



Environment and
Climate Change Canada

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GREENHOUSE GAS EMISSIONS PROJECTIONS

CANADIAN ENVIRONMENTAL
SUSTAINABILITY INDICATORS



Canada 

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CANADIAN ENVIRONMENTAL SUSTAINABILITY INDICATORS GREENHOUSE GAS EMISSIONS PROJECTIONS

May 2022

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Greenhouse gas emissions projections

Climate change is caused by the increase in concentrations of greenhouse gases (GHGs) which trap heat in the Earth's atmosphere. These increases are primarily due to GHG emissions from human activities.

Canada's actions to address climate change at home and abroad are guided by the 2015 Paris Agreement goal of holding the increase in the global average temperature to well below 2 degrees Celsius above pre-industrial levels, and pursuing efforts to limit the global temperature increase to 1.5 degrees Celsius. In 2021, Canada announced an enhanced target committing Canada to cut its GHG emissions by 40% to 45% below 2005 levels by 2030. To estimate future GHG emissions, Canada develops GHG projections on an annual basis, using the most up-to-date assumptions of the key drivers that influence Canada's emissions. These indicators use GHG emissions modelling to show a pathway to achieving Canada's 2030 target.

Projections under Canada's 2030 Emissions Reduction Plan

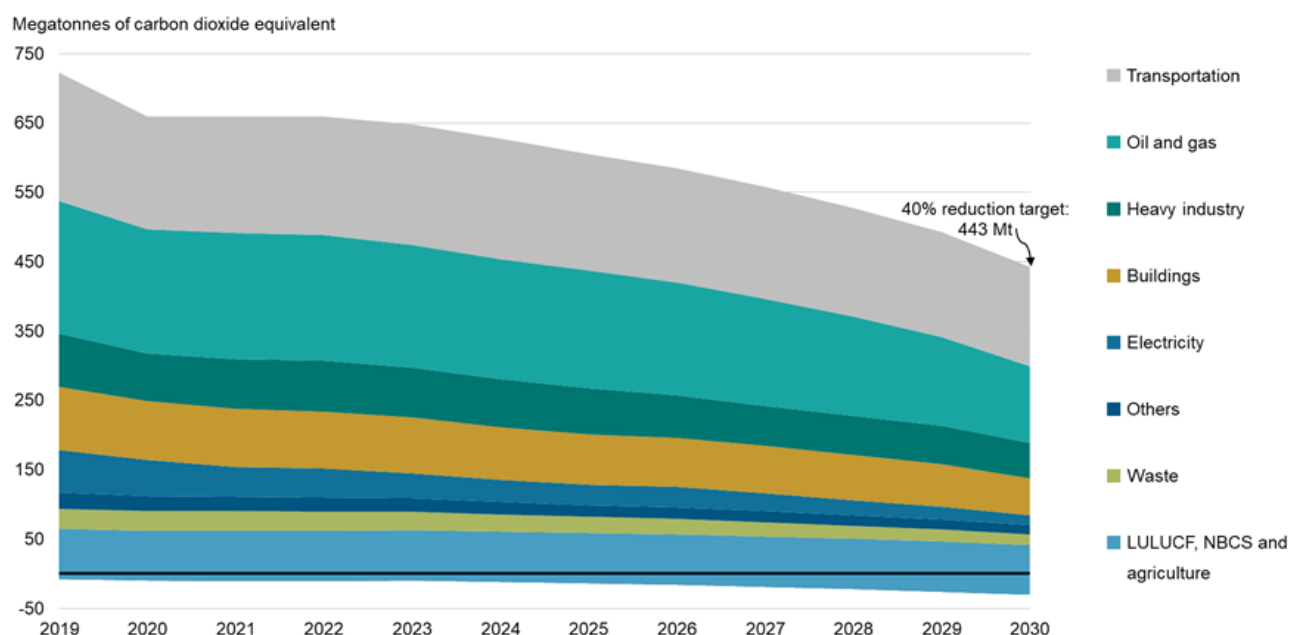
In March 2022, the Government of Canada introduced the [2030 Emissions Reduction Plan](#), which provides a roadmap for the Canadian economy to achieve its target of 40% to 45% emissions reductions below 2005 levels by 2030. Broken down by sector, the plan uses a [hybrid modelling approach](#) based on today's understanding of the most economically efficient potential for each sector to reduce emissions by 2030. Given the economic interdependencies and interactions among sectors, this roadmap may shift as Canada further decarbonizes, costs of abatement technologies change and other opportunities emerge. The Government of Canada expects that the measures outlined in the 2030 Emissions Reduction Plan, together with complementary climate actions from the provinces and territories, municipalities, the financial community, Indigenous Peoples, innovators, and businesses – as well as with the acceleration of clean technology innovation and deployment – will lead to further emission reductions by 2030.

