces, the government has indicated that it is willing to negotiate the terms with the provinces still generating electricity using coal: Alberta, Saskatchewan, Nova Scotia and New Brunswick. Performance standards for natural gas electricity plants are also being developed to support the transition towards cleaner sources of electricity generation.

Despite this phase-out of traditional coal-fired power plants, other developments in Canada suggest that this does not imply a total phase out of all coal-fired power plants. Saskatchewan's Boundary Dam CCS project is the world's first and largest commercial-scale coal-fired CCS project. It has the nominal capacity to capture 90% of its GHG emissions, which amounts to around 1 $MtCO_2eq$/year (Government of Canada, 2016b). While some of the CO_2 will be stored directly, most of it will be used for enhanced oil recovery which means it will also not be emitted back into the atmosphere (Global CCS Institute, 2016). The CCS unit has captured almost 1.5 million tonnes of CO_2 between the start of its operation in October 2014 and March 2017 (Global CCS Institute, 2016). The project cost a total of C$1.5 billion, including C$240 million in government funding (MIT CC&ST, 2016). Canada budgeted C$1 billion in 2016 and made a commitment of C$2.37 billion in 2017 over four years for clean technology industry. The government also announced an additional C$21.9 billion over 11 years for green infrastructure (David Suzuki Foundation, 2017).

Transport

In November 2016, the Canadian government also announced that it will develop clean fuel standards, in consultation with provincial and territorial governments, to reduce emissions from fuels used in transportation, buildings and industry (Government of Canada, 2016d). Canada has various policies in place to reduce emissions. Fuel economy standards for light and heavy duty vehicles are aligned with federal-level regulations in the US. Canada has also implemented a regulation requiring a renewable fuel content of 2% for diesel and 5% for gasoline. In October 2014, Canada issued a notice of intent to develop GHG emission reduction regulations for heavy duty vehicles post 2018. The regulations will be harmonised with US EPA Phase 2 GHG regulations[3] (TransportPolicy.net, 2017).

Footnotes

[1] The province of Saskatchewan has not adopted the Framework; provinces have the flexibility to design their own plans to meet their emission reduction targets.

[2] Traditional coal-fired electricity does not use carbon capture and storage (CCS) to capture carbon dioxide and store it.

[3] At the time of writing, the EPA has not announced any changes to its heavy duty vehicle GHG regulations.

Assumptions

Pledge and historical emissions

Pledges were calculated from historical data obtained from the UNFCCC GHG inventory (CRF, 2017).

In its revised NDC, Canada calculates its NDC target by cutting its base year (2005) emissions level by 30%. Since it is an economy wide target, we assume that the target is calculated using 2005 emissions including LULUCF.

We used a similar approach in our CAT assessment for the NDC as well as the calculations for the 2020 target (which is also an economy wide target). LULUCF emissions excluding natural disturbances in 2005 were retrieved from CRF data and converted to GWPs from the IPCC Second Assessment Report (SAR) (UNFCCC, 2017). Projected LULUCF emissions for 2020 and 2030 were obtained from Canada's sixth national communication (Government of Canada, 2014).

Canada has applied global warming potentials (GWPs) from the IPCC Fourth Assessment Report (AR4) in its projections from 2014–2030 reported in its revised NDC. To ensure consistency between the historical data obtained from CRF (2017) and other elements of our analysis, we calculated the target and the projections based on GWPs from the IPCC Second Assessment Report (SAR). An analysis based on AR4 GWPs would not significantly change the emission trend shown or rating given.

There is a difference of ~36 $MtCO_2e$ in LULUCF emissions for the base year (2005) between 2016 and 2017 CRF inventory data. This difference partially explains the difference between the CAT assessment of the NDC target level in 2030—479 $MtCO_2e$ incl. LULUCF—against the 523 $MtCO_2e$ incl. LULUCF reported in the revised NDC. The remaining difference is due to different GWPs used.

Current policy projections

The current policy projections from 2015 to 2030 were obtained from Environment and Climate Change Canada's 2016 greenhouse gas emission projections which were then harmonised to historical data in SAR (Environment and Climate Change Canada, 2016). The report presents projections considering future impacts of policy measures enacted as of 1st November 2016(Environment and Climate Change Canada, 2016). It presents three scenarios (low emissions scenario, reference scenario and high emissions scenario) reflecting different assumptions about oil and gas prices and GDP growth rate.

Due to uncertainty in GDP growth rate and oil and gas prices, the CAT shows the current policy pathway as a range based on the low and high emission scenarios. Canada has recently introduced its national carbon pricing plan, to be implemented by provinces and territories by 2018. It is not yet clear how much this plan would contribute to reducing national emissions. This policy is not quantified in our current policy projections, as more details of the plan would be needed for this purpose.

The impact of planned policies for 2030 is quantified by subtracting the expected percentage emission reductions achieved through planned policies (policies announced as of 1st November 2016 and the measures listed in the Pan-Canadian Framework) from the current policy pathway. Since the impact of these planned policies is additional to the current policies, we take the current policy pathway range as a starting point.