The 2030 Emissions Reduction Plan continues to build upon the actions outlined in Canada's previous climate plans. Canada released the first-ever national climate plan in 2016 – the [Pan-Canadian Framework on Clean Growth and Climate Change](#) – jointly developed by the federal, provincial and territorial governments. The measures in the Pan-Canadian Framework set in place Canada's foundation for reaching its 2030 and 2050 targets, and many of the actions set out under the plan are still ongoing. In 2020, the Government of Canada released its strengthened climate plan, [A Healthy Environment and a Healthy Economy](#), which builds on the measures included in the Pan-Canadian Framework. The plan contains 64 strengthened and new federal policies, programs and investments to cut pollution and build a stronger, cleaner, and more resilient and inclusive economy. It will do this through 5 pillars: cutting energy waste; providing clean, affordable transportation and power; pricing carbon pollution; building a clean industrial advantage; and embracing nature-based climate solutions to support healthier and resilient communities.

Key results

The 2030 Emissions Reduction Plan shows a pathway to achieving Canada's 2030 emissions reduction target of 40% to 45% below 2005 levels. It highlights the emissions reduction potential for all economic sectors to reduce emissions by 2030 and includes concrete action that the Government will take to reach the target.

Figure 1. Greenhouse gas emissions reductions pathway, Canada, 2019 to 2030



[Data for Figure 1](#)

Note: LULUCF = land use, land use change and forestry. NBCS = nature-based climate solutions. The land use, land use change and forestry, nature-based climate solutions and agriculture sector category includes greenhouse gas emissions as well as greenhouse gas removals. For more information on the projected emissions in 2030, refer to the [2030 Emissions Reduction Plan: Canada's Next Steps for Clean Air and a Strong Economy](#) and [Canada's Greenhouse Gas and Air Pollutant Emissions Projections 2021](#).

Source: Environment and Climate Change Canada (2021) [National Inventory Report 1990-2019: Greenhouse Gas Sources and Sinks in Canada](#). Environment and Climate Change Canada (2022) [2030 Emissions Reduction Plan: Canada's Next Steps for Clean Air and a Strong Economy](#). Environment and Climate Change Canada (2022) [Canada's Greenhouse Gas and Air Pollutant Emissions Projections 2021](#).

In 2021, Canada increased its ambition on climate change under the 2015 Paris Agreement. Canada has committed to a GHG emissions reduction target of 40% to 45% below 2005 levels by 2030, which means a reduction from 739 megatonnes of carbon dioxide equivalent (Mt CO₂ eq) in 2005 to between 406 Mt CO₂ eq and 443 Mt CO₂ eq in 2030. Previously, Canada had committed to reducing its GHG emissions by 30% below 2005 levels by 2030.

Canada's 2030 trajectory is indicative of where there is emissions reduction potential in key sectors to make additional progress. It is important to note that pathways are not sectoral targets, they are projected sectoral contributions: the emissions reductions ultimately contributed by each sector are likely to vary over time as Canada responds to real-world changes, such as other countries implementing their climate plans and changes in global demand for oil and natural gas.

Existing and new measures in the [2030 Emissions Reduction Plan](#) position Canada to achieve the lower-bound of its 2030 target (40%). From 2005 to 2030, potential contributions from each sector¹ include:

- Buildings -37% (31 Mt CO₂ eq)
- Oil and gas -31% (50 Mt CO₂ eq)
- Electricity -88% (104 Mt CO₂ eq)
- Heavy industry -39% (35 Mt CO₂ eq)
- Transportation -11% (17 Mt CO₂ eq)
- Waste and others -49% (28 Mt CO₂ eq)

¹ Refer to the [Greenhouse gas emissions](#) indicators and the [2030 Emissions Reduction Plan](#) for more information on how the economic sectors contribute to GHG emissions in Canada.

- Agriculture -1% (1 Mt CO₂ eq)²

In 2030, an additional projected emissions reduction of 30 Mt CO₂ eq could come from land sector contributions, nature-based climate solutions and agriculture measures. The land use, land use change and forestry (LULUCF) sector acts as both a source and a sink of GHG emissions. Some land use activities (such as timber harvesting and land conversion), as well as natural disturbances (such as forest fires and insect infestations), result in GHG emissions. On the other hand, land use activities can also result in GHG removals. For example, as forests recover and trees grow, carbon is removed from the atmosphere and converted into wood by trees. Nature-based climate solutions (NBCS) are actions that conserve, sustainably manage and restore ecosystems (such as forests, grasslands, wetlands, agricultural lands and oceans) to contribute to climate change mitigation and deliver important co-benefits for society.

Combined, these sectoral reductions arrive at 443 Mt CO₂ eq in 2030, which represents a 40% reduction below Canada's 2005 emissions and positions Canada to achieve the lower-bound of its 2030 target. Further, the plan indicates enhanced climate ambition from provinces and territories, municipalities, industry, and the financial sector, as well as partnership with Indigenous Peoples can drive further reductions and put Canada in a position to achieve the target's upper bound of 45%.

Reference Case greenhouse gas emissions projections

Environment and Climate Change Canada publishes an updated [Reference Case GHG emissions projection scenario](#) annually that reflects the latest historical data and up-to-date future economic and energy market assumptions. Projections fluctuate over time as a result of changes in these assumptions. The 2021 Reference Case scenario models GHG emissions projections based on historical emissions to 2019 as well as all policies and measures funded, legislated and implemented by federal, provincial, and territorial governments as of November 2021. The 2021 Reference Case serves as a baseline for the [2030 Emissions Reduction Plan](#) and therefore does not take into account the impact of broader strategies or announced measures that are currently not implemented or funded.

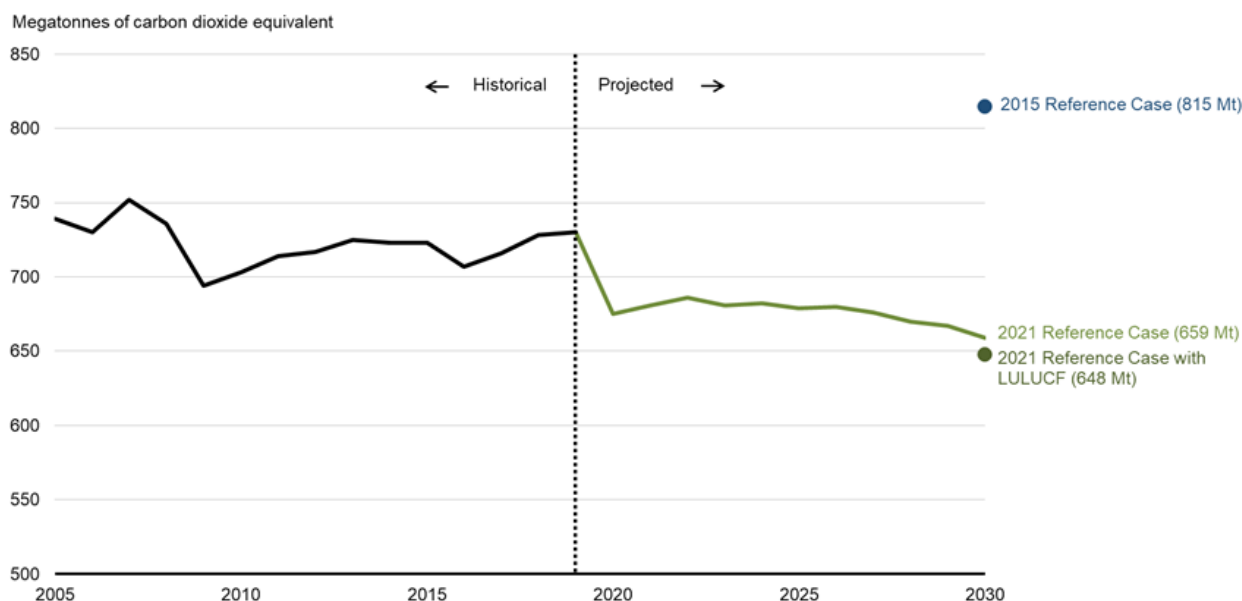
Key results

The most recent 2021 Reference Case scenario shows:

- projected emissions of 659 megatonnes of carbon dioxide equivalent (Mt CO₂ eq) in 2030, or 11% below 2005 levels
- when including the removals contribution from the land use, land use change and forestry (LULUCF) sector, emissions are projected to be 648 Mt CO₂ eq in 2030, or 12% below 2005 levels

² While the agriculture sector shows little change in emissions, this relates only to the model-determined emissions. Further emissions reduction measures for agriculture, such as limiting the use of fertilizers and employing nature-based climate solutions, are expected to contribute about 13 Mt CO₂ eq. These reductions are accounted for under the "LULUCF, nature-based climate solutions and agriculture measures" sector category.

Figure 2. Historical greenhouse gas emissions and projections, Canada, 2005 to 2030



[Data for Figure 2](#)

Note: LULUCF = land use, land use change and forestry. The Reference Case scenario is the "with measures" scenario as defined by the United Nations Framework Convention on Climate Change. For more information on the projection scenario, refer to the [Data sources and methods](#).

Source: Environment and Climate Change Canada (2021) [National Inventory Report 1990-2019: Greenhouse Gas Sources and Sinks in Canada](#). Environment and Climate Change Canada (2022) [Canada's Greenhouse Gas and Air Pollutant Emissions Projections 2021](#).

The 2015 projections published in [Canada's Second Biennial Report on Climate Change](#) are frequently used as a starting point or a point of comparison for subsequent projections. At the time, Canada's GHG emissions in 2030 were projected to be 815 Mt CO₂ eq. These were the first projections released after the 2015 Paris Agreement. The publication of these projections also preceded the release of Canada's first-ever national climate plan, the [Pan-Canadian Framework on Clean Growth and Climate Change](#), in 2016.

Climate plans and actions implemented by Canada since 2015 have had an impact on the GHG projections. Forecasted GHG emissions for 2030 are decreasing over time. Under the 2021 Reference Case scenario, it is projected that Canada's emissions in 2030 would be 659 Mt CO₂ eq, or 156 Mt CO₂ eq below Canada's 2015 projections of 815 Mt CO₂ eq. Taking into consideration an 11 Mt CO₂ eq contribution from the LULUCF sector, emissions in 2030 would be 648 Mt CO₂ eq, or 167 Mt CO₂ eq below the 2015 projections.

The 2021 Reference Case scenario projects that Canada's emissions in 2030 will be 15 Mt CO₂ eq lower in comparison to the 2020 Reference Case scenario projections. When taking into consideration the contributions from the LULUCF sector, the 2021 Reference Case is 9 Mt CO₂ eq lower than the 2020 Reference Case.

About the indicators

What the indicators measure

The indicators provide an overview of Canada's projected GHG emissions up to 2030. These modelled projections are based on:

- historical data from Canada's National Inventory Report
- expectations about future energy markets, population and economic growth from authoritative sources including the Canada Energy Regulator, Statistics Canada and Finance Canada
- policies and measures that were in place as of November 2021 (Reference Case scenario)
- policies and actions that were included in the 2030 Emissions Reductions Plan where there was sufficient information to include them in the sectoral projections

Why these indicators are important

In 2015, Canada and 194 other countries reached the Paris Agreement. This agreement aims to limit the global average temperature rise to well below 2 degrees Celsius and pursue efforts to limit the increase to 1.5 degrees Celsius. To achieve this long-term goal, the Paris Agreement requires countries to increase their ambition every 5 years. This is why, in July 2021, Canada committed to a GHG emissions reduction target of 40% to 45% below 2005 levels by 2030 and to achieve net-zero emissions by 2050.

The *Canadian Net-Zero Emissions Accountability Act* received Royal Assent in June 2021, and enshrines in legislation Canada's commitment to achieve net-zero greenhouse gas emissions by 2050. The Act establishes a legally-binding process to set 5-year national emissions-reduction targets and develop emissions-reduction plans to achieve each target. The [2030 Emissions Reduction Plan](#) is the first emissions reduction plan issued under the Act. Updates on progress to implement the measures outlined in the 2030 plan will be presented through progress reports in 2023, 2025 and 2027. Additional targets will be developed in 5-year intervals for 2035 through to 2045, as well as associated plans through to 2050.