Sources

David Suzuki Foundation. (2017). Budget 2017 moves towards a clean energy economy, misses nature protection. Retrieved May 4, 2017, from http://www.davidsuzuki.org/media/news/2017/03/budget-2017-moves-towards-a-clean-energy-economy-misses-nature-protection/

Environment and Climate Change Canada. (2016). Canada's 2016 greenhouse gas emissions Reference Case. Retrieved from https://www.ec.gc.ca/ges-ghg/default.asp?lang=En&n=1F24D9EE-1

Environment and Climate Change Canada. (2017a). Low Carbon Economy Fund to reduce greenhouse gas emissions and generate clean growth. Retrieved August 22, 2017, from https://www.canada.ca/en/environment-climate-change/news/2017/06/low_carbon_economyfundtoreducegreenhousegasemissionsandgeneratec.html

Environment and Climate Change Canada. (2017b). STRATEGY ON SHORT-LIVED CLIMATE POLLUTANTS – 2017. Retrieved from http://ec.gc.ca/GES-GHG/FF677357-F627-463A-A7C4-9068CEF3C3D9/5003-SLCP Strategy 2017_EN.pdf

Environment Canada. (2014). Canada's Sixth National Report on Climate Change 2014.

Global CCS Institute. (2016). Boundary Dam Carbon Capture and Storage Project. Retrieved from https://www.globalccsinstitute.com/projects/boundary-dam-carbon-capture-and-storage-project

Government of Canada. (2010). A Climate Change Plan for the Purposes of the Kyoto Protocol Implementation Act - May 2010. Retrieved April 21, 2017, from http://www.climatechange.gc.ca/default.asp?lang=En&n=4D57AF05-1

Government of Canada. (2014). Canada's Sixth National Report on Climate Change 2014.

Government of Canada. (2015). Canada's INDC Submission to the UNFCCC. Retrieved from http://www4.unfccc.int/submissions/INDC/Published

Documents/Canada/1/INDC - Canada - English.pdf

Government of Canada. (2016a). CANADA'S MID-CENTURY LONG-TERM LOW-GREENHOUSE GAS DEVELOPMENT STRATEGY. Retrieved from http://unfccc.int/files/focus/long-term_strategies/application/pdf/canadas_mid-century_long-term_strategy.pdf

Government of Canada. (2016b). Canada's Second Biennial Report on Climate Change. Retrieved from http://unfccc.int/files/national_reports/biennial_reports_and_iar/submitted_biennial_reports/application/pdf/canadas_2nd_biennial_report.pdf

Government of Canada. (2016c). PAN-CANADIAN FRAMEWORK on Clean Growth and Climate Change. Retrieved from https://www.canada.ca/content/dam/themes/environment/documents/weather1/20170125-en.pdf

Government of Canada. (2016d). Pan-Canadian Framework on Clean Growth and Climate Change. Annex I: Federal investments and measures to support the transition to a low-carbon economy. Retrieved from https://www.canada.ca/en/services/environment/weather/climatechange/pan-canadian-framework/annex-federal-investments-measures.html

Government of Canada. (2016e). The Government of Canada accelerates investments in clean electricity. Retrieved from http://news.gc.ca/web/article-en.do?nid=1157989

Government of Canada. CANADA ' S 201 7 NATIONALLY DETERMINED CONTRIBUTION SUBMISSION TO THE UNITED NATIONS FRAMEWORK (2017). Retrieved from http://www4.unfccc.int/ndcregistry/PublishedDocuments/Canada First/Canada First NDC-Revised submission 2017-05-11.pdf

Government of Canada. (2017b). Forward Regulatory Plan 2017 to 2019. Retrieved from http://www.ec.gc.ca/default.asp?lang=En&n=DF9C1A4C-1&offset=1&toc=show#X-2017022815060985

Government of Canada. (2017c). National Inventory Report 1990-2015: Greenhouse Gas Sources and Sinks in Canada. Retrieved from https://www.ec.gc.ca/ges-ghg/default.asp?lang=En&n=662F9C56-1

MIT CC&ST. (2016). Boundary Dam Fact Sheet: Carbon Dioxide Capture and Storage Project. Retrieved May 10, 2017, from https://sequestration.mit.edu/tools/projects/boundary_dam.html

TransportPolicy.net. (2017). Canada: Light-duty: Emissions. Retrieved from http://transportpolicy.net/index.php?title=Canada:_Light-duty:_Emissions

UNFCCC. (2017). UNFCCC: National Inventory Submissions 2017. Retrieved from http://unfccc.int/national_reports/annex_i_ghg_inventories/national_inventories_submissions/items/10116.php

World Bank. (2016). State and Trends of Carbon Pricing. Retrieved from http://www.ecofys.com/files/files/world-bank-ecofys-vivid-2016-state-trends-carbon-pricing.pdf

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