These indicators allow the public and policy-makers to see Canada's modelled GHG emissions projections relative to the 2030 target.

Further, these indicators are important because of the human health, environmental and economic impacts associated with GHG emissions. For more information on these impacts, consult [Greenhouse gas emissions: drivers and impacts](#).



Effective action on climate change

These indicators support the measurement of progress towards the following [2019 to 2022 Federal Sustainable Development Strategy](#) long-term goal: A low-carbon economy contributes to limiting global average temperature rise to well below 2 degrees Celsius and supports efforts to limit the increase to 1.5 degrees Celsius.

These indicators are being proposed to track progress in the draft [2022 to 2026 Federal Sustainable Development Strategy](#).



Greening government

These indicators support the measurement of progress towards the following [2019 to 2022 Federal Sustainable Development Strategy](#) long-term goal: The Government of Canada will transition to low-carbon, climate-resilient, and green operations.

These indicators are being proposed to track progress in the draft [2022 to 2026 Federal Sustainable Development Strategy](#).

In addition, the indicators contribute to the [Sustainable Development Goals of the 2030 Agenda for Sustainable Development](#). They are linked to Goal 13, Take urgent action to combat climate change and its impacts and Target 13.2, "Integrate climate change measures into national policies, strategies and planning."

Related indicators

The [Greenhouse gas emissions](#) indicators report trends in total anthropogenic (human-made) GHG emissions at the national level, per person and per unit gross domestic product, by province and territory and by economic sector.

The [Greenhouse gas emissions from large facilities](#) indicator reports GHG emissions from the largest GHG emitters in Canada (industrial and other types of facilities).

The [Global greenhouse gas emissions](#) indicator provides a global perspective on Canada's share of global GHG emissions.

The [Greenhouse gas concentrations](#) indicators present atmospheric concentrations as measured from sites in Canada and at a global scale for 2 greenhouse gases: carbon dioxide and methane.

The [Carbon dioxide emissions from a consumption perspective](#) indicator shows the impact of Canada's consumption of goods and services, regardless of where they are produced, on the levels of carbon dioxide released into the atmosphere.

The [Land-based greenhouse gas emissions and removals](#) indicator tracks exchanges of greenhouse gas emissions and removals between the atmosphere and Canada's managed lands.

Data sources and methods

Data sources

The data for these indicators come from Canada's [Greenhouse Gas and Air Pollutant Emissions Projections 2021](#) and Canada's GHG emissions projections as reported in the [2030 Emissions Reduction Plan](#). The indicators reflect the latest GHG emissions projections modelling published by the department at the time of production.

The latest projections (March 2022) use historical GHG emissions data from the 2021 [National Inventory Report](#) for the years 2005 to 2019. The projections cover the period from 2020 to 2030.

Methods

No changes or additional calculations are performed on the data.

More information

The indicators are based on analysis that incorporates the most up-to-date information on GHG emissions, economic and population growth and energy price and production projections available at the time the technical modelling was completed. Data and information on policies and measures modelled under the Reference Case scenario and the 2030 Emissions Reduction Plan were included in [Canada's Greenhouse Gas and Air Pollutant Emissions Projections 2021](#) and Annex 5 of the [2030 Emissions Reduction Plan](#).

Emissions projections

The emissions projections have been developed in line with generally recognized best practices. This includes:

- incorporating Intergovernmental Panel on Climate Change standards for estimating GHG emissions across different fuels and processes
- relying on outside expert views and the most up-to-date assumptions of the key drivers that influence Canada's overall GHG emissions, such as economic and population growth, energy prices, and energy demand and supply
- applying an internationally recognized energy and macroeconomic modelling framework for estimating emissions and economic interactions
- using a methodology to develop the projections and underlying assumptions that has been subject to peer review by leading external experts on economic modelling and GHG emissions projections, and vetted by key stakeholders

The approach to developing Canada's GHG emissions projections involves:

- using the most up-to-date statistics on GHG emissions and energy use, and sourcing key assumptions from the best available public and private expert sources
- developing a baseline projection scenario (Reference Case) using the detailed and proven Energy, Emissions and Economy Model for Canada, that combines a detailed bottom-up simulation with a top-down macroeconomic model
- developing an emissions projection scenario for the 2030 Emissions Reduction Plan using a combination of 2 modelling approaches – a "bottom-up" approach— as well as a "back-casting" approach

The modelling process for the [2030 Emissions Reduction Plan](#) involved 3 steps.

1. Establish an updated reference case that is the foundation on which the measures included in the 2030 plan were layered
2. Measures with sufficient detail were modelled in a "bottom-up" modelling exercise that is described in Annex 5 of the 2030 plan
3. A "back casting" exercise was run to identify the most economically efficient reductions by sector to achieve the 40% objective by 2030. The details of this exercise are shown in Chapter 3 of the 2030 plan

Scenarios

The indicators present the 2021 Reference Case scenario, shown from 2020 to 2030, as reported in [Canada's Greenhouse Gas and Air Pollutant Emissions Projections 2021](#). This scenario includes policies and measures in place as of November 2021. The 2021 Reference Case scenario does not take into account the impact of broader strategies or future measures within existing plans where significant details are still under development (such as the Clean Fuel Standard, credit purchases under the Western Climate Initiative and certain changes or updates of carbon pricing systems).

The indicators also present a sectoral greenhouse gas emissions reductions pathway to 2030, shown from 2019 to 2030, as reported in the [2030 Emissions Reduction Plan](#). This takes into account existing climate measures, some new measures contained in the plan, as well as policies and measures that are still under development.

Recent changes

The calculation of these indicators reflects methodological revisions that were applied to the 2021 [National Inventory Report](#), as well as revisions to the Energy, Emissions and Economy Model for Canada. For a list of the modelling and methodological changes, refer to Section 1.3.1 of [Canada's Greenhouse Gas and Air Pollutant Emissions Projections 2021](#) and Annex 5 of the [2030 Emissions Reduction Plan](#).

The indicators were updated with the latest sectoral GHG emissions projections published under Canada's 2030 Emissions Reduction Plan. The 2030 plan is the first Emissions Reduction Plan issued under the *Canadian Net-Zero Emissions Accountability Act*. Progress under the plan will be reviewed in progress reports produced in 2023, 2025 and 2027. Additional targets will be developed every 5 years from 2035 through to 2045, as well as associated plans through to 2050.

Caveats and limitations

Emissions projections are subject to uncertainty, and are most appropriately viewed as a range of plausible outcomes. Many of the events that shape emissions and energy markets cannot be anticipated. In addition, future developments in technologies, demographics and resources cannot be foreseen with certainty.

More information

2030 Emissions Reduction Plan

The [2030 Emissions Reduction Plan](#) continues to drive down Canada's emissions while growing a clean economy, creating new sustainable jobs, and providing supports to help defray the costs of decarbonization. Projections for the 2030 plan uses a combination of 2 modelling approaches, a "bottom-up" approach as well as a "back-casting" approach. The "bottom-up" approach provides a floor for projected emissions reductions achievable from existing climate measures, including some new measures contained in the 2030 plan. This accounts for about 470 megatonnes of carbon dioxide equivalent (Mt CO₂ eq) or 36% below 2005 levels. The 2030 plan also uses a "back-casting" approach to help account for policies and measures that are included in the plan, but are still under development (such as the Canada Green Buildings Strategy, work to develop a Buy Clean Strategy to support and prioritize the use of made-in-Canada low carbon products). Under this approach Canada's total emissions are capped at the level needed to achieve the 2030 target of 40% below 2005 levels, including the potential contribution from the oil and gas sector, and the Government's model is used to identify potential reductions for the remaining sectors in an economically efficient manner. Many jurisdictions, such as the United Kingdom and Scotland, use this approach to guide ambition for future climate actions.

Taken together, these approaches provide one potential pathway across economic sectors to meet Canada's 2030 target. However, it does not fully take into account other uncertain factors that could have an impact on the path to the 2030 target, such as labour availability, technology and infrastructure requirements.

Further, these projections likely do not fully account for the reality that Canada is just starting along the innovation curves associated with some of the most promising decarbonization technologies, such as industrial electrification, carbon capture, utilisation and storage (CCUS), and hydrogen, which are expected to experience improvements in cost and technical performance into the future. And finally, the projections may not fully capture the significant investments and economic transformation likely to unfold over the coming decade. For example, the potential reductions for certain investments, such as those in clean technology, that are difficult to fully quantify in advance but are expected to have an impact on future GHG emissions.

Broken down by sector, Canada's pathway to 2030 is based on today's understanding of the potential for each sector to reduce emissions by 2030. Given the economic interdependencies and interactions within and between sectors, the exact areas for emissions reduction potential may shift in the future as Canada further decarbonizes.

Reference Case Scenario

The projection scenarios derive from a series of plausible assumptions regarding, among others, population and economic growth, prices, demand and supply of energy, and the evolution of energy efficiency technologies. The 2021 Reference Case scenario assumes no further government actions to address GHG emissions beyond those already in place as of November 2021.

Under the 2030 Emissions Reduction Plan: Canada's Next Steps for Clean Air and a Strong Economy, a number of policies and measures have been announced. As the policy development process is not yet finished, some policies were not included in the 2021 Reference Case scenario. For a complete list of included policies and measures, refer to Table A.33 in Annex 3 of [Canada's Greenhouse Gas and Air Pollutant Emissions Projections 2021](#). The Reference Case does not take into account the impact of broader strategies or future measures within existing plans where significant details are still under development. Policies still under development will be included in subsequent scenarios as their details become finalized.

The emission reduction projections are conservative relative to the significant investments and economic transformation likely to unfold over the coming decade. Certain investments, such as those in clean technology or public transit, are difficult to quantify in advance but can be expected to have a material impact on greenhouse gas emissions. These projections also do not account for the reality that Canada is just starting along the innovation curves associated with some promising decarbonization technologies. It is expected that GHG estimates will continue to decline in the near to medium term, especially with the significant impact of the COVID-19 pandemic on several sectors in 2020 and 2021 and a gradual recovery in the following years.

The projections presented in the indicators are based on a series of assumptions, including that the current planned policy context will continue into the future. The projections do not attempt to account for the inevitable but as yet unknown changes that will occur in government policy; energy supply, demand and technology; or domestic and international economic and political events.

The future level of GHG emissions in Canada depends on a number of factors, including changes in future energy markets and economic assumptions, technological change, consumer behaviour, and introduction of additional policies aimed at emissions reductions. A sensitivity analysis was conducted to address the uncertainty regarding the key drivers of GHG emissions. The analysis focuses on variability in 2 key factors: future economic growth and population projections, and the evolution of oil and natural gas prices and production. For more details about the sensitivity analysis, please consult Section 1.3.6 and Annex 2 of [Canada's Greenhouse Gas and Air Pollutant Emissions Projections 2021](#).

While the Energy, Emissions and Economy Model for Canada is a sophisticated analytical tool, no model can fully capture the complicated interactions associated with given policy measures between and within markets or between firms and consumers.

The Energy, Emissions and Economy Model for Canada has a broad model boundary that captures the complex interactions that occur between producers, consumers and the environment across all energy sectors in the Canadian context. In addition, the Energy, Emissions and Economy Model for Canada has an explicit causal structure that can be used to understand the origins of the patterns of behavior observed and also captures capital stock dynamics. Combined with the fact that it is calibrated to the Canadian experience, these provide considerable flexibility for the modelling of energy and environmental policies.

Unlike computable general equilibrium models, the Energy, Emissions and Economy Model for Canada does not fully equilibrate government budgets and the markets for employment and investment. That is, the modeling results reflect rigidities such as unemployment and government surpluses and deficits. The model, as used by Environment and Climate Change Canada, also does not generate changes in nominal interest rates and exchange rates, as would occur under a monetary policy response to a major economic event. Consequently, the model is not designed to undertake welfare analysis.

Finally, the model lacks endogenous technological change for the industrial and transportation sectors. As a result, the Energy, Emissions and Economy Model for Canada is not well-suited to modelling disruptive technological changes.

Resources

References

Environment and Climate Change Canada (2016) [Pan-Canadian Framework on Clean Growth and Climate Change](#). Retrieved on April 5, 2022.

Environment and Climate Change Canada (2020) [A Healthy Environment and a Healthy Economy](#). Retrieved on April 5, 2022.

Environment and Climate Change Canada (2021) [National Inventory Report 1990-2019: Greenhouse gas sources and sinks in Canada](#). Retrieved on April 5, 2022.

Environment and Climate Change Canada (2022) [2030 Emissions Reduction Plan: Canada's Next Steps for Clean Air and a Strong Economy](#). Retrieved on April 5, 2022.

Environment and Climate Change Canada (2022) [Canada's Greenhouse Gas and Air Pollutant Emissions Projections 2021](#). Retrieved on April 5, 2022.

Related information

[Canada's climate plan](#)

[Greenhouse gas emissions: drivers and impacts](#)

[Greenhouse gas emissions projections](#)

Annex

Annex A. Data tables for the figures presented in this document

Table A.1. Data for Figure 1. Greenhouse gas emissions reductions pathway, Canada, 2019 to 2030

Economic sector	2005 (Mt CO ₂ eq)	2019 (Mt CO ₂ eq)	2020 (Mt CO ₂ eq)	2021 (Mt CO ₂ eq)	2022 (Mt CO ₂ eq)	2023 (Mt CO ₂ eq)	2024 (Mt CO ₂ eq)	2025 (Mt CO ₂ eq)	2026 (Mt CO ₂ eq)	2027 (Mt CO ₂ eq)	2028 (Mt CO ₂ eq)	2029 (Mt CO ₂ eq)	2030 (Mt CO ₂ eq)
Transportation	160	186	162	168	171	174	174	168	165	162	156	151	143
Oil and gas	160	191	179	182	181	177	173	170	163	154	144	128	110
Heavy industry	87	77	69	71	73	72	70	66	61	58	56	55	52
Buildings	84	91	85	84	82	80	76	73	71	68	65	62	53
Electricity	118	61	52	43	42	36	31	29	30	26	22	18	14
Others	26	24	22	21	21	20	19	17	16	16	15	14	13
Waste	31	28	28	28	27	26	24	23	22	20	19	18	16
Land use, land use change and forestry, nature-based climate solutions and agriculture (emissions)	72 ^[A]	73	72	73	73	73	73	73	73	73	72	72	71
Land use, land use change and forestry, nature-based climate solutions and agriculture (removals)	n/a	-8	-10	-11	-11	-10	-12	-14	-16	-19	-22	-26	-30
Total	739	723	659	659	660	646	627	605	584	558	527	492	443

Note: Mt CO₂ eq = megatonnes of carbon dioxide equivalent. n/a = not available. ^[A] Data for agriculture only. Totals may not add up due to rounding. Historical greenhouse gas emissions data for 2005 and 2019 were taken from the National Inventory Report 1990-2019: Greenhouse gas sources and sinks in Canada.

Source: Environment and Climate Change Canada (2021) [National Inventory Report 1990-2019: Greenhouse Gas Sources and Sinks in Canada](#). Environment and Climate Change Canada (2022) [2030 Emissions Reduction Plan: Canada's Next Steps for Clean Air and a Strong Economy](#). Environment and Climate Change Canada (2022) [Canada's Greenhouse Gas and Air Pollutant Emissions Projections 2021](#).

Table A.2. Data for Figure 2. Historical greenhouse gas emissions and projections, Canada, 2005 to 2030

Year	2021 Reference Case ^[A] (megatonnes of carbon dioxide equivalent)
2005	739
2006	730
2007	752
2008	736
2009	694
2010	703
2011	714
2012	717
2013	725
2014	723
2015	723
2016	707
2017	716
2018	728
2019	730
2020	675
2021	681
2022	686
2023	681
2024	682
2025	679
2026	680
2027	676
2028	670
2029	667
2030	659 ^[B]

Note: ^[A] Reported in [Canada's Greenhouse Gas and Air Pollutant Emissions Projections 2021](#). Historical greenhouse gas emissions data from 2005 to 2019 were taken from the National Inventory Report 1990-2019: Greenhouse gas sources and sinks in Canada. The 2021 Reference Case scenario includes policies and measures in place as of November 2021. ^[B] Taking into consideration an 11 megatonne of carbon dioxide equivalent contribution from the land use, land use change and forestry sector, emissions in 2030 would be 648 megatonnes of carbon dioxide equivalent. The Reference Case scenario is the "with measures" scenario as defined by the United Nations Framework Convention on Climate Change. For more information on the projection scenario, refer to the [Data sources and methods](#).

Source: Environment and Climate Change Canada (2021) [National Inventory Report 1990-2019: Greenhouse Gas Sources and Sinks in Canada](#). Environment and Climate Change Canada (2022) [Canada's Greenhouse Gas and Air Pollutant Emissions Projections 2021](#).

